

# OXFORD School of Archaeology

Annual Report  
2011–2012



## THE SCHOOL OF ARCHAEOLOGY

The School of Archaeology is one of the premier departments in the world for the study and teaching of the human past. Comprised primarily of the Institute of Archaeology and the Research Laboratory for Archaeology and the History of Art, the School hosts a dynamic faculty, nearly one hundred undergraduates, and a large cohort of outstanding graduate students each year. It is one of the few places in the world where the many facets of archaeology come together to explore themes such as human origins and early hunter-gatherers, the ancient environment, classical and historical archaeology, and chronology.

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# Introduction

## Helena Hamerow (Head of the School of Archaeology)

The year just ended has seen members of the School of Archaeology engaged in an extraordinarily diverse range of research projects across many parts of the globe, in some cases launching new projects, in others bringing work to completion. Preparations for the Research Excellence Framework also gained momentum and will occupy ever more of our attention in the coming months. While the emphasis in the following report is on showcasing selected research projects, the introduction provides an opportunity to record key events in the life of the School over the past year.

The School has had the pleasure of welcoming a number of new arrivals: Dr Philipp Niewöhner has been appointed to a three-year Departmental Lectureship in Byzantine Archaeology and Material Culture, 300–1300, a post which is shared with Classics and History. New post-doctoral researchers include: Peter Hommel, who joined Jessica Rawson's project on 'China and Inner Asia (1000–200 BC): Interactions that changed China'; Chris Green, Anwen Cooper and Letty ten Harkel, who joined Chris Gosden's project on 'Landscape and Identities: the case of the English Landscape 1500 BC–AD 1086', Chris as GIS Research Assistant, Anwen and Letty as Research Assistants working, respectively, on the prehistoric and early medieval periods. Jane Kershaw has stayed on after finishing her D.Phil. to take up a British Academy Post-Doctoral Fellowship on the bullion economy of Viking-Age England. Dr Maura Pellegrini, who transferred to the Research Laboratory in May 2011 as part of a Leverhulme-funded project on the Late Glacial in Italy, stayed on with Fell Fund support to lay the groundwork for a new collaboration between Archaeology and Earth Sciences to support the development of strontium isotope research. Dr Laura Morley joined the EngLaid project as Administrative Assistant and Konstantina Panousi was appointed Librarian of the Institute. Other post-doctoral researchers who began their work in the past year are Susanna Carvalho, who has joined the 'Primate Archaeology' project (see below), Laine Clark-Balzan, working with Jean-Luc Schwenninger on spatially-resolved optically stimulated luminescence and microdosimetry, and Michelle Wollstonecroft, who has



been appointed to work on the SeaLinks Project, investigating the movement of plants, people and animals between Indian Ocean societies. Elaine Russell-Wilkes joined us to provide administrative support for the 'Palaeodeserts' project (see below). And while we are on the subject of new arrivals, we also warmly congratulate Lucy Palmer on the birth of her daughter, Bethan, in November.

A key event of another kind was the retirement of Liz Strange after many years as Receptionist at the Institute of Archaeology. Liz's friendly smile and sympathetic ear (not to mention cakes) created a warm and welcoming atmosphere that has been appreciated by generations of students and staff. All in the School wish her a long and happy retirement.

We were also privileged to host a number of visiting scholars in 2011–12: Dr Ivo Stefan, lecturer in Medieval Archaeology from Charles University, Prague, here on a Gerda Henkel fellowship, and Dr Hajnalka Herold from the University of Vienna, also an early medieval specialist, here on a Von Humboldt grant; Dr Javier Rodríguez-Corral, from the Universidad de Santiago de Compostela, is visiting for two years.

Many, though by no means all, of the School's current research projects are described in the pages that follow. It is gratifying to note that amongst these are several major new projects that commenced in the past year:

The five-year, ERC-funded 'English Landscapes and Identities Project' has now begun its work. The project



team, led by Chris Gosden, is seeking to understand the development of the English landscape from the middle Bronze Age to the Norman Conquest through the use of mapped data to explore continuities and changes in land use in different parts of England. The first conference relating to the project was held at Keble College in June.

The ERC has also funded two new projects this year: the first, led by Michael Petraglia, is examining how long-term climate change in the Arabian Desert affected early humans and animals and what responses determined whether they survived or died out over the last two million years. Satellite images have revealed a network of ancient lakes and rivers that once coursed their way through the sand. The images are the starting point for a ground-breaking research project which will study the landscape features and excavate sites likely to be of archaeological interest, using the network of water courses as a map. Researchers will use the latest dating techniques to pinpoint the ages of animal and plant remains and of different stone tool technologies and compare similarities and differences displayed in the region's rock art, while stable isotopes of faunal remains will help us understand climate patterns and conditions under which the former desert inhabitants lived.

The second ERC-funded project to begin last year is a study of 'Primate Archaeology: an evolutionary context for the emergence of technology', led by Michael Haslam, which aims to characterize the archaeological signature left by primate tool-manufacture as a possible guide to understanding early hominid behaviours.

The Radiocarbon Lab has also been very much in the news. The earliest musical instruments found in Europe – flutes made of bird bone and mammoth ivory – have been dated to 40,000 years ago, several thousand years earlier than previously thought. The results were achieved by Tom Higham and his team, using an improved ultrafiltration method designed to remove contamination from collagen preserved in the bone. The same team was also able to demonstrate that bones found under the floor of a Bulgarian church and long claimed to be those of St John the Baptist do indeed date to the first century AD.

The work of Professors Higham and Petraglia was recently highlighted by the journal *Nature* in two publicly accessible articles:

<http://www.nature.com/news/archaeology-date-with-history-1.10573>

<http://www.nature.com/news/human-migrations-eastern-odyssey-1.10560>

The Radiocarbon Accelerator Unit (ORAU) received very positive feedback from the NERC Radiocarbon Facility review, with a recommendation to NERC to renew the service for another five years. The ORAU also tendered successfully for the main radiocarbon dating provision for English Heritage. It is exciting to report that the process of setting up an ancient DNA laboratory at the RLAHA also began in the past year.

This year also saw work commence on two major Leverhulme-funded projects. 'China and Inner Asia (1000–200 BC): Interactions that changed China' (led by Jessica Rawson) is the first major project to be associated with the Oxford Centre for Asian Archaeology, Art and Culture, launched in October 2010. The project team is now firmly established at the Institute of Archaeology. More recently, an investigation into the 'Earliest Symbolism and Cemeteries in Prehistoric North Africa' (PI: Nick Barton) was awarded a grant for three years.

Finally, a major AHRC grant has been awarded to 'The Atlas of Hillforts in Britain and Ireland Project', a collaboration between the Universities of Edinburgh and Oxford, led by Ian Ralston and Gary Lock. Its aim is to record every hillfort in these countries and make these records available through an online resource and published atlas.

As financial pressures mount and amid continuing uncertainties regarding the future funding of Higher Education, external funding remains of paramount importance if we are to continue as a world-leading centre of archaeological research. Members of the School are therefore to be congratulated on their continuing success in this regard: the total grant income for projects that commenced during this year came to approximately £3.7 million. Such success in obtaining external grants will lay the groundwork for future achievement.

A high point of another kind came on 8 December, when the innovative work of 'SeaLinks' (PI: Nicole Boivin), an ERC-funded project examining the pre-historic emergence of long-distance maritime contacts around the Indian Ocean, was recognized at a reception at Buckingham Palace, hosted by the Queen and the Duke of Edinburgh. The event was in recognition of the role of adventurers and explorers and coincided with an exhibition at the Palace displaying items related to exploration and adventure from the royal archives. Innovative teaching within the School was also recognized by the Oxford University Student Union with the nomination of Nick Barton for an 'Innovation in Teaching' Award.

The School also undertook a range of 'outreach' activities, most notably at our training excavations at the Roman small town of Dorchester-on-Thames. This year's season enabled us to reach a broad spectrum of the local community, as well as enthusiastic excavators from further afield. Residents of Dorchester itself joined us in excavating and processing finds, and also provided general logistical support. In addition to offering training to nearly 50 undergraduates from several departments across the University, we also welcomed three sixth-form students on work experience, several undergraduates from other UK universities, and over a dozen other members of the

public to our Field School. Some travelled from as far as Spain, Norway and Australia to dig with us! We held an Open Day for the public at the end of our third week and, during a brief sunny break in the monsoon-like weather, welcomed over 250 visitors to the site for tours and displays of finds.

A certain amount of 'bricks and mortar' work has also been undertaken. The Institute refurbished its palaeobotanical laboratory, thereby enabling a larger number of students to take practical classes, and allowing microscopic images to be projected onto a screen for teaching purposes. Indeed, the Institute as a whole has begun to receive a major face-lift, following on from essential re-wiring. The full impact of this will only become apparent in 2013, but visitors can already see that an impressive transformation is being wrought.

Finally, it should be noted that the Institute's highly successful 50th Anniversary celebrations in September 2011 have led to the creation of an alumni page on the School of Archaeology's newly redesigned website. We hope that this will encourage former students (and others) to keep in touch and stay informed about current developments within the School.

October 2012

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**Maxine Anastasi** (*St Cross College*)

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**Jamie Anderson** (*Hertford College*)

*Human Adaptation to Environmental Change in Marginal Environments of the North Atlantic Zone, c.AD 800–1700: A Reappraisal of the Chronological Basis*

**James Blinkhorn** (*St Hugh's College*)

*The Palaeolithic Occupation of the Thar Desert: Assessing Models for the Human Colonisation of South Asia*

**Diana Blumberg** (*St Cross College*)

*The Provenance and Trade of Engraved Gemstones in the Classical World*

**Bohingamuwa Bohingamuwa** (*St Cross College*)

*Sri Lanka and the Early Indian Ocean Contacts: Historical Narratives vs. Material Realities*

**Daniela Boos Pedroza** (*St Hugh's College*)

*Locating Provenance: Oxygen Isotopes as Tracers*

**Ceri Boston** (*Linacre College*)

*Tars and Lobsters: Origins, Lifestyle, Health and Diseases of 18th Century Royal Navy Personnel as Reflected in their Remains*

**Fiona Bradshaw** (*Wolfson College*)

*Plant Exploitation in Oceania: Analysis of Resins from Archaeological and Ethnographic Artefacts in the Pitt Rivers Museum*

**Cassian Bramham Law** (*Hertford College*)

*Research on the Role of Lacustrine Systems and the Re-occupation of the North European Plain Following the Last Glacial Maximum*

**Elizabeth Brophy** (*Keble College*)

*Royal Statuary in Egypt 300 BC–AD 220: Context and Function*

**Chelsea Budd** (*Keble College*)

*Marginality, Metaphor & Meaning: Stable Isotope Studies of Diet and Subsistence Aimed at Understanding the Adoption of Agriculture during the Neolithic and Bronze Age Periods in the Marginal Environment of the Orkney Islands*

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*Images, Objects and Imperial Power in the Roman and Qin-Han Empires*

**Dana Challinor** (*St Cross College*)

*Charcoal Evidence from Ritual and Domestic Contexts at Pompeii and Herculaneum*

**Sujatha Chandrasekaran** (*Lincoln College*)

*The Western Caucasus – Imported Armour in the Hellenistic Period*

**Beichen Chen** (*Merton College*)

*An Attempt to Understand the Cultural Interactions in Late Bronze Age China*

**Xuan Chen** (*Merton College*)

*Eastern Han (AD 25–220) Tombs in Sichuan*

**Yi Chen** (*Merton College*)

*Interregional Interaction and Social Development – Southern China from 3000 to 500 BC*

**Tiffany Chezum** (*Exeter College*)

*The Changing Status of the Indigenous Elite in Greek and Roman Egypt: From the Evidence of the Material Culture*

**Laine Clark-Balzan** (*Keble College*)

*Dating the Aterian Using Techniques of Luminescence Dating and Implications for Mapping the Dispersal of Modern Homo Sapiens*

**Robert Corrie** (*The Queen's College*)

*Detecting Archaeological Sites in Egypt Using Satellite Remote Sensing and Digital Image Processing*

**Jennifer Craig** (*Brasenose College*)

*Maritime Archaeology of the Philippines in the Sixteenth Century*

**Aurelie Cuenod** (*Wolfson College*)

*Rethinking the Bronze–Iron Transition in Iran: Copper and Iron Metallurgy before the Achaemenid Period*

**Victoria Cullen** (*Keble College*)

*A Tephrochronological Approach to Address Synchronicity of the Middle to Upper Palaeolithic Transition in the Caucasus*

**Ann-Sofie Diener** (*Lady Margaret Hall*)

*Orientalisation at the Birthplace of Zeus: Cretan Art, 9th–7th Centuries BC*

**Oana Dominte** (*Keble College*)

*The Fascination of Fire: A Phenomenological Approach to Fire Practices in Bronze and Iron Age Britain*

**Heidi Eager** (*Linacre College*)

*Biomolecular Archaeology: Using Commensal Mammals to Reconstruct Prehistoric Human Contact in the Indian Ocean*

**Teresa Erice Jurecky** (*St Hugh's College*)

*Clearing the Fog from the Mountains: Landscape and the Reassessment of Isolation in Asturias, Spain (100 BC–900 AD)*

**Brian Fahy** (*Wolfson College*)

*Cricket Run or Home Run? Correlations Between Emporia and non-Emporia Based Trade from the Wreck of the Lena Shoal*

**Dragana Filipovic** (*Wolfson College*)

*Plant Use and Crop Husbandry at Çatalhöyük East, Central Anatolia*

**Peter Fiske** (*St Cross College*)

*To Which the World Sails: Egyptian Travel, Trade, and Transformation from the Bronze Age to the Iron Age*

**Patrik Flammer** (*Merton College*)

*Molecular Archaeoparasitology as Novel Tool for the Study of Trading and Migration Networks through History*

**Tim Forssman** (*St Hugh's College*)

*Gathering Dust: Late Holocene Bushmen on the Mapungubwe Landscape, South Africa*

**Carmela Franco** (*Wolfson College*)

*Sicilian Amphorae (AD I–VI): An Economic Analysis of Production and Distribution*

**Tyler Franconi** (*Christ Church*)

*The Economic Development of the Rhine River Basin in the Roman Period*

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*Fire in the Mind: A Cognitive Synthesis of Early Bronze Age Funerary Rituals*

**Alkiviadis Ginalis** (*Merton College*)

*Byzantine Ports – Central Greece as a Link Between the Mediterranean and the Black Sea*

**Sarah Graham** (*Wolfson College*)

*In Search of the Dioskouroi: Image, Myth and Cult 700–140 BC*

**Ilaria Maria Grimaldi** (*Wolfson College*)

*Tracking Early Indian Ocean Movements Using Taro (*Colocasia Esculenta*) Phylogeography*

**Huw Groucutt** (*Wolfson College*)

*Hominin Dispersals and the Middle Palaeolithic of Arabia*

**John Hanson** (*Wolfson College*)

*The Urban System and Economy of the Roman Empire*

**Sanda Heinz** (*St Cross College*)

*The Statuettes and Amulets of Heracleion-Thonis*

**Rowena Henderson** (*St Cross College*)

*Weaning in the Bronze and Iron Age*

**Philippa Henry** (*Wolfson College*)

*The Changing Scale and Mode of Textile Production in Late Saxon England: Its Relationship to Developments in Textile Production Technology and Changes in Society*

**Rachel Hesse** (*Merton College*)

*Roman Ritual: A Zooarchaeological Analysis of Roman Religious Sites and Burials*

**Joshua Hogue** (*St Cross College*)

*The Iberomaurusian of the Maghreb: A Reappraisal of Chronological, Geographic and Functional Variability*

**Amber Hood** (*Merton College*)

*Illuminating Early Dynastic Egypt: Using a Multidisciplinary Approach to Reassess the Chronological and Typological Ceramic Assemblage of the Late Naqada Period and its Transition into the Old Kingdom*

**Tom Hoogervorst** (*Linacre College*)

*Southeast Asia in the Ancient Indian Ocean World: Combining Historical Linguistic and Archaeological Approaches*

**Yiu-Kang Hsu** (*Linacre College*)

*Northern China, Xinjiang, Kazakhstan and Western Siberia. Development and Circulation of Bronze Knives and Axes*

**Antonis Iliopoulos** (*Keble College*)

*Cognitive Archaeology. The Neuroarchaeology of Early Body Decoration: An Interdisciplinary Discourse on the Origins of Self-Consciousness, Symbolism and Language*

**Anthony Johnson** (*Keble College*)

*The Long-Term Dynamic Influence of Human Activity on Topsoil Magnetic Susceptibility*

**Eleni Karouzou** (*Lincoln College*)

*Thessaly: From the Late Bronze Age to the Early Iron Age (c.1200–700)*

**Alexandra Kasserli** (*St Cross College*)

*Archaic Trade in the Northern Aegean. The Case of Methone*

**Kyungkyu Kim** (*Wolfson College*)

*Early Maritime Activities in the South China Sea from the First Century BC to the Fifth Century AD*

**Sunwoo Kim** (*Wolfson College*)

*Life and Death in the Korean Bronze Age (c.1500–400 BC): An Analysis of Monuments and Settlements in the Mid-Korean Peninsula*

**Rachel King** (*Linacre College*)

*Managing the Past: Archaeology in the Resource Vernacular of KwaZulu-Natal, South Africa*

**Maria Kopsacheili** (*Wolfson College*)

*Palaces and Elite Residences in the Hellenistic Mediterranean (4th–1st c. BCE): Formation and Purpose*

**Ania Kotarba-Morley** (*St Cross College*)

*Defining Mechanisms of Red Sea and Indian Ocean Trade Between 3rd c. BC and 6th c. AD: Using Geoarchaeology and Spatial Analysis to Investigate Harbours at the Port City Archaeological Sites of Berenice (Egypt), Pattanam (India), Manthai (Sri Lanka) and Unguja Ukuu (Zanzibar, Tanzania)*

**Anna Kouremenos** (*Lincoln College*)

*Elite Houses in Kissamos and Knossos (Crete): A Study in Emulative Acculturation*

**Kathryn Krakowka** (*St Cross College*)

*The Prevalence of Interpersonal Violence Against Women in Medieval Spain and its Effects on the Structure of Modern Domestic*

**Michelle Langley** (*St Cross College*)

*Curation of Magdalenian Osseous Projectile Points*

**Sharen Lee** (*Linacre College*)

*Bayesian Methods for the Construction of Robust Chronologies*

**Laura Lewis** (*Keble College*)

*A New Perspective on the 'Modern Human Behaviour' Debate: Early Microlithic Industries and Behavioural Flexibility in the Indian Subcontinent*

**Chen Li** (*Merton College*)

*Han Dynasty (206 BC–AD 220) Stone Carved Tombs in Central and Eastern China*

**Yan Liu** (*Merton College*)

*The Western Han Wooden-Chambered Tombs in the Mid-Yangzi River Region, South China (206 BC–AD 25)*

**Matthew Lloyd** (*Merton College*)

*The Archaeology of Greek Warriors and Warfare from c.1050 to c.600 BCE*

**Lisa Lodwick** (*St Cross College*)

*Archaeobotanical Assemblages from Late Iron Age and Early Roman Silchester: Assessing the Character of an Early British Urban Settlement*

**Jerome Mairat** (*Wolfson College*)

*The Coinage of the Gallic Empire*

**Lara Mallen** (*St Hugh's College*)

*Raiding Relationships: The Role of the San in the Stock Raiding System of the North Eastern Cape and Southern Lesotho*

**Anat Marom-Rotem** (*Linacre College*)

*Development and Application of an Analytical Method for Radiocarbon Dating Bones Using the Amino Acid Hydroxyproline*

**Javier Martinez** (*Lincoln College*)

*Water Use and Supply in the Towns of Late Antique and Early Medieval Spain*

**Rebecca McClung** (*St Cross College*)

*Understanding Social and Environmental Issues on the West Coast of Ile de la Reunion through Graffiti and Other Memory Markers*

**Mark McKerracher** (*St Cross College*)

*Agricultural Development in Middle Saxon England*

**Kristine Merriman** (*Merton College*)

*Organic Preservation in Archaeological Ceramics*

**Elizabeth Montgomerie** (*Exeter College*)

*Images of the Rural Economy on Mosaic Pavements in the Late Antique Levant*

**Wendy Morrison** (*Exeter College*)

*Complex Assemblages, Complex Social Structures: The Upper and Middle Thames Valley 100 BC–AD 100*

**Sarah Neate** (*Linacre College*)

*Conservation and Practical Analysis Issues in the Identification of Manuscript Pigments: An Assessment of Current Methodologies and Potential for Use in the Bodleian Library*

**Luisseach Nic Eoin** (*St Hugh's College*)

*Functional Analysis of Grindstone Technology from the Middle and Later Stone Ages of Southern Africa*

**Erika Nitsch** (*Linacre College*)

*Stable Isotope Evidence for Diet Change in Roman and Medieval Italy: Local, Regional and Continental Perspectives*

**Jayson Orton** (*St Hugh's College*)

*Late Holocene Archaeology in Namaqualand, South Africa: Hunter-Gatherers and Herders in a Semi-Arid Environment*

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*Innovative Economies: The Impact of Iron Technology on the Economy and Culture of Early Iron Age Greece (1200–700 BCE)*

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*Byzantine Architecture and Painting: the Church of Krena in Chios*

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*An Archaeology of Post-Industrial England*

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**Philippa Puzey-Broomhead** (St Cross College)

*A Historical Archaeology of the Black Loyalists in Atlantic Canada*

**Leonie Raijmakers** (Merton College)

*One Way Ticket: Studying Indian Ocean Maritime Activity through Biomolecular Phylogenetics of Human Commensal Animal Species*

**Kathryn Reusch** (St Hugh's College)

*'That Which Was Missing': The Archaeology of Castration*

**Natasha Reynolds** (Wolfson College)

*The Eastern Gravettian and its Place in the Mid Upper Palaeolithic Settlement of Europe*

**Candace Rice** (Exeter College)

*Port Economies and Maritime Trade in the Roman Mediterranean: 166 BC to AD 300*

**Giles Richardson** (Brasenose College)

*Sinking like a Stone: Shipwrecked Cargoes and the Maritime Transport of Decorative Stone in the Roman Empire*

**Valeria Riedemann Lorca** (Lincoln College)

*Greek Mythology in Funerary Contexts: Reception and Regional Variations in the Late Classical Period*

**Jonah Rosenberg** (St John's College)

*The Development of Emotional Rendering in Greek Art 525–400*

**Erica Rowan** (St Cross College)

*Roman Diet and Nutrition in the Vesuvian Area: A Study of Biological Remains from a Sewer at Herculaneum*

**Benjamin Sabatini** (Linacre College)

*Abandoned Chemistry: A New Interpretation of Copper Alloy Artifacts from the Cypriot Bronze Age Based on Recently Acquired and Existing Chemical Data*

**Yurika Sakai** (St Cross College)

*Investigate the Scale of Human Mobility in England in the Roman and the Anglo-Saxon Period*

**Katia Schorle** (St Cross College)

*Strategies on Desert Frontiers: The Eastern Desert of Egypt, Libyan Desert and Syrian Desert in Comparison*

**Nichole Sheldrick** (Corpus Christi College)

*The Architecture of Roman Tripolitania: 46 BC to AD 300*

**Yuriria Silva-Velazquez** (Linacre College)

*Application of Transmission Electron Microscopy to Identify Pre-Hispanic Developments in the Manufacture of Maya Blue Pigments*

**Jane Smallridge** (Magdalen College)

*The Death of Memory: Remembering and Forgetting in Transitional Roman and Dark Age Britain*

**Christophe Snoeck** (Merton College)

*Diet on the Nile; Uncovering the Diet of Ancient Egyptians through Stable Isotopes*

**Gabriela Sotomayor** (Wolfson College)

*Ptolemaic Jewellery and Engraved Gems*

**Silja Spranger** (Lincoln College)

*Honorific Statuary in the Third Century AD*

**Ina St George** (Linacre College)

*The Role of Wall Art in the Neolithic at Çatalhöyük*

**Vajk Szeverenyi** (St Cross College)

*Interregional Interaction and Social Change in the Early Bronze Age of the Carpathian Basin, c.2900–2000 BC*

**Caroline Thurston** (Wolfson College)

*The Material Culture of Greece, 1200–600 BC. The Typological and Functional Development of Animal and Human Figures and Figurines from Mainland Greece and the Cyclades, 1200 to 600 BC*

**Christina Triantafyllou** (Keble College)

*Imperial Building in Trajanic Rome: A Study of the Construction and Economics of Public Building*

**Alexander Vacek** (Merton College)

*Greek and Related Pottery from Al Mina. A Case Study of Production, Consumption and Distribution of Greek Pottery in the Eastern Mediterranean from the 9th to the end of the 7th Century BC*

**Elsbeth van der Wilt** (Linacre College)

*A Selection of Lead Objects from Heracleion-Thonis, Egypt*

**Angela Vaughan** (*Keble College*)

*An Isotopic Study of Diet and Environment at Taforalt, Morocco*

**Greg Votruba** (*Wolfson College*)

*Anchors and Mooring in the Ancient World*

**Victoria Waldock** (*Wolfson College*)

*A Multi-Sensorial Analysis of Holocene Saharan Pastoralist Rock Art*

**Veronica Walker Vadillo** (*St Cross College*)

*Maritime Archaeology of Southeast Asia. Nautical Angkor: The Social Life of Boats in the Khmer Empire*

**Jennifer Wehby** (*St Cross College*)

*Investigation of the Agency and Expertise of Ancient Roman Builders through Material Analysis of Concrete Samples from Ostia, Italy*

**Nicholas West** (*Wolfson College*)

*The Role of Small-Scale Sculpture in the Transmission of Classical and Hellenistic Greek Representational Forms in Antiquity*

**Marlena Whiting** (*Lincoln College*)

*Travel and Accommodation in the East Mediterranean, 300–700: A Study of Networks of Communication, Travel, Infrastructure and Modes of Accommodation in Late Antiquity*

**Rachel Wood** (*Lincoln College*)

*After the Achaemenids: Exchange, Transmission and Transformation in the Visual Culture of Babylonia, Iran and Bactria c.330–c.100 BC*

**Carrie Wright** (*St Cross College*)

*Calcium Isotopes in Modern Biological Mammal Systems and Archaeological Skeletal Material*

**Mu-Chun Wu** (*Hertford College*)

*The Spatial Construct of Social Relations: Social Transformation in Early Kau-Shi, Taiwan*

**Rose-Marie Wyche** (*St John's College*)

*The Afterlives of Late Antique Sarcophagi in Provence*

**Maggie Ziriak** (*St Cross College*)

*Using Isotopic Analysis to Identify Migration: A Case Study of the City of Sanisera*

# Research Projects

## Cemeteries and Sedentism in the Epipalaeolithic of North Africa

**Nick Barton**

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The principal aim of this project is to investigate whether the first appearance of cemeteries in North Africa marks an important transitional stage in hunter-gatherers becoming more sedentary in their behaviour. Such adaptations are normally associated with the Neolithic but we believe this may have occurred many thousands of years earlier in pre-farming societies of the North African Maghreb. The objectives concern the comparative study of human skeletal material from sites in Morocco and Algeria for physical evidence of mobility, and involve the detailed analysis of health, nutrition and mortuary behaviour at the major site of Taforalt (Morocco). The question of intensification in dietary practices and for decreased mobility is also being addressed via the study of rich molluscan remains and other cultural evidence in the epipalaeolithic layers of this cave.

In 2011 effort was focused on completing data collection for the comparative study of human material, which involved visits to university and museum collections in Canada and the USA to record Capsian (late epipalaeolithic) remains from Algerian sites (De Groote, Post-Doctoral Assistant, and Humphrey, co-PI) and the Institut de Paléontologie Humaine in Paris to undertake radiographic scans of adult skeletons from Taforalt. The first of a series of papers of the newly excavated human burials from Sector 10 at Taforalt was published. These burials show no evidence for deliberate post-mortem modification of the kind reported in the earlier work of Roche. It is possible that the burials in our excavations, located in a recess at the rear of the cave, represent an earlier stage of the cemetery. It may also indicate that there was an elaboration of funerary behaviour over time at this site.

A major part of the molluscan analyses is now complete (Bell, co-PI). Initial results by Taylor (Reading Ph.D.) reveal an abrupt change in species diversity marking the beginning of major exploitation of snails for consumption. Other datasets (including charred plant macroremains, large mammals, phytoliths) show that while the molluscs were the most obvious aspect of the economy of the upper deposits they were actually only one part of a diverse economy which involved a wide range of plant and animal resources.

Study of the epipalaeolithic artefact collections from Taforalt (J. Hogue, Oxford D.Phil.) reveals major subdivisions in the stratified assemblages. The chronological development of the cultural layers can now be fully documented via nearly 50 AMS <sup>14</sup>C dates (on charcoal, bone,

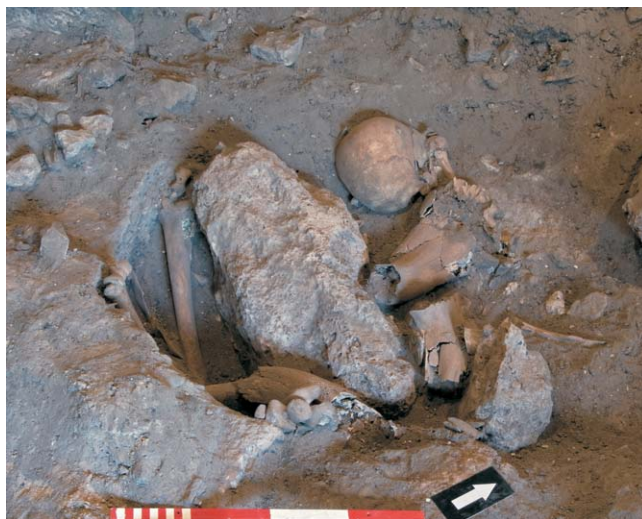
ostrich eggshell) from the Oxford Radiocarbon facility that cover the entire timespan of the epipalaeolithic in this cave. Study of lithic raw materials and heat-affected natural rocks, as well as of worked bone and marine shell (including dentalium beads), is continuing. Artefact collections from other sites in Morocco and the Maghreb are also being analysed by Hogue and Barton (principal-PI) for comparative purposes.

Humphrey, L., Bello, S.M., Turner, E., Bouzouggar, A. and Barton, N. 2012: Iberomaurusian funerary behaviour: Evidence from Grotte des Pigeons, Taforalt, Morocco. *Journal of Human Evolution* 62, 261–73.

For further information, see the Cemeteries and Sedentism website:

<http://web.arch.ox.ac.uk/leverhulme/>

*The Cemeteries and Sedentism Project is principally funded by the Leverhulme Trust and grants from the British Academy and the Natural Environment Research Council. The Institut National des Sciences de l'Archéologie et du Patrimoine granted permission to conduct this project. The work has been carried out in close collaboration with INSAP, Reading University, UK, the Natural History Museum, UK, and Römisch Germanisches Zentralmuseum, Mainz, and by researchers at a number of UK institutions.*



Adult group burial from Taforalt. Copyright Institute of Archaeology, Oxford: Ian R. Cartwright.

## Investigating Early Farming through Stable Isotope Analysis of Crops

**Amy Bogaard**

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Recent research suggests that cultivation and herding in the Middle East developed in a similar time-frame, culminating in the emergence of full-blown agriculture based on domesticated crops and livestock from the later ninth millennium cal BC. The early suite of crops and livestock (wheat and barley, pulses and flax, together with sheep, goats, pigs and cattle) went on to spread together across Europe. This combined crop-and-livestock 'package' hints at some sort of mixed farming. But what was early farming like? How were crops grown and animals raised? This kind of understanding is crucial for explaining how farming emerged and became established, as well as its long-term consequences. The NERC-funded Crop Isotope Project, now completed, is the first attempt to assess systematically the importance of manuring in early farming communities.

To assess the relevance and extent of manuring among early farmers, we needed to learn to identify it archaeologically. Agricultural soils are rarely preserved, so the primary evidence for ancient cultivation comes from crop remains – grains and inedible plant parts, 'chaff', preserved mostly through charring, which renders the material biologically inert but preserves its shape. Previous research showed that mineral fertilizer and farmyard manure have different effects on which forms of nitrogen get incorporated into the soil and taken up by crops. Mineral nitrogen is rich in the lighter stable isotope ( $^{14}\text{N}$ ), whereas farmyard manure has more of the heavier form ( $^{15}\text{N}$ ).

We focused on seed crops grown by farmers of the Neolithic and the Bronze Age periods and on how manuring affected their isotope ratios. To assess these relationships, we collected modern crop material from experimental stations across Europe, including Rothamsted in Hertfordshire, set up our own experiments – at Sutton Bonington, near Nottingham and in Syria, near Aleppo – and visited regions where crops are still grown in traditional ways, including Asturias in Spain, Transylvania in Romania and Evvia in Greece.

Our modern results have shown that intensive manuring has a dramatic effect on nitrogen isotope signatures in both grain and chaff of wheat and barley; moderate manuring has a correspondingly modest effect. This means we can tell how much manure was applied, if any, from nitrogen isotopes in cereals. Pulses like peas and lentils work differently: they fix nitrogen from the atmosphere, so manuring has a comparatively slight impact on their isotope ratios.

All this sets the stage for assessing archaeological crop material. While we are still assessing the archaeological results, the general outcome is that manuring was widespread in Neolithic farming communities across Europe. Our results suggest that, while early farming practice was geared towards sustainability, the 'long-term investment' of manuring encouraged families to claim ownership of land, with social consequences culminating in the fixed inequalities of some hierarchical Bronze Age societies.

For further information, see 'Manuring and stable nitrogen isotope ratios in cereals and pulses: towards a new archaeobotanical approach to the inference of land use and dietary practices': <http://nora.nerc.ac.uk/15478/>



Post-doctoral researcher Rebecca Fraser and doctoral student (now Dr) Michael Wallace prepare archaeobotanical material for stable isotope analysis. Photo: Amy Bogaard.



## Exploring Ancient Indian Ocean Connections in East Africa

**Nicole Boivin and Alison Crowther**

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Africa's place in the early Indian Ocean world remains an enigma. Several sources suggest extensive contacts and trade between East Africa and other parts of the world as early as the beginning of the first millennium AD. The *Periplus of the Erythraean Sea*, for example, a first century mariner's guide to the Indian Ocean by a Roman author, describes a thriving trade between East Africa and Arabia, featuring the export of such African goods as ivory and tortoise-shell, and the intermarriage of Arabs and Africans. No archaeological evidence currently exists to corroborate this reliable historical document, however. Meanwhile, linguistic, genetic and ethnographic evidence also indicates early contact between East Africa and distant Southeast Asia. Not only is this suggested by the presence in East Africa, potentially from an early time period, of Southeast Asian crops like banana, yam, taro, rice and coconut, but the people of the island of Madagascar off the East African coast speak a Southeast Asian language. However, again, archaeology is silent on these otherwise very clear connections.

Attempting to shed light on the continued enigma of East Africa's Indian Ocean connections is one of the key activities of the Oxford-based Sealinks Project. To this end, the project is undertaking archaeological, botanical and genetic studies in the region in collaboration with a variety of African and other international institutions. One of the key studies involves the investigation of the Southeast Asian crop taro, which is grown today throughout Africa and the rest of the Indian Ocean but hails originally from Southeast Asia. Samples of modern taro, as well as a medieval taro specimen from Egypt that has yielded ancient DNA, are being analysed to try to understand better the route or routes by which taro entered Africa, as well as the timing of its arrival. In a similar way, genetic studies of contemporary animal species in Africa, such as the rats and mice that travelled

with early colonizers and traders, are also being undertaken to shed light on East Africa's wider maritime connections.

Also critical to the Sealinks Project are the methods of archaeology. The project has undertaken excavations at a series of habitation sites along the East African coast to try to understand when both exotic goods and non-native species of plants and animals arrive in the region. In 2011, sites were excavated in both Kenya and Tanzania. On the island of Zanzibar, the project focused on a small village site in the north of the island, as well as one of East Africa's major early ports, located in the far south. The work there has just begun, but the results already provide evidence for a wealth of contacts, with pottery from as far afield as the Middle East, India and China being unearthed, along with valuable items like a bronze mirror that may have been fabricated in China, and over a thousand different glass, agate, carnelian and even gold beads, many of which came from distant parts of the Indian Ocean. Further artefactual and chronometric studies will be critical to understanding how the sites fit into the jigsaw puzzle of East African prehistory. Other sites also need to be targeted elsewhere in coastal and island East Africa, as well as Madagascar, before the patterns will be clear, and the enigma resolved.

In addition to these various project studies, the Sealinks Project has also focused on fostering dialogue and collaboration amongst scholars interested in Africa's early Indian Ocean past. In April of 2012, a second major



The fifth–tenth century AD port site of Unguja Ukuu (one of the earliest known trading ports on the East African coast) is situated on the shores of Menai Bay in south-west Zanzibar. The bay is rich in marine resources and provides a protected harbour for boats to anchor.



Excavations at Unguja Ukuu revealed deep deposits rich in imported Indian Ocean trade items such as glass beads (top right), this bronze (Chinese?) mirror fragment (centre right), and bronze incense burner lid (bottom right).



Africa-focused workshop, 'East Africa in the Indian Ocean World 2' was held over two days at Jesus College, Oxford, featuring a wide range of archaeologists, geneticists, linguists, palaeoenvironmental researchers and others from around the world. The workshop offered an opportunity for researchers to present new findings and discuss major research challenges and questions, and highlighted current excitement about the fascinating studies currently under way in the East African region.

*This research is funded by a major five-year European Research Council (ERC) grant awarded to Dr Nicole Boivin*

*for the Sealinks Project, and a British Academy Postdoctoral Fellowship to Dr Alison Crowther, as well as small grants provided by the Natural Environment Research Council (NERC) and the Oxford University Fell Fund. The project involves collaborations with a wide range of projects and institutions world-wide, in particular the British Institute in Eastern Africa; National Museums of Kenya; University of Dar es Salaam; Department of Museums and Antiquities – Zanzibar; Institute of Archaeology – University College London; University of Warwick; University of Durham; University of York; Cornell University; and the University of Aberdeen.*

## Geo-archaeological Techniques

### Peter Ditchfield

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**M**y recent research is largely focused on the use of geo-archaeological techniques to answer questions about environmental change and human mobility. This has followed two distinct themes.

Firstly, the use of geochemical and sedimentological data to explore the record of environmental change in North Africa, particularly in the Moroccan Palaeolithic sites of Rhafas, Taforalt and Dar es-Soltan 1 with the aims of constructing a record of environmental change over the last 130 ka and how this has impacted on the human populations within this area. This work is using stable isotopic analysis of various substrates including tooth enamel, bone collagen and ostrich eggshell in conjunction with detailed sedimentology and sediment micromorphology.

The second theme of my research is the use of geochemical techniques to look at community structure and to test for local versus immigrant individuals in various human skeletal assemblages. This ongoing work focuses on the use of oxygen, carbon and strontium isotopic analysis of human tooth enamel to reveal a geographically distinct chemical signal formed during the growth of the tooth. I am applying this technique to human assemblages from a wide range of time periods and locations, including the Neolithic portal tomb at Poul nabrone in the west



of Ireland, Roman burials from Gloucestershire and Kent, and Saxon cemeteries in Oxfordshire, Hampshire and Essex, as well as later medieval cemeteries in Oxford and Cheshire.



## Below the Salt: Mummies, Cloth and Dress from pre-Islamic Iran

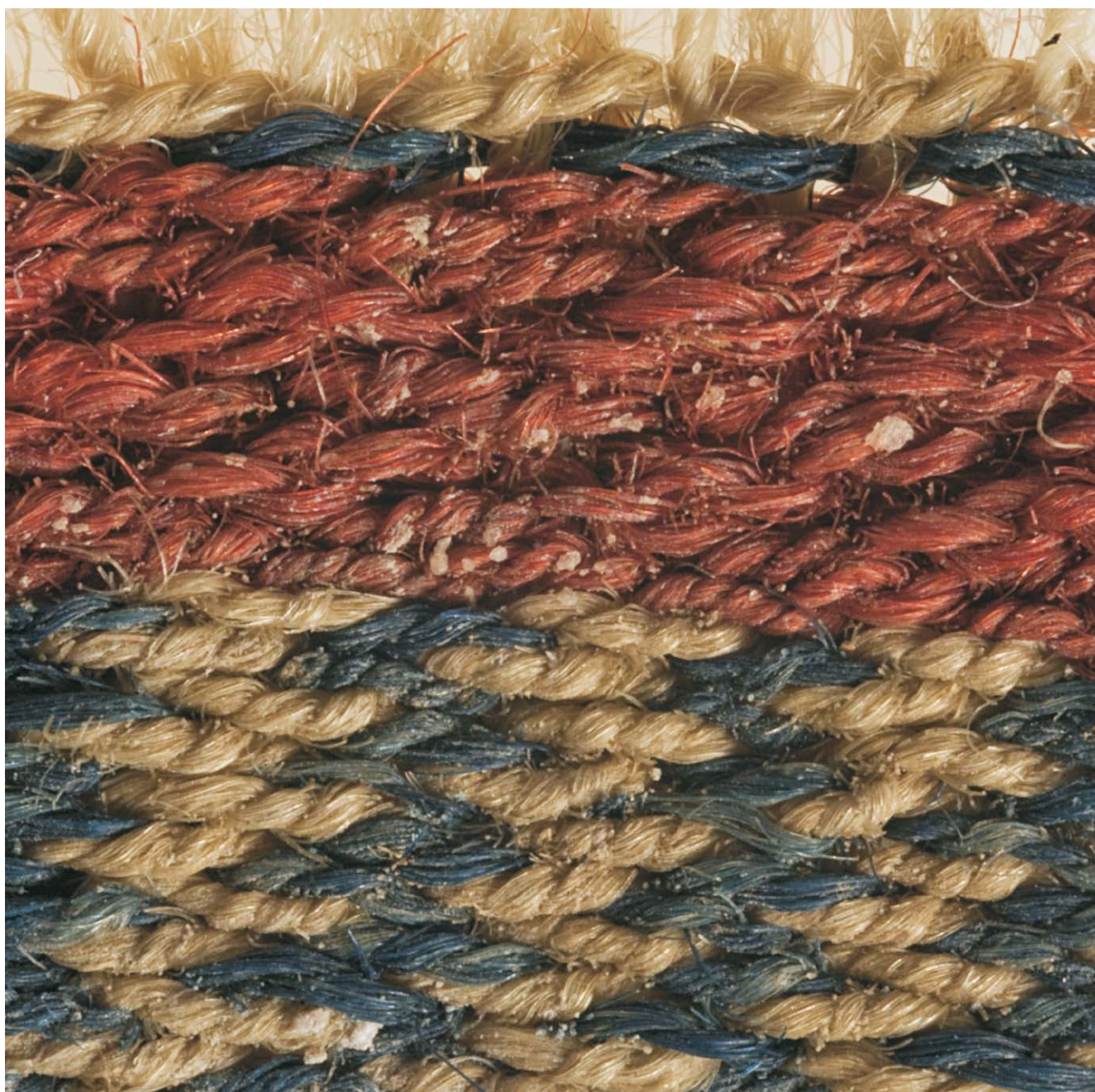
**Irene Good**

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**S**alt was a highly sought-after commodity in the pre-industrial world. Certain regions in western Asia feature accessible halide outcroppings, allowing early mining and exploitation of this important natural resource. The Douzlakh Salt Mine in Chehr Abad, in the province of Zanjan, produced a very high quality vein of halide, making it an appealing venue for early miners.

This region, however, is also prone to earthquakes. One recorded earthquake, for the region of Rayy c.350 BC, may well have had a direct impact on the mine, as bodies were trapped in a collapsed mine shaft. Another possible cause of these accidents is from a collapsed mine shaft due

to the imperfect mining techniques that were practised. Owing to the highly alkaline surroundings in which they were buried, they became naturally mummified and their clothing nearly perfectly preserved. The first mummy was discovered by chance in 1993. More mummified bodies (or partial remains) have been subsequently recovered in archaeological excavation which was carried out by an Iranian team in 2004–5, and more recently with the current international collaborative project, with remains now totalling at least eight individuals. The timeframe for the historical use of the Chehr Abad mine spans two distinct phases, as evidenced by the series of radiocarbon dates



Close up of a textile fragment from Sasanian period Chehr Abad. Photo: I. Cartwright.

analysed at the RLAHA. One phase is within the later Achaemenid period and the other during Sasanian times. It appears likely that there were two distinct mine collapse events, one occurring around 470 BC, and the second around AD 500.

Mummies are usually prepared for mummification, but sometimes they occur naturally. However, it is rare to have mummies in accidental burial and to be recovered through controlled excavation. Thus, we have a representative example of everyday dress of workers and elites, local and non-local people who were involved with the extraction of salt, from two discrete time periods spanning nearly a millennium. Moreover, the well-preserved textiles and other organics (wood and leather, and feathers) are from a region not generally known for organic preservation.

The textile remains from these bodies are quite varied. Some are of complete garments or partial remains of dress. The rest are fragments of textiles used with equipment, as makeshift handles, for example, or of aprons and reused rags and carrying sacks for working in the mine. Thus, the array of textile fragments helps to paint a picture of daily life working in the salt mine.

The picture is being further developed from insight gathered from more detailed scientific study of the textile remains, and some of the results are surprising. The quality and technical craftsmanship of the textiles are quite varied – some fabrics are very rough and plain, others are quite sophisticated and fine, with highly skilled spinning, weaving and dyeing. Two textiles from the Sasanian period show a sophisticated compound weave, helping us to reconstruct a part of textile history that is at present poorly understood.

The comparison between the earlier and later textile fibres is also interesting; there are distinct morphological changes in the sheep's wool in the Sasanian period – possibly due to a later influx of Roman sheep breeds. Furthermore, isotopic study of the wools shows that certain dyed threads in multi-coloured cloth were derived

from an outside area, giving us insight into the organization of cloth production in Achaemenid Iran.

For further reading on the Chehr Abad Salt Mine Project there is a featured 'Gallery' article on the project in a forthcoming issue of *Antiquity*. There are also several forthcoming articles on the textiles from the Chehr Abad Project listed on the author's webpage:

<http://www.arch.ox.ac.uk/salt.html>

<http://www.arch.ox.ac.uk/IG1.html>

and the official project website:

<http://www.saltmen-iran.com/tiki-index.php>

*'Below the Salt' is a research project led by Professor Mark Pollard (University of Oxford) and Professor Don Brothwell (University of York). This is part of a larger international research project being carried out in collaboration with the German Mining Museum in Bochum, the Iranian Center for Archaeological Research (ICAR) in Tehran, and the Research Laboratory for Archaeology and the History of Art at Oxford. Research is supported by the Arts and Humanities Research Council (grant AH/H010998/1).*



Mummy no. 4 *in situ*. Photo: AbF. Aali.



## English Landscapes and Identities Project

**Chris Gosden**

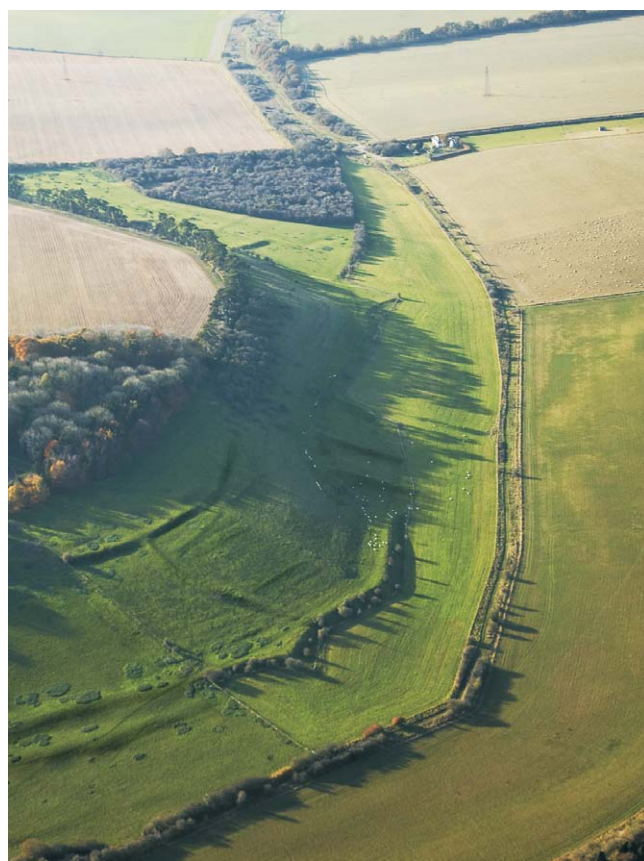
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The English Landscapes and Identities Project will look at the long-term history of the English landscape from 1500 BC to AD 1086 combining evidence on landscape features, such as trackways, fields and settlements, with the distribution of metalwork. The project looks at a crucial period of English landscape history from the start of the settled agricultural landscape to the medieval world, which was directly ancestral to that of modernity. The project will combine a mass of digital data from English Heritage's National Mapping Project, local Historic Environment Records and the Grey Literature with that on artefacts held in the Portable Antiquities Scheme and other artefact databases, such as the Celtic Coin Index and the Early Medieval Corpus of single coin finds. Not only will we analyse a mass of data on a scale not attempted previously, but we will also develop a theoretical framework for analysing landscape and artefactual change over the long-term as it pertains to issues of identity, community and ontology. Working from the Bronze Age to the early medieval period reveals great evidence of change, but also surprising continuity in terms of land divisions and forms of settlement; what is less clear is whether this is echoed in the places and types of artefact deposition. People in the past built communities, which included humans and materials, but also various spiritual forces. The project is developing collaborations between English Heritage, Historic Environment Records, the Portable Antiquities Scheme and the Archaeology Data Service. The main outcomes of the project will be a website, which will provide a search tool which will allow broad access to the sources of data underpinning the project.

The English Landscapes Project is a uniquely ambitious attempt to understand the social and material forces animating a series of pre-modern societies as they worked themselves out on the extended form of landscapes and the condensed relations contained in artefacts. The project is not purely empirical and will develop theory concerning the relations between people and the material world, providing model value for attempts to understand landscapes and artefacts in other areas of Europe and beyond. The project will run between 1 August 2011 and 31 July 2016. The researchers on the project are: Chris Gosden, principal applicant, Anwen Cooper (prehistory), Chris Green

(GIS), Zena Kamash (Roman period), Laura Morley (administration), John Pybus (semantic web), Letty ten Harkel (early medieval), Xin Xiong (semantic web).

*We are very grateful to the European Research Council for funding this research and to numerous people in English Heritage for the provision of data, including Simon Crutchley, Pete Horne, Lindsay Jones and Barney Sloane. We would also like to thank the many HER professionals we have been working with, as well as Roger Bland and Dan Pett at the PAS, Catherine Hardman and Stuart Jeffrey of the ADS, and Ehren Milner at the AIP. Roger Thomas has been especially supportive throughout.*



Prehistoric earthworks at Hazel Down. Photo copyright: Ian Cartwright.



## The Origins of Wessex: Uncovering the Kingdom of the Gewisse

**Helena Hamerow, Chris Ferguson and John Naylor**

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The Anglo-Saxon kingdom of Wessex is popularly assumed to have originated around its later capital, Winchester. In fact, its origins lie in the Upper Thames Valley, with the emergence of a people referred to in early sources as the Gewisse ('the trusty ones'); it is the Gewisse who, by the end of the seventh century, came to be known as the West Saxons. Yet the process by which Anglo-Saxon polities formed after the collapse of Roman authority in Britain in the early fifth century remains obscure. While written sources for this period are practically non-existent, archaeological evidence for the fifth to seventh centuries is constantly increasing and has enormous potential to illuminate the process by which supra-local communities formed, providing the basis of numerous small 'kingdoms' by the seventh century. This project focuses on one such kingdom, that of the West Saxons.

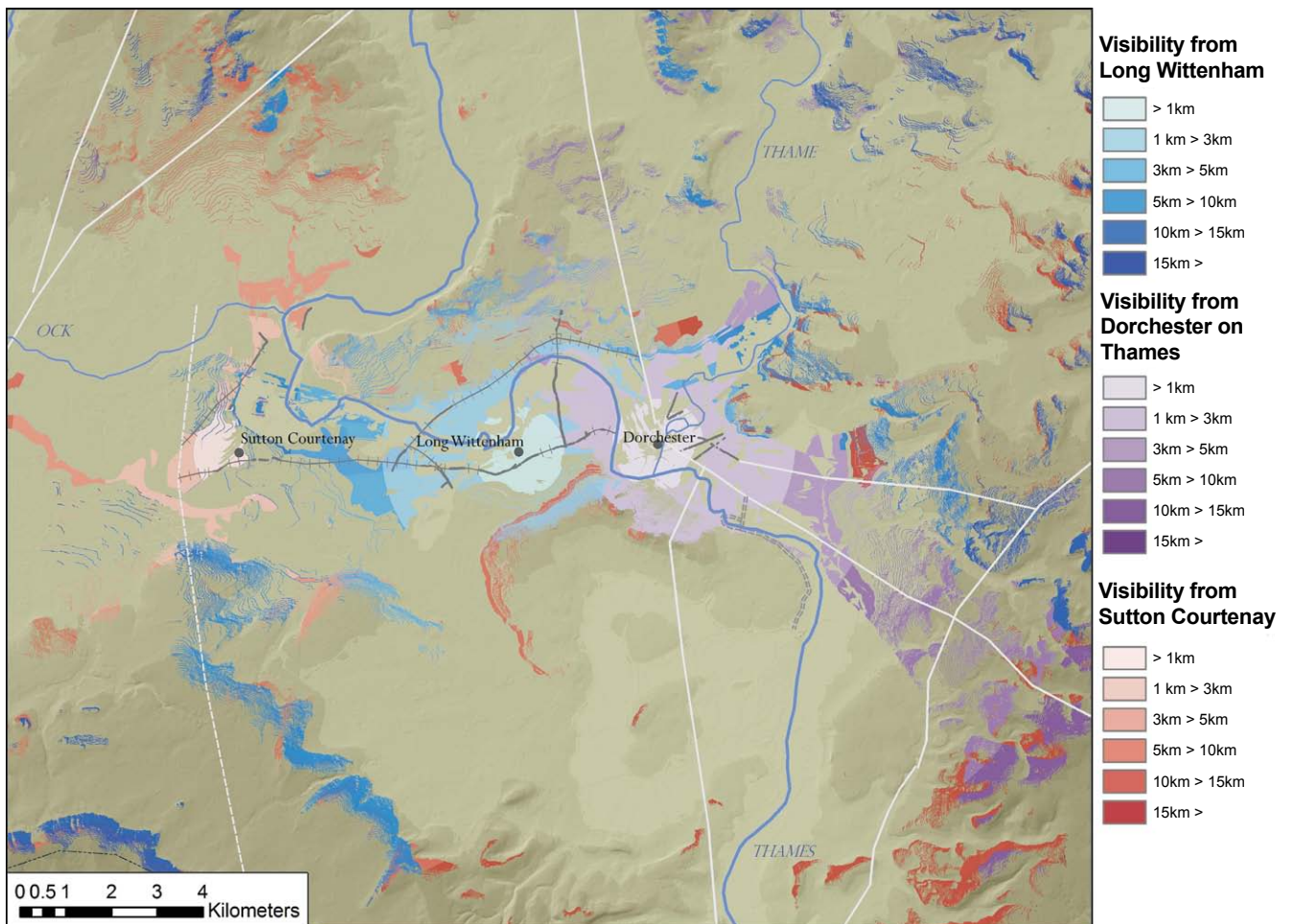
The aim of the project is to identify places in the landscape where people would regularly have come together along the Thames and its tributaries during the fifth to mid-eighth centuries and the relationship of these places to communication routes. Aerial photographic and other evidence is being used to examine the relationship of Anglo-Saxon sites – burials and settlements – to earlier trackways and monuments, particularly important since the names of some of the 'founding fathers' of the Gewisse

signal Romano-British origins. Indeed one possibility being examined is that some of the late Romano-British elite survived by 'becoming' Saxon. The project is also using data from the Portable Antiquities Scheme and the Corpus of Early Medieval Coin Finds to establish the distribution of imported metalwork, high-status objects and coins in relation to routeways. Hitherto unsuspected concentrations of such objects have emerged, and these may indicate the location of previously unrecorded cemeteries, markets and high-status centres. Potential routeways and nodes in communication networks have been identified through the distribution of sites and artefacts, using GIS software. The role of inter-visibility in determining the placement of formal markets, early Christian sites, 'princely' settlements and cemeteries is also being considered, particularly in relation to rivers, roads, prehistoric and Roman monuments, and other landscape features, by using 'banded' viewsheds. Through the combination of finds distributions, aerial prospection and LiDar data, the project is identifying new sites as well as providing a more detailed understanding of previously identified sites. The second phase of the pilot will involve new campaigns of fieldwork and survey.

*The Origins of Wessex Pilot Project was funded by the John Fell Fund, Oxford University.*



A metal-detector find in Oxfordshire led to the discovery in 2009 of the grave of a woman who died around the middle of the seventh century and was buried wearing this fine garnet-inlaid disc brooch. Its similarities to two others found in the Upper Thames Valley connect this new find to a 'chain' of high-status burials and settlements of the leaders of the Gewisse. Photo: I. Cartwright, Institute of Archaeology, Oxford.



This 'banded viewshed' shows how three high-status settlements of the Gewisse – at Dorchester, Long Wittenham and Sutton Courtenay – had distinct 'zones' of visibility and were all connected by a Roman trackway which was still in use in the seventh century.

## The Earliest Dispersal of Anatomically Modern Humans in Europe

**Tom Higham and Katerina Douka**

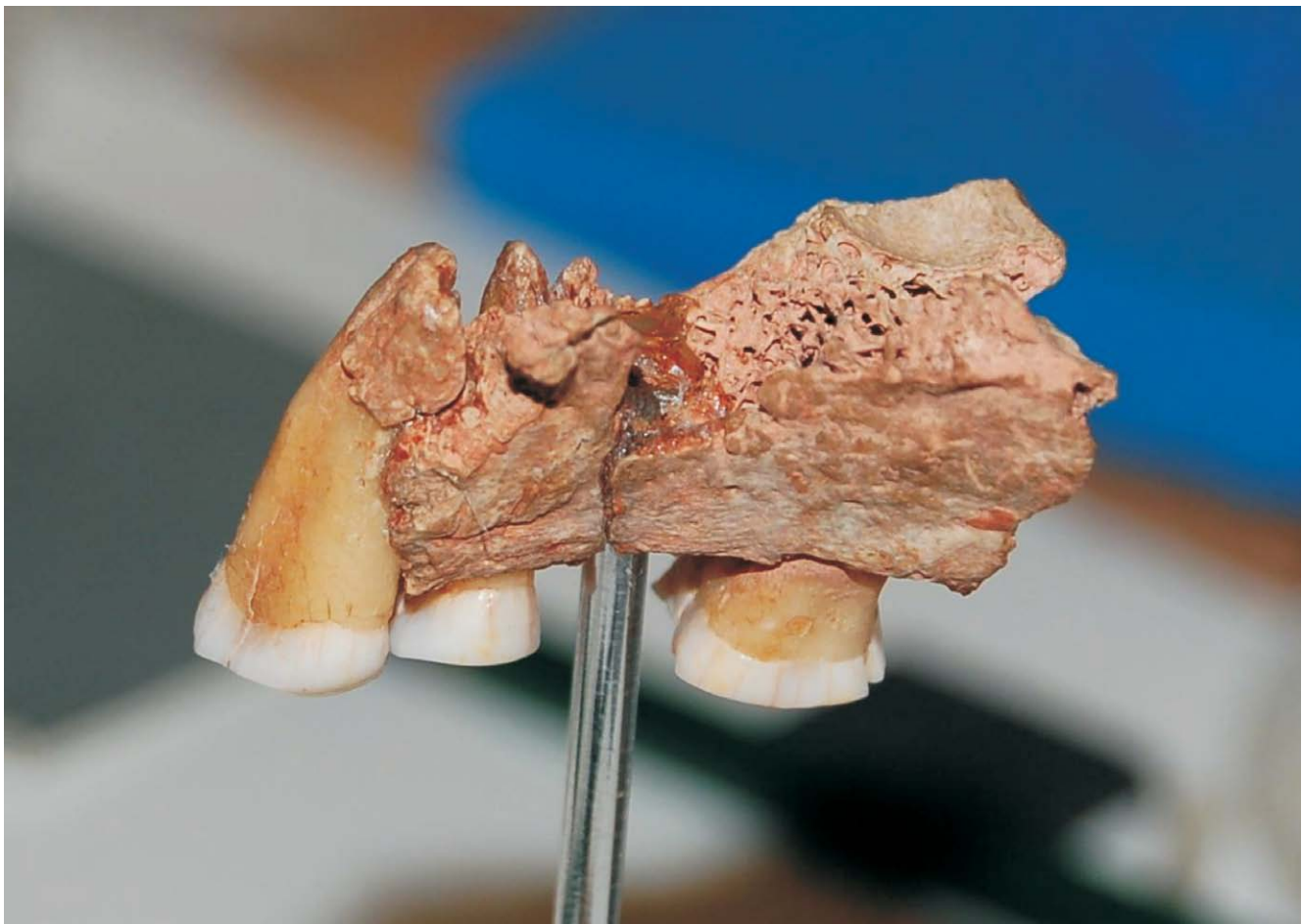
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The extent to which Neanderthals and anatomically modern humans (AMH) overlapped in Eurasia is a key question in palaeoanthropology. Longer contemporaneity increases the chance for genetic and cultural exchange to have occurred between the two and tells us much about how the process of Neanderthal extinction might have played out. Accurate dating of the latest Neanderthals and earliest AMH is especially important, but has been difficult due to the serious technical challenge of applying radiocarbon towards its limit around 50–55,000 BP. Research in the Oxford Radiocarbon Accelerator Unit has focused on improving the dating of material from the Palaeolithic by developing improved methods of removing contamination from samples prior to dating. Two recent examples of this work show the importance of getting the dating right in the context of the Palaeolithic.

Kent's Cavern, near Torquay in Devon, is one of the most important archaeological sites in Britain. Sediments within it contain material dating to the period when the earliest modern humans replaced the latest Neanderthals in Britain – between ~45–35,000 years ago. Recent work we have undertaken has produced an age for a tiny piece

of human maxilla called KC4 that was excavated in the 1920s.

Radiocarbon dating was first attempted on the specimen in 1988, and an age of  $30,900 \pm 900$  BP was obtained. Doubts were raised about the result many years later because trace animal collagen glue used to treat the bone was found on the specimen. A renewed attempt to date it failed, so new animal bone samples selected from above and below the maxilla find spot were dated instead, using the ORAU ultrafiltration method. This method removes contaminants more effectively than other less rigorous techniques and produces more reliable AMS dates. The results showed that the maxilla is more than 6000 years older than previously thought at ~41–44,000 years ago. The age estimate was generated using a Bayesian statistical model of the dating results. It puts the specimen into the period when the final Neanderthals were present in Europe along with the early Aurignacian, an industry associated with AMH. Uncertainties over the precise attribution of the specimen were addressed by exhaustive morphometric and CT-based scanning methods, and a comparison of the results against a dataset of AMH and Neanderthal teeth. This showed that in the majority of traits, the KC4



The KC4 maxilla, excavated in 1927 at the site of Kent's Cavern, Devon. Photo: Chris Collins, NHM.



teeth had modern human, rather than Neanderthal, characteristics. We conclude that the specimen is an AMH, and it pre-dates all previously known AMH in north-western Europe, attesting to the rapid dispersal rate of our species across the continent at this time.

ORAU has also developed novel techniques for isolating chemically pure carbonates. One of us (KD) developed a means by which original aragonitic carbonate can be separated from calcite, the contaminating form of carbonate, using a heavy liquid density separation method. The method was applied to shell ornaments from Uluzzian levels at the Italian site of Grotta del Cavallo. This helped us to date two infant teeth discovered at the site in 1964. These had previously been classified as Neanderthal. New research, however, using microCT scanning and morphometric analysis, showed that these specimens are actually AMH. Our new

chronometric model shows that the teeth must date to between 43–45,000 years ago, making them the earliest remains of anatomically modern people in Europe ever found. The results of the teeth reanalysis show that the Uluzzian levels in which they were found must have been the work of AMH. This is important because the Uluzzian industry has yielded personal ornaments, colourants and bone tools, items that were, up until our research, associated with Neanderthals in Italy.

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Infant tooth from the Grotta del Cavallo; this is now identified as a modern human rather than Neanderthal, by precision geometric morphometric analysis. Photo: S. Benazzi, Vienna.

## The Bullion Economy of Viking England

**Jane Kershaw**

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The nature and impact of Viking settlement in England has been a locus of debate for the past 50 years. In archaeology, one of the most important sources of information for Scandinavian England is portable metalwork. Over the last 15–20 years, hundreds of new discoveries have been made, largely as a result of metal-detecting. If properly studied, these recent finds have the potential to transform understanding of key aspects of Scandinavian society.

Archaeological examination of the Viking bullion economy, in which weighed silver and gold were used as a means of exchange, rather than coin, offers a palpable means of understanding Scandinavian settlement. The use of bullion distinguished the Scandinavians from the coin-using Anglo-Saxons in this period. This British Academy-funded project aims to collect and analyse evidence for Scandinavian bullion and bullion-related objects in England, including items such as ingots, foreign coin and weights. This material can provide new insights into fundamental questions such as: what were the sources of Viking wealth? How did the Vikings pay for goods and to what extent did they integrate into Anglo-Saxon society?

Past study of Viking bullion has been dominated by the evidence of silver hoards, found in England in large numbers from the early tenth century. While these approaches are valuable, material selected and deliberately deposited in hoards may not be typical of items used in daily exchange. Breaking from this traditional focus, this project uses an altogether different category of evidence: finds from settlements and single finds, discovered over the last two decades as a result of metal-detecting. As accidental losses, these represent the scale and use of bullion more accurately, providing novel insights into Viking economic practice.

Since beginning the project in October 2011, I have built up a database of some 300 finds of bullion or bullion-related material, all found by recent metal-detecting. This material reveals fascinating insights into Scandinavian economic practice. The high degree of fragmentation exhibited by the imported coin and ingots suggests that the new settlers used bullion to pay for very small transactions – equivalent to a couple of pounds in today's money.

Such a practice was not suggested by the hoards, which tend to exclude low-value pieces. The distribution of the single finds is also surprising, with many items coming from regions where coinage is also well documented. This raises questions as to why bullion continued to be used when coinage was readily available.

In addition to addressing these questions, future research will also investigate the sources of Scandinavian silver in the period: did the Vikings obtain silver from Anglo-Saxon, Continental or Scandinavian sources? The answer will, in turn, provide new insights into economic zones and relationships within Viking-Age Britain and Scandinavia.

*The Bullion Economy of Viking England is a three-year project, funded by the British Academy.*



Whereas the Scandinavian settlers used bullion as a means of exchange, the native Anglo-Saxons used coin. This silver ingot from West Yorkshire has a typical Scandinavian cigar shape and bears diagnostic test marks, suggesting its use in a Scandinavian-style bullion transaction.



## Palaeoclimate Information from Ostrich Eggshell

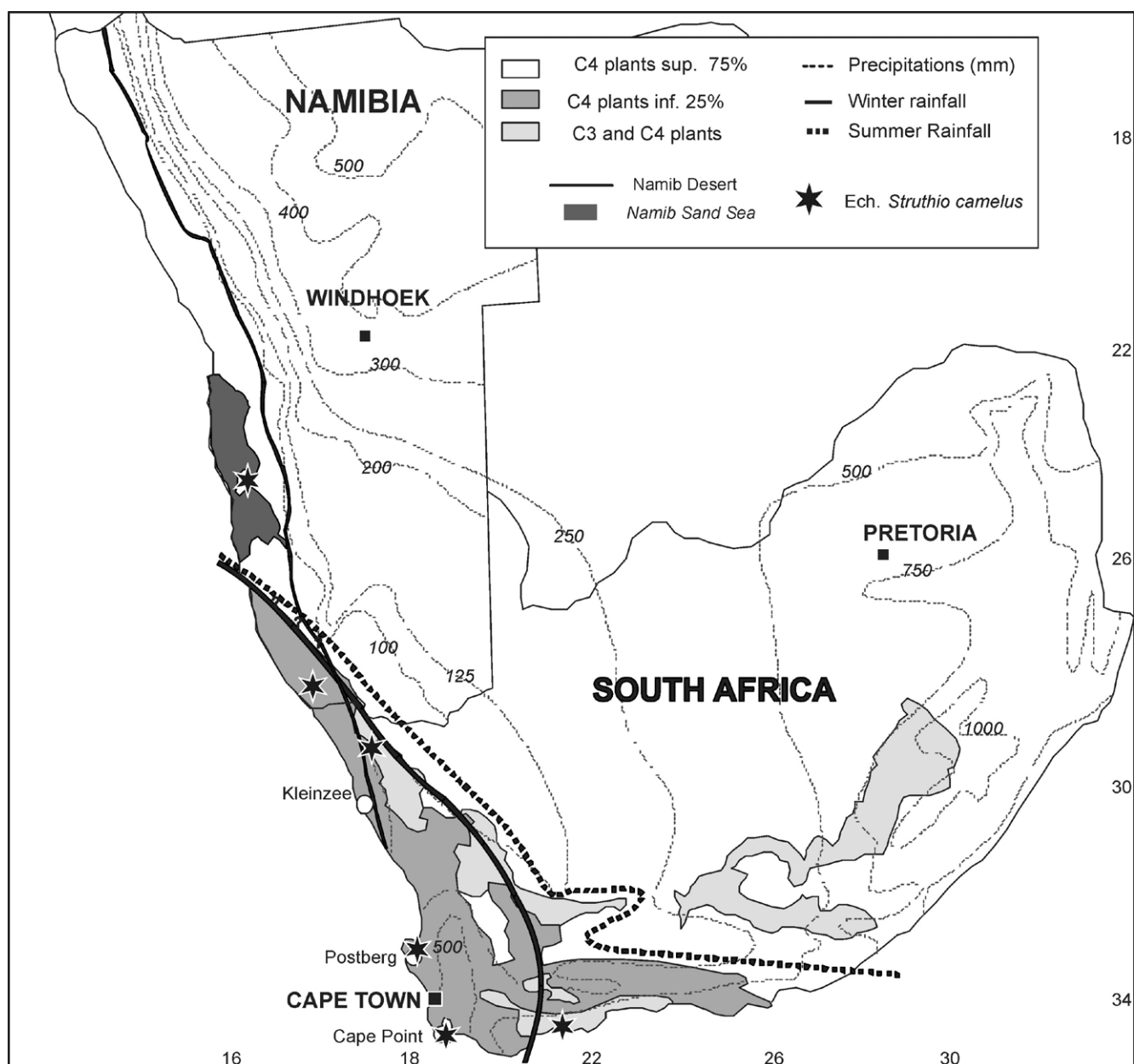
**Julia Lee-Thorp**

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Climate and environmental parameters provide the contextual information essential for understanding the nature of sites and the subsistence behaviour of its occupants. But extracting this information is very challenging in arid and semi-arid areas, and in particular the means to estimate aridity, precisely, are few. Ostriches are arid-adapted birds that obtain most of their water requirements from plants so the stable isotope composition of their eggshells can provide information about climate and vegetation eaten at the time of egg formation. Importantly, ostrich eggshell (OES) fragments survive well over long periods of time and are ubiquitous in many African

archaeological and palaeontological sites. This is because they were frequently used for food, as decorative beads and as containers. They were also favoured by hyenas, who supplied them to their young in the dens.

The first step in understanding the isotopic composition of OES as a response to external conditions has been to study modern eggshells, as questions remain about exactly how moisture availability is archived, what sorts of plants are eaten by the birds, how much variability occurs, and how the timing of the egg-laying season affects the results. Keeping the source of moisture (from the south-east Atlantic) constant, we analysed eggshells from sites



Map of southern Africa showing the sampling transect along the west coast, a region which receives mainly precipitation from the south-east Atlantic in the Southern Hemisphere winter months. Rainfall is more than an order of magnitude lower in the northern part of the transect, compared to the sampling stations in the south. Map by Loïc Ségalen.

in a rainfall and humidity transect along the west coast of southern Africa, from the De Hoop Nature Reserve in the south, to the central Namib Desert. The results show a strong relationship between  $\delta^{18}\text{O}$  and mean annual precipitation, which can be related to the degree of evapotranspiration in plants (and hence humidity), while  $\delta^{13}\text{C}$  shows that ostriches made use of plants following all three photosynthetic pathways as available. This project began years ago with the help of the late Professor Nick Shackleton, and it has been continued with collaborator Dr Loïc Ségalen of the UPMC, Paris.

Now that we have a better handle on how best to interpret the isotopic composition, the next and current step is its application to sequences in the exceptional sites at



A typical fragment of ostrich eggshell from an archaeological deposit (recent in this case), measuring roughly 1×1 cm. Some fragments may be coloured as a result of proximity to hearths but experiments show that moderate heating makes little difference to their isotopic composition. It does, however, exclude their use for amino-acid racemization assessment.

Pinnacle Point. These sites, near Mossel Bay, South Africa, have been subjected to a battery of approaches to position the cultural record of early modern humans into a secure chronological, climatic and environmental setting. The SACP4 Project, led by Professor Curtis Marean of ASU, USA, with a large multidisciplinary team, is drawing to a conclusion (to be followed immediately by another NSF-funded initiative). The isotopic analysis of fauna, and ostrich eggshell, forms one of the components of this endeavour, and in the latter case it is being completed as part of a separately funded project, designed to explore closed-system amino-acid racemization dating of the eggshell and establish individually dated climate records using isotopes. The amino-acid racemization part of the project is based at York University, and the isotope component at the RLHAHA.

Results obtained so far for an OIS 6 hyena den (PP30) and one of the longer Pinnacle Point archaeological sequences show (unsurprisingly) that OES during glacial conditions differed in both  $\delta^{18}\text{O}$  and  $\delta^{13}\text{C}$  compared to typical modern values, but not necessarily as expected. The glacial period flora, although more enriched in  $^{13}\text{C}$ , show little indication of change through time in contrast to stronger shifts in a nearby stalagmite record. On the other hand, the OES  $\delta^{18}\text{O}$  shifts are greater than those of the stalagmite, and suggest an aridification trend roughly equivalent to a halving of effective precipitation for the period 50–80 ka. Once we have completed isotope analyses for these two sites, we will move on to other PP sites that represent different periods and thus build up a longer sequence.

*The SACP4 Project was funded by the NSF and others to Professor Curtis Marean, Arizona State University, and the Building a Better Eggtimer Project by a NERC grant to Kirsty Penkman et al. (York University) and to Julia Lee-Thorp (Oxford).*

## Archaeology and Cultural Heritage of the Metolong Dam, Lesotho 2011–12

**Peter Mitchell**

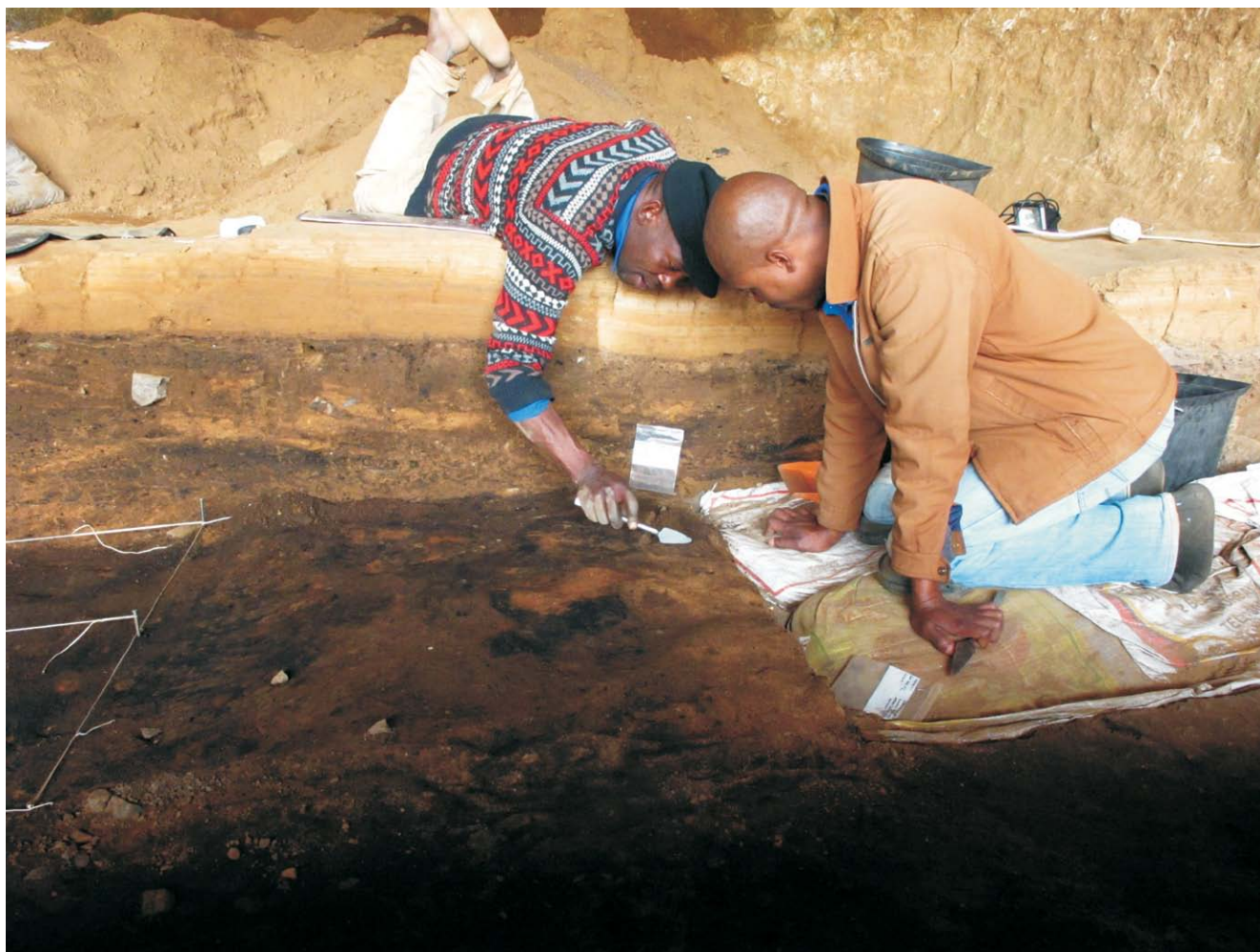
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Last year's annual report introduced some aspects of the fieldwork that Charlie Arthur and I have been undertaking ahead of the construction of the Metolong Dam in the southern African kingdom of Lesotho. Although recent reports indicate that construction of the dam wall – and thus the eventual impoundment of the dam itself – are running behind schedule and may not now be completed until the southern summer of 2013/14, there is no doubt that the dam will, in the end, drown a key stretch of Lesotho's Phuthiatsana River, rich in many different forms of archaeology.

The principal objective of excavations carried out from August to October 2011 was to learn more about Ntloana Tsoana, one of two large rock-shelters that will disappear below the Metolong reservoir. Earlier excavations demonstrated that this site preserves a series of Middle Stone Age stone tool assemblages of Howiesons Poort and post-Howiesons Poort affiliation, the oldest of which dates back to some 59,000 years ago. They also showed that, above these deposits of Marine Isotope Stage 3 date, an extensive sequence of occupation horizons dating to

the Pleistocene/Holocene transition is preserved below a thick series of culturally sterile silts. What was not known before our re-excavation of the site began in 2009 was that at the base of these late Pleistocene/early Holocene layers are remains of several occupations associated with makers of the Robberg Industry. Distinguished by the systematic production and use of small stone bladelets struck from specialized bladelet cores, but otherwise almost wholly lacking in any formal elements, the Robberg dates to around 19–12,000 years ago, although there is a suspicion that in south-eastern southern Africa (perhaps including Lesotho) it may have persisted into the very beginning of the Holocene. The bladelets themselves seem, from microwear and residue studies undertaken elsewhere, to have been used in working many different materials, most likely as multiple inserts in hafted tools.

Robberg sites are relatively rare in southern Africa, often being separated from each other by several hundred kilometres, but in this case we can compare Ntloana Tsoana with Lyn Wadley's excavations just across the Lesotho/South African border at Rose Cottage Cave. Moreover,



Senior excavator Rethabile Mokachane explains how to excavate an early Holocene hearth feature to Tlaleho Maloro, a 2011 trainee, 29 August 2011. Copyright: Charles Arthur.



we know from excavations that I undertook some 25 km south-east of Ntloana Tsoana in 1988 and 1989 that the Robberg is also represented at the site of Tloutle, another large western Lesotho rock-shelter. Excitingly, analysis of the stone tool assemblages that we recovered in 2010 from Ha Makotoko, just 2 km downstream from Ntloana Tsoana and also due to be flooded, hints strongly at the presence of the Robberg there as well. In other words, and drawing on insights from colleagues who are studying the fauna from our excavations as well as a number of palaeoenvironmental proxies, we may, for the first time, be able to approach the Robberg at a level of spatial resolution commensurate with that at which people actually used their local landscape.

The last 12 months have also seen us obtain the first set of radiocarbon dates from our excavations. Among other key results, they date the newly discovered Middle Stone Age (MSA) assemblage at Ha Makotoko to  $40100 \pm 230$  BP (UGAMS-8988), probably broadly contemporary with the later MSA components at Ntloana Tsoana and definitely within a period for which relatively few observations are yet known elsewhere in the sub-continent. We plan to explore the dating of both sites through further dates in the near future, making use in part of the ORADS facility here in Oxford. In addition, Zenobia Jacobs of the University of Wollongong, Australia, was able to visit the Metolong area last year and took over 30 samples for single-grain Optically Stimulated Luminescence (OSL dating). This will provide a check on our radiocarbon dates and extends Zenobia's previous work at Ntloana Tsoana (Jacobs *et al.* 2008), but it will also give us a sound chronology for the combination of aeolian and riverine processes responsible for the deposition of significant thicknesses of culturally sterile sediment on top of the early Holocene archaeological levels at both of our major sites. Identification of those processes and linking them into broader changes in the wider landscape is a key concern of another of our collaborators, Mike Morley of Oxford Brookes University, who also joined us in the field last year.

A third colleague who visited the Metolong area during the past year is Adelphine Bonneau of the University of Quebec at Montreal. Building on her success in dating Bushman rock paintings in South Africa (Bonneau *et al.* 2012), she was able to take samples from four of the rock art sites that will be drowned by the dam. As well as seeking material for radiocarbon dating, she is hoping to apply OSL dating as an independent check on the age of the paintings sampled and is also attempting to characterize and identify the kinds of pigments used. Preliminary

results are promising and suggest that – at least for images painted in black – we may be able to obtain dates. If so, this will make a significant contribution to beginning to develop a sound chronology for southern African Bushman rock paintings, something still very much in its incipient stages but essential if we are to have any hope of unravelling possible changes in the art over time or of linking the art to the evidence recovered from excavation. More fieldwork on this theme, as on others, is scheduled for 2012.

Finally, I should point out that there is more to African archaeology in Oxford than Metolong as we also have a thriving graduate community. Of current doctoral students Victoria Waldock continues her work analysing rock engravings in the Libyan Sahara, while Lara Mallen is exploring the links between rock art, excavated data and oral history to the south-east of Metolong in the Maclear district of South Africa's Eastern Cape Province. Elsewhere in South Africa, Mark McGranaghan has just completed a study of nineteenth-century /Xam Bushmen – source of much of the ethnography used to interpret the art – and Jayson Orton is writing up results of his many excavations on the Holocene archaeology of Namaqualand. Further afield, Tim Forssman is researching the record left by hunter-gatherers who lived alongside farmers in Botswana's Tuli Block, while two new projects have begun in Lesotho itself: Luiseach Nic Eoin is examining grindstones from the Metolong sites to identify the materials that were processed on them and Rachel King has begun a project to look at the archaeology of farming communities in south-western Lesotho and adjacent parts of South Africa.

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*Archaeological research at Metolong has principally been funded by the World Bank and the Metolong Authority, although excavations in 2011 were funded by the Boise and John Fell Funds of the University of Oxford and a grant from the British Academy. Lesotho's Department of Culture provides authorization for the project.*

## Technological Transfer in the Eastern Mediterranean during the Bronze Age

**Elise Morero**

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The beginning of the second millennium is characterized in the eastern Mediterranean (Aegean world, Cyprus, Anatolia, Egypt, North and South Levant) by the emergence of the palatial system. This phenomenon was accompanied by the development of luxury craft productions and specialized craftsmanship. Among these productions, the stone vase industry was one of the most flourishing, mainly in Minoan Crete and in Egypt, from where numerous artefacts and techniques were exported and sometimes imitated (mainly the egyptianizing production) throughout this area. The development of trade and contacts allowed the spread of ideas and objects, but also of artisans and their know-how. Different reactions to the introduction and selection of foreign techniques can be observed, which are deeply connected to political, diplomatic and cultural relationships between production centres.

To identify the techniques, a multidisciplinary approach was developed with the RLAHA in Oxford and

an international collaboration, which associates chemical analysis (Cranfield University), tribology (LTDS of Lyon, France), and experimental reconstruction of ancient processes, as well as ethnographical studies of traditional workshops in India (ANR – CNRS, France) and Egypt, which have been planned in order to complete the research. Analysis of the traces of manufacture left on the archaeological objects is performed at different scales of observation (macroscopic to microscopic). A group of stone vases was selected for this study mainly from museums and collections in the UK (Ashmolean, Petrie Museum, Levantine collection in UCL) and Greece (National and Cycladic Museum in Athens, Museum of Mycenae, Stratigraphical Museum at Knossos). Then, the recorded traces were compared to a database of traces derived from experimental reconstructions in order to identify the ancient processes. The reconstruction of ancient techniques in the field also yields information that can be used in the identification of the processes of transmission of the new techniques, as well as the organization of the production in workshops.

More recently, with the collaboration of the Khalili Research Centre (Oxford), this research has been enlarged to include a project on the reconstruction of lapidary techniques developed for the manufacture of Fatimid rock crystal vessels (Islamic period).

This multidisciplinary work constitutes the first step towards a reconstruction of the history of techniques, the evolution and the changes in the minds of human groups challenged by technological innovations and of their perception.

For further information, see:

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Vargiolu, R., Morero, E., Boleti, A., Procopiou, H., Pailler-Mattei, C. and Zahouani, H. 2007: Effects of abrasion during stone vase drilling in Bronze Age Crete. *Wear* 263, 48–56.

*This project is funded by a two-year postdoctoral Fyssen Foundation grant (France). We thank the museums and directors of excavations, and the archaeological authorities in Greece and the BSA for their permission to study the material stored in these institutions, as well as the researchers involved in this project in the UK, Greece and France.*



Experiments in the field: reconstruction of an ancient wheel borer.



## Out of Africa: Human Migrations into Arabia

**Michael Petraglia**

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The movement of our species out of Africa is one of the hottest topics in palaeoanthropology and human evolutionary studies. Mitochondrial DNA evidence has been used to suggest the dispersal of humans out of Africa, via the Horn of Africa into Arabia, and on to the rest of Eurasia. Human population movements across southern Asia are posited to have been rapid, employing a coastal route about 60,000 years ago. According to this account, as populations wandered along the coasts, they would have avoided the hyper-arid deserts of Arabia. These coastal dispersals would supposedly have been marked by 'Upper Palaeolithic-like' technologies, noted by blade and microblade tools. Recent archaeological research in the Arabian peninsula is challenging this traditional view.

Oxford, together with an international team of scientists, is engaged in an on-going collaborative project in the Kingdom of Saudi Arabia. Our project team is uncovering archaeological evidence relevant to addressing the timing and extent of human expansions out of Africa. Excavations have been performed along the shorelines of the Jubbah palaeolake, identifying the presence of well-preserved Middle Palaeolithic sites dating to a humid period, about 75,000 years ago. The lake would have been an attractive environment for humans, as freshwater resources were available, in addition to an abundant supply of raw material for stone tool manufacture. Our palaeoenvironmental studies demonstrate that the lake was surrounded by grasslands with some trees, thereby indicating that the region would have supported animals in this savanna-like setting.

Contrary to the view that populations utilized coastlines, our research indicates that foraging populations

were using the abundant rivers and lakes to migrate across the Arabian peninsula. Our view is that modern humans got out of Africa much earlier than 60,000 years ago, the migration marked by Middle Palaeolithic toolkits distributed across the Arabian peninsula. One of the most fascinating, and unsolved, questions concerns what happened to these groups once the desert advanced and freshwater supplies dried up. Our future research will address whether large areas of Arabia were abandoned during dry periods and the degree to which groups were able to survive in isolated pockets with favourable habitats. Answers to these questions may be relevant for considering the impact of climate change in dryland settings today.

For further information, see:

'Archaeology: Trailblazers across Arabia': <http://www.nature.com/nature/journal/v470/n7332/full/470050a.html>

'The Evolution of Human Populations in Arabia': <http://www.springer.com/life+sciences/evolutionary+%26+developmental+biology/book/978-90-481-2718-4>

*Archaeological research in the Kingdom of Saudi Arabia has been principally funded by grants from the National Geographic Society and the Leakey Foundation. We thank HRH Prince Sultan bin Salman, President of the General Commission for Tourism and Antiquities, and Professor Ali Ghabban, Vice President for Antiquities and Museums, for permission to carry out this study. We also acknowledge our close collaboration with Dr Abdullah Alsharekh, King Saud University, and researchers at universities in the UK, France and Australia.*



D.Phil. student Huw Groucutt discussing fieldwork in Saudi Arabia. Mr Groucutt is carrying out stone tool analyses of assemblages in Arabia and in surrounding regions in order to understand potential cultural influences and connections.



## Iron and Empire: Resolving the Role of Upland Populations in Angkorian State Formation

**Thomas Oliver Pryce**

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The vast and iconic politico-religious complex at Angkor is probably the best known of all Southeast Asia's archaeological sites. As such, great efforts have been expended to understand the long-term socio-cultural processes that led to the formation of the Angkorian and other regional state-level societies, but these have largely concentrated on the lowland groups that provided the necessary agrarian economic base and displayed precocious social ranking. The potential role of upland populations has been largely overlooked, and certainly not evidenced beyond the relatively poor time depth and dubious historical fidelity of recorded oral traditions. The great challenge to redressing this imbalance is the very weak archaeological signature we can expect of upland groups ethnographically recorded as e.g. living in stilted bamboo (or similar biodegradable) houses, practising swidden agriculture, and not using pottery. However, in Southeast Asia we benefit from a wealth of ethnohistoric data which indicate that economic specialization in metallurgy was largely the preserve of mineral- and fuel-rich upland groups. As metal production leaves substantial direct (e.g. furnaces and slag heaps) and indirect (e.g. palaeopollution and deforestation) evidence, metallurgical industrial heritage may be a privileged and durable means with which to investigate diachronic and

multiscalar trends in upland occupation and economic activity.

Since 2009, collaborative research between Dr Mitch Hendrickson (University of Illinois-Chicago), Dr Stéphanie Leroy (French *Centre d'Énergie Atomique*), and myself has focused on evaluating whether an upland ethnic minority group called the *Kuay*, noted for their expertise in iron mining, smelting and smithing by late nineteenth and early twentieth century francophone travellers around northern Cambodia, north-eastern Thailand and southern Laos, were responsible, fully or partly, for satisfying the Angkorian Khmer Empire's (c.AD 800 to c.1450) enormous iron requirements for intensive agricultural production, vast building programmes and fervent militarism. *Kuay* metalworkers may have been a significant facilitating medium of Angkorian political ambitions, and it is by pursuing the long-term socio-cultural dynamics of regional iron technologies that we are beginning to address the Khmer/non-Khmer symbioses and tensions necessary for a more holistic understanding of the Angkorian Empire and the *Kuay*'s historical trajectory. The latter is especially significant given that Angkor is an overt and powerful symbol of the modern Cambodian state and the *Kuay* are almost totally absent from the textual evidence.



Third Eastern Gopura at Preah Khan of Kompong Svay. The buildings may have crushed slag foundations.



Excavations at five major loci have produced good macro evidence for technological continuity at iron production sites located in central Cambodian territories long associated with *Kuay* occupation, and initial radiocarbon dates have set the iron production sequence back to the eighth century AD, i.e. pre-Angkorian, and they could well extend earlier. In addition to field investigations, my materials science analyses of ore, furnace, tuyère and slag samples have provided ‘anthrochemical’ evidence for social relationships between iron-producing populations, whilst Dr Leroy’s advanced geochemical methodology has identified at least four different sources of iron for the tools and architectural crampions used in the construction of Angkorian temples. Furthermore, Dr Leroy has been extracting carbon from steely phases in the artefacts, which will enable the first ever radiometric dating of temple construction episodes to cross-check textual and art historical evaluations. The developing picture is thus one of the Angkorian state being dependent upon the upland populations encircling its primary agricultural territories for raw and processed materials.



A late nineteenth century depiction of *Kuay* iron production.

*Hendrickson’s ‘Industries of Angkor Project’ has been funded by the Australian Research Council and the National Geographic Society, my ‘Iron Kuay Project’ has been funded by the Wenner-Gren Foundation, and we have all been generously assisted by Cambodian colleagues and the Ecole française d’Extrême-Orient.*



An elderly *Kuay* lady in 2010 with an original *Kuay* fighting sword.



## Calibrating the Radiocarbon Chronometer

**Christopher Ramsey**

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**R**adiocarbon is one of the main methods used to put archaeological information into a temporal framework. However, when we measure the radiocarbon in a sample all we can actually determine is the ratio of radioactive to stable carbon. In order to convert this measurement into a date we need to compare these measurements to other samples of known age. Over the last few decades laboratories world-wide have been working to find and measure suitable known-age material and we now have a 'calibration curve' based on tree rings extending back over the last twelve thousand years, just into the end of the last ice age. Before this we do have marine records but these are not ideal for assessing the age of terrestrial archaeological material.

The Oxford Radiocarbon Laboratory is involved in three major initiatives in relation to the calibration of radiocarbon dates:

1. The measurement of radiocarbon from a very unusual lake sediment in Japan, Lake Suigetsu, which has annual laminations throughout the last glacial and which retains a continuous record of radiocarbon extending over the full range of the technique.
2. Study of radiocarbon from Kauri trees in New Zealand, which provide a high-resolution snapshot of how radiocarbon varied on a decadal timescale in the very different climatic conditions of the last ice age.
3. Development of better statistical methods for the analysis of large sets of radiocarbon dates, through the program OxCal.

The Lake Suigetsu and Kauri Projects are complementary as the continuous record from Suigetsu provides the framework within which the high-resolution Kauri can be understood. Between them this research should give us, for

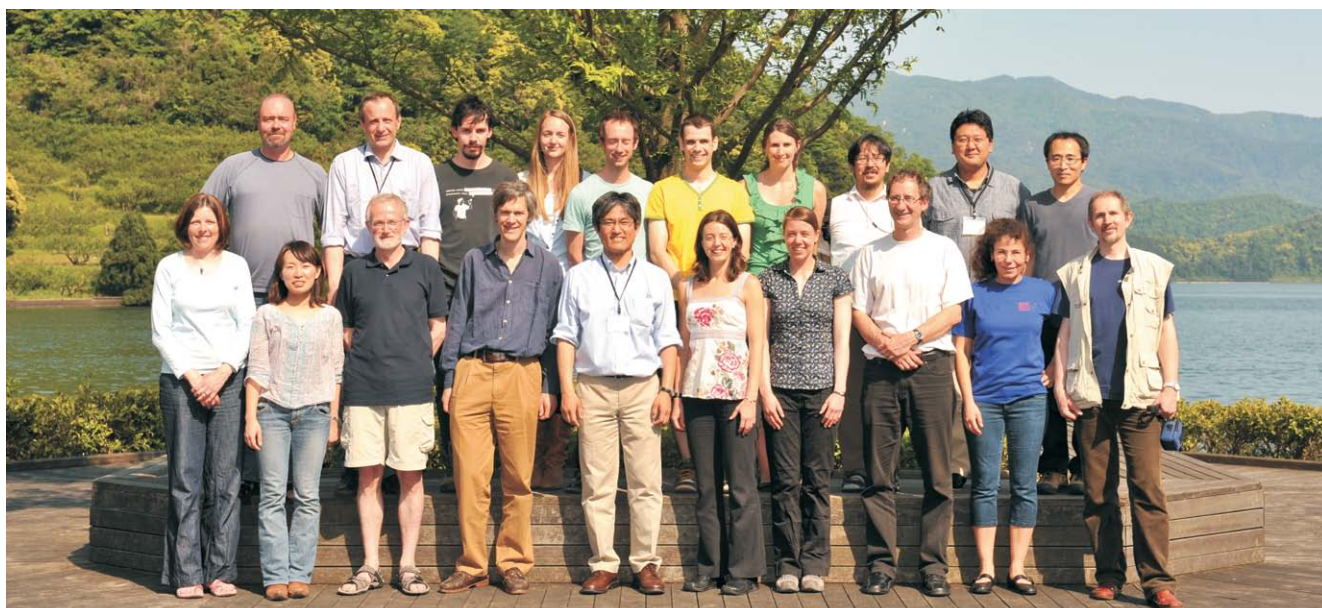
the first time, a complete radiocarbon record for the atmosphere that can help us better understand the exact chronological meaning of radiocarbon dates from the Palaeolithic. The results from this research are also giving us insights into the propagation of environmental changes during rapid climate shifts over this period. The Suigetsu radiocarbon dating program has now been completed and publication of the project will be completed over the next year.

When it comes to building archaeological chronologies, we need to use not only the environmental records of radiocarbon but also all the contextual information found in archaeological sites in the related material culture. This is increasingly being achieved through the application of Bayesian analysis, through programs such as 'OxCal', in studies ranging from the Middle/Upper Palaeolithic transition right up to the medieval period. More research is under way to develop these techniques further in support of projects such as RESET and Cemeteries and Sedentism in the Epipalaeolithic of North Africa.

*The Suigetsu Project is a multi-disciplinary project led by Takeshi Nakagawa (Newcastle University) and funded by NERC. Richard Staff completed his D.Phil. at Oxford on this topic this year. For further information, see: <http://www.suigetsu.org/>*

*The Kauri Dating Project is led by Exeter with radiocarbon analyses carried out in Oxford by Linda Reynard (PDRA) and Richard Staff (PDRA).*

*The OxCal Project is an initiative of the Oxford Radiocarbon Accelerator Unit and statistical research has been conducted by D.Phil. student, Sharen Lee, supported by the NERC as part of the RESET Project: <http://c14.arch.ox.ac.uk/reset/>*



The Suigetsu research project group meeting at the lake on Honshu Island, central Japan.



## China and Inner Asia, 1000–200 BC: Interactions that Changed China

**Jessica Rawson**

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The project, funded by the Leverhulme Trust, explores changes stimulated in central China by contact with Inner Asia, namely Siberia and Central Asia. While central China along the Yellow River derived many significant technologies and materials, such as metallurgy, chariots, and gold, carnelian and faience, from their neighbours, the ways in which these were deployed were quite unlike those used in the adjacent areas. In October 2011, a post-doc, Dr Peter Hommel, and a graduate student, Beichen Chen, joined the team. Two more graduates will join in October 2012. Dr Hommel is working on the transmission of materials across Siberia and Mr Chen on the role of the Han River within China as a route of communication between the Yellow and Yangtze River basins.

Two areas of research in China are essential foundations for the project. The first of these is the excavation and study of sites in Xinjiang and Gansu provinces that have produced copper and bronze artefacts of dates earlier than the use of metal in central China around 1600 BC. While Xinjiang and Gansu are today integral parts of China, in the late third and second millennia, these areas were bridges between Siberia, with widespread use of copper and bronze weapons, and central China, where before the second millennium metals were hardly used at all. Thus the source of the stimulus to use copper and bronze is now identified as coming from the north and west. However, these stimuli do not explain the fascination with cast bronze vessels seen in China.

Study of both ceramic manufacture and culinary habits in East Asia is among the keys to understanding the unusual direction in bronze casting taken in China. China, Japan and eastern Siberia have revealed some of the world's earliest ceramics, being in use from about 16,000 BC. Unlike other parts of East Asia, in China an outstanding ceramic production then evolved during the Neolithic period, in which boiling and steaming of grains, such as millet and rice, played a pivotal role. Highly elaborated ceramics imply that these were already deployed for some ritual use.

The project has therefore built upon these topics to argue that, while the alloying of copper and arsenic or copper and tin depended on an outside stimulus, preoccupation

with vessels, rather than with weapons or ornaments (as in other regions), was due to the use of multiple ceramic vessels in elaborate shapes in Neolithic ritual practices that grew out of both China's very early ceramic manufacture and a preoccupation with boiling and steaming foods, unlike the roasting practices of Western Asia. Papers on this topic were presented at the conference, *Emergence of Bronze Age Societies – A Global Perspective*, organized by Peking University and the Institute of Archaeology, University College London, at Baoji in Shaanxi province, November 2011 and at Peking University to celebrate the 90 years of archaeological work of the Faculty of Archaeology and Museology in April 2012.

For further information, see:

Rawson, J. 2010: Carnelian beads, animal figures and exotic vessels: traces of contact between the Chinese states and Inner Asia, c. 1000–650 BC. In M. Wagner and W. Wei (eds.), *Archäologie in China, Bridging Eurasia*, 1–42. Mainz: Deutsches Archäologisches Institut, Eurasien-Abteilung, Assenstelle Peking.



Bronze ritual vessel, Shang Dynasty, c.1200 BC. The elaborate surface detail and rectangular body are changes made by bronze casters to a vessel type that when first made in ceramics had a rounded body and three legs to hold the food or liquids it contained over a fire. The bronze is at Compton Verney, Warwickshire.

## Shipwreck 43 from Thonis-Heracleion, Egypt

**Damian Robinson**

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**B**eneath the waters of Aboukir Bay in Egypt lie the remains of a remarkably well-preserved maritime landscape. For the nautical archaeologist the finds from the port-city of Thonis-Heracleion are of particular significance. Preserved in the soft Nile silts of the harbour bottom the European Institute for Underwater Archaeology (IEASM), led by Franck Goddio, have discovered the remains of at least 64 ancient shipwrecks during survey and limited excavation work aimed at characterizing the topography of the site.

In September–October 2011, a team from the School of Archaeology's Centre for Maritime Archaeology joined with the IEASM during their annual mission in Aboukir Bay to begin excavation of one of the ancient shipwrecks. Tentatively dated to between 785–412 cal BC, shipwreck 43 was originally discovered during explorations of the Central Harbour in 2007. It is part of a dense cluster of at least six other wrecks located in the northern sector of the port. The 2011 excavation concentrated on two areas, the bow and stern of the port side of the vessel. The aims were to investigate the wreck through limited stratigraphic excavation in order to understand the sequence of deposition, to assess the state of preservation of the shipwreck, and to document any remaining structural elements.

Preliminary observations suggest that shipwreck 43 has a distinctive form of ship construction that has not been fully documented elsewhere in the ancient Mediterranean. As the structural elements of the wreck were made from

the locally available wood *Acacia tortilis/raddiana*, it is thought that shipwreck 43 was Egyptian in origin and thus we are probably dealing with a shipbuilding tradition that utilized local supplies of timber and developed in accordance with the realities of nautical life at the margins of the Nile Delta.

The preliminary results have inevitably left us with many more questions than answers and excavations will continue in 2012. While our first season has provided some insight into naval architecture of the vessel, a complete understanding of it, as well as clarifying how the ship came to be wrecked, awaits us in future seasons.

*The mission was sponsored by grants from the John Fell Fund and the Craven Committee, and supported by the Hilti Foundation.*



Excavating around the limestone anchor with wooden fluke (*Pinus* sp.) on shipwreck 43. The fluke nearest to the diver was previously removed for radiocarbon dating (405–208 cal BC). OCMA © Franck Goddio, Hilti Foundation.



## Excavations in the Peristyle Garden of the House of the Gladiators, Pompeii

**Mark Robinson**

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Most studies of gardens in Pompeii have not included excavation below the level of the surface sealed by the eruption of Vesuvius in AD 79. However, earlier work by the Oxford team in the garden of the House of the Greek Epigrams discovered that further evidence can be found in the garden soils themselves, including traces of the bedding out of plants. Burnt offerings to the *lares* (household gods) were found in small pits in the garden. Traces of early Bronze Age archaeology were also found in this garden, sealed beneath volcanic ash from an earlier eruption of Vesuvius. An opportunity arose to investigate these themes further at the House of the Gladiators (Pompeii V 5, 3) working in conjunction with Dr D. Esposito, who was analysing the structural sequence of the house.

A small team of students from the University of Oxford excavated in the peristyle garden for three seasons from 2008 to 2010. Once the undisturbed Roman soil had been reached, excavation proceeded using the Northern European technique of watering the soil so that any colour differences related to planting would be observed in the damp soil. Pumice-filled holes where the

stumps of shrubs from AD 79 had decayed were excavated and plaster casts were made of their root systems. Deep trenches were also excavated into the underlying geological deposits.

The results suggested that the peristyle garden was laid out some time around 5 BC with a formal arrangement of trees and shrubs. Around AD 60 there was major rebuilding work and much of the planting was dug away by quarry pits. The garden was replanted with shrubs in flowerpots. Some survived until AD 79 so were represented by pumice-filled holes, others died and were replaced. The use of purpose-made flowerpots for some of the shrubs and the bedding out of plants grown in soil which was not local to the garden suggested that a thriving nursery trade served Pompeii. The only burnt offering was associated with a Hellenistic house buried by the garden.

The earliest deposit reached below the garden was yellow tephra which probably belonged to the Mercato eruption of Vesuvius in the Mesolithic. Above this was a colluvial accumulation of soil 0.7 m thick. The chronology of the pottery from the soil suggested that there was



Topsoil removal in the peristyle garden of the House of the Gladiators.

nearby settlement from the middle and late Neolithic, throughout the Bronze Age, perhaps even into the Iron Age. This soil was sealed by grey volcanic ash which represented the ground flow/surge deposit of a major eruption, presumably one of the late AP (Ante Plinian) eruptions of Vesuvius. These eruptions are not otherwise closely dated and if the ash is indeed Iron Age, this has

major implications for the origin of the town of Pompeii. Archaic and Hellenistic remains were present above the grey ash.

*La Soprintendenza archeologica di Napoli e Pompei granted permission to excavate. The project was partly funded by the British Academy.*



Making a plaster cast of a root void.



Plaster cast of a shrub stem emerging from a flowerpot.



## Dating Knowth

**Rick Schulting**

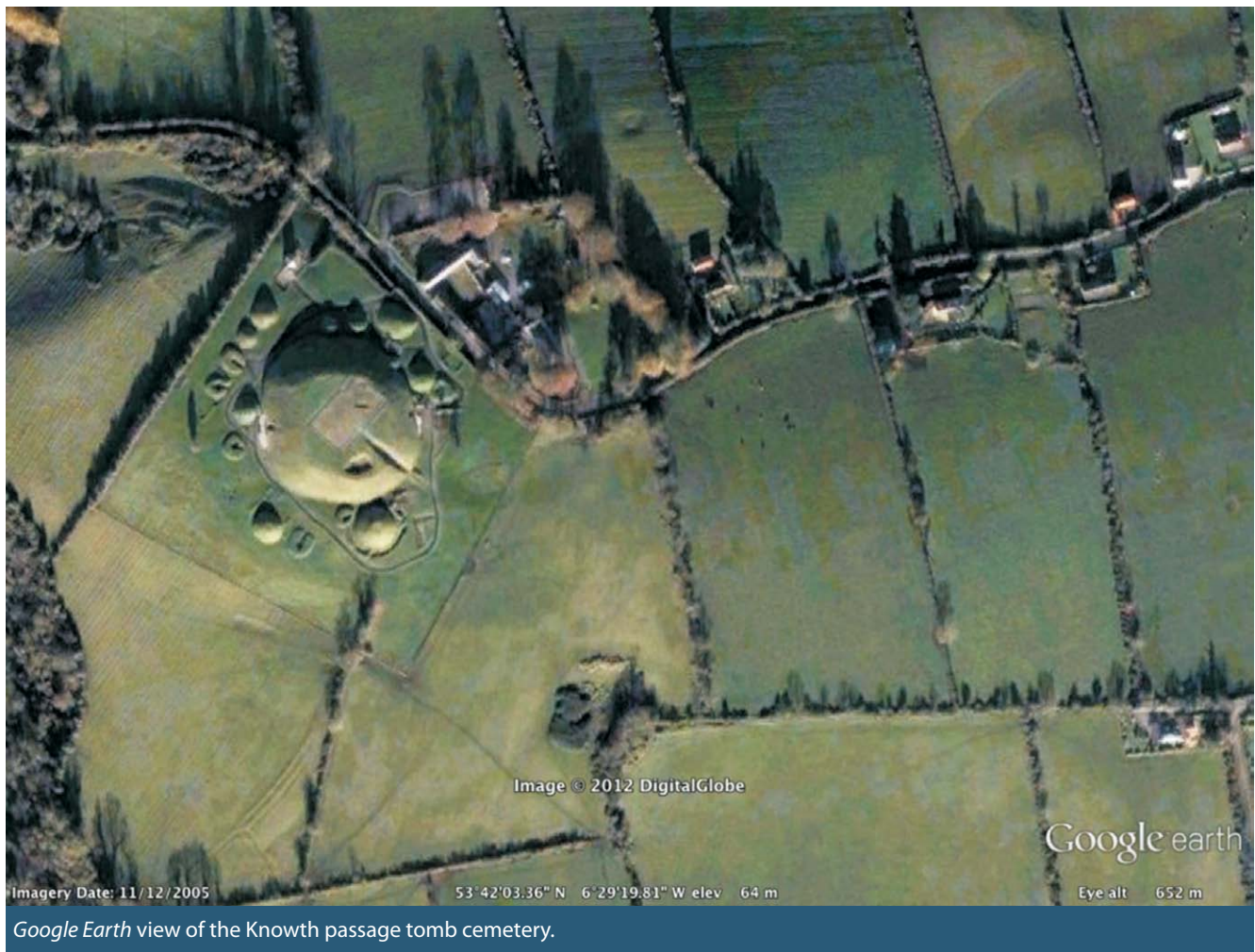
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The passage tombs of the Brú na Bóinne in Ireland are among the most iconic sites in Neolithic Europe. The large mound at Knowth is one of the three monumental constructions in the valley, alongside Newgrange and Dowth. Knowth is unique, however, in that its central mound is surrounded by a group of 20 smaller mounds, forming a veritable passage tomb cemetery. While these monuments have long been known to date roughly to the Middle Neolithic (c.3500–3000 BC), the available radiocarbon dates suffer from a number of problems (e.g. deriving from palaeosols underlying the monuments, and/or charcoal subject to possible ‘old wood’ effects). Moreover, the chronology has been too crude to address more detailed questions, such as the sequence of construction, and how long the large mounds in particular remained in use as burial places.

With this in mind, and in collaboration with the excavator of Knowth, Professor George Eogan, and a team of Irish and UK archaeologists, a thorough dating programme was initiated. In total 60 new AMS <sup>14</sup>C determinations were obtained from the complex, all directly on human bone, both unburnt and cremated. While the majority of samples came from the elaborate

eastern passage tomb of the main mound, efforts were made to include as many of the smaller satellite tombs as possible.

One serious problem we faced is that the period in question falls within a problematic part of the calibration curve, in which it is difficult to distinguish dates between about 3400 and 3000 BC. To overcome this, we used the Bayesian modelling capabilities of the OxCal program developed by Chris Ramsey of the RLAHA (also a project member). The results indicate that both the large and the small mounds were probably used for only one to two centuries, in the period 3160–2920 BC. There are only slight hints that some of the smaller mounds may have preceded the main mound (this sequence is seen more clearly archaeologically, but it lacks any chronological control). What all of this suggests is an explosion of tomb-building and use in Brú na Bóinne at the close of the fourth millennium BC. Interestingly, this period coincides with the introduction of a new form of pottery into Ireland, Grooved Ware, originating in Orkney. Grooved Ware is found at Knowth, but only in very limited quantities in its earliest forms. There are other connections between Ireland and Orkney, such as the very concept





Passage stone from Knowth 1.

of passage tombs themselves, though this is part of a wider phenomenon spread along the Atlantic façade. Yet the megalithic building traditions – court tombs, portal tombs, simple passage tombs – of the Irish Early Neolithic had fallen out of use well before 3200 BC. Are we seeing in the Brú na Bóinne a reaction to new ideas – and people? – from abroad, drawing on but adapting earlier traditions of monument building?

The results of the dating project will appear as a chapter in the forthcoming volume on the main mound, Knowth 1.

Schulking, R.J., Bronk Ramsey, C., Reimer, P.J., Eogan, G., Cleary, K., Cooney, G. and Sheridan, A. forthcoming: Dating the human remains from Knowth. In G. Eogan and K. Cleary (eds.), *Excavations at Knowth 6: The Archaeology of the Large Passage Tomb at Knowth, Co. Meath*. Dublin: Royal Irish Academy.

For further reading:

Eogan, G. 1986: *Knowth and the Passage-Tombs of Ireland*. London: Thames and Hudson.

*'Dating Knowth' was made possible through funding from NERC's ORADS programme, the Heritage Council of Ireland, the Royal Irish Academy and the <sup>14</sup>CHRONO laboratory of Queen's University Belfast.*



## Using Ash from Large Volcanic Eruptions to Date and Synchronize Palaeoclimate Archives

**Victoria C. Smith**

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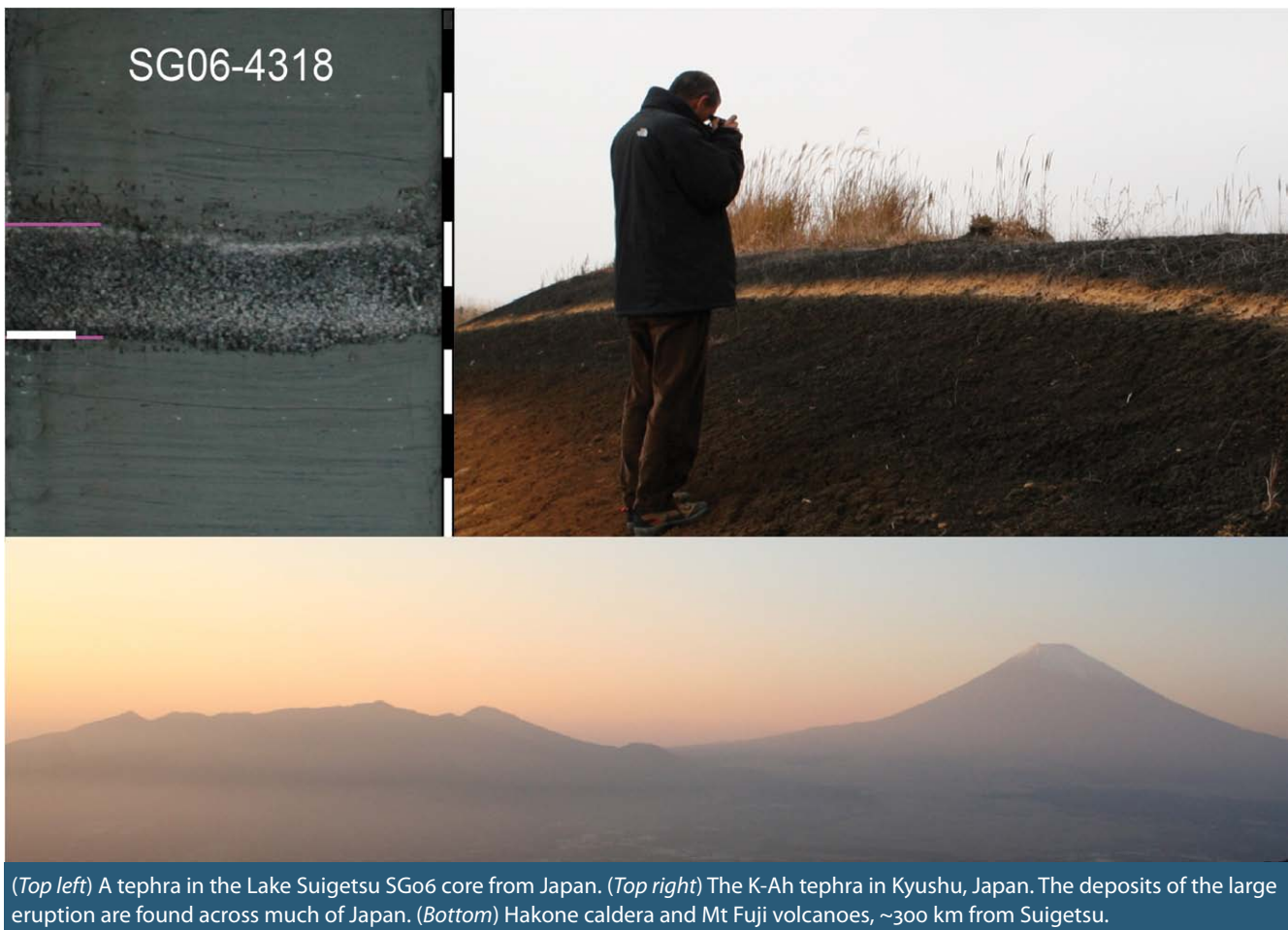
There are many records of past climate. These marine, lake and ice cores show that the Earth has experienced large and abrupt changes in climate in the past. However, our understanding of the drivers of these changes and how these are propagated across the globe is not clear. In order to further our understanding we need to correlate precisely these palaeoclimate records so we can assess leads and lags. The deposits of large explosive eruptions are dispersed over thousands of kilometres forming unique markers and therefore ideal for synchronizing these archives. Our research group is involved in many projects to identify and characterize these volcanic ash layers in order to integrate archaeological and palaeoenvironmental records.

One of our current projects involves the high-resolution SGo6 core from Lake Suigetsu, Japan that spans the last 150 kyrs. This continuous record contains terrestrial macrofossils, diatoms and pollen, which make it one of the most important terrestrial palaeoclimatic records of the Late Pleistocene. SGo6 also contains numerous tephra layers, including those that are only cryptically preserved and identified using density separation techniques.

Detailed geochemistry is being carried out on the distal volcanic deposits preserved in SGo6, and of some of the

largest eruptions from Japan. The composition of the glass sherds allows us to characterize the deposits, effectively providing a fingerprint, to correlate to other distal layers and a particular volcano and eruption. The eruptions are often dated by radiometric methods, including radiocarbon and  $^{40}\text{Ar}/^{39}\text{Ar}$  techniques.  $^{40}\text{Ar}/^{39}\text{Ar}$  eruption ages could potentially provide chronology for the portion of the SGo6 core that extends past the radiocarbon limit. Our research has shown that it is possible to obtain precise and accurate  $^{40}\text{Ar}/^{39}\text{Ar}$  ages on deposits as young as 10 ka, but large crystals are required (few mm in length). The dense and large crystals are only preserved in the proximal volcanic deposits; thus distal tephra need to be correlated using the glass chemistry. We are establishing which eruptions are recorded in SGo6 and aim to date these events to constrain the chronology. The deposits of large numbers of explosive eruptions found in SGo6 are also found in marine cores around Japan and beyond; identifying and dating the eruptions allow these records to be synchronized to understand further the climate system.

For further information on tephrochronology projects, see the departmental webpage.



(Top left) A tephra in the Lake Suigetsu SGo6 core from Japan. (Top right) The K-Ah tephra in Kyushu, Japan. The deposits of the large eruption are found across much of Japan. (Bottom) Hakone caldera and Mt Fuji volcanoes, ~300 km from Suigetsu.

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- Haslam, M., Clarkson, C., Roberts, R.G., Bora, J., Korisettar, R., Ditchfield, P., Chivas, A., Harris, C., Smith, V., Oh, A., Eksambekar, S., Boivin, N. and Petraglia, M. 2012: A southern Indian Middle Palaeolithic occupation surface sealed by the 74 ka Toba eruption: further evidence from Jwalapuram Locality 22. *Quaternary International* (The Toba Super-eruption special volume) 258, 148–64. doi:10.1016/j.quaint.2011.08.040
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*The Suigetsu tephra and Ar-Ar research is funded by the John Fell Fund from Oxford University Press and Oxford University.*



## The Oxford Roman Economy Project

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**H**ow well could pre-industrial economies do? The nature, scale, structure and performance of ancient economies is one of the liveliest areas of debate in ancient history. The Oxford Roman Economy Project, co-directed by Alan Bowman and Andrew Wilson, combines archaeological and ancient documentary sources to quantify elements of the Roman economy, especially in the period 100 BC–AD 350 which produced the greatest quantity of monuments and works of art still visible today. The project has been collecting a large amount of archaeological and documentary data on Roman settlement, agriculture, trade, mining and coinage, in an attempt to analyse historical patterns from the vast mass of information accumulated especially over the last few decades of excavations across the Roman world.

The results are disseminated through annual conferences (on urbanization and demography; agriculture; trade; mining and coinage; and most recently, the economics of Roman art); and a range of other workshops and colloquia, whose proceedings are published in the new OUP series, *Oxford Studies on the Roman Economy*. There is also a project website, with working papers and bibliographies, and online databases.

The emerging picture suggests that the Roman economy experienced per capita growth apparently in parallel with aggregate growth as the population grew between the end of the civil wars (31 BC) and the Antonine Plague (smallpox?) of the AD 160s. A key focus of research is on what might be the explanation for how, for a century and a half, the Roman economy defied Malthusian expectations,

which predict that – in pre-industrial societies lacking fossil fuels – as population grows per capita income should decline as marginal returns decrease, and vice versa. The answers lie in a combination of technological change, institutional change as the Mediterranean became a Roman lake, a process of Smithian growth in which the archaeological record shows us the interplay of urbanization, increased long-distance trade, and the division of labour. Arguably, after the collapse of the western Roman empire in the fifth century, Roman levels of urbanization, trade, and prosperity on several indices were not matched again until, variously, the late medieval or early modern periods.

For further information, see the OXREP website:

<http://oxrep.classics.ox.ac.uk/>

and

Bowman, A.K. and Wilson, A.I. (eds.) 2009: *Quantifying the Roman Economy: Methods and Problems* (*Oxford Studies in the Roman Economy* 1). Oxford: Oxford University Press.

Bowman, A.K. and Wilson, A.I. (eds.) 2012: *Settlement, Urbanisation and Population* (*Oxford Studies in the Roman Economy* 2). Oxford: Oxford University Press.

*The Oxford Roman Economy Project has been funded by grants from the AHRC and the European Science Foundation, and since 2009, by the generosity of Baron Lorne Thyssen.*

# Student Profiles

## Sara Polakova

For me, Oxford has always represented the pinnacle of education, and particularly with my being from the Czech Republic, its image and reputation seemed even more distant and eminent. Inspired by my parents who always taught me the value of education, going to Oxford is something that I have wanted to achieve since the age of 8.

Choosing the subject of study was not easy, as my interests have always been very broad, from literature to history, from philosophy to psychology. I was, however, certain that whatever it was I chose to study, it would be something from the humanities. This even further deepened my desire to study at Oxford, which is known for its academic prowess particularly in the social sciences and humanities.

When researching possible courses, the Archaeology and Anthropology course caught my eye immediately. It was the fascinating interdisciplinary approach that gripped me; the combination of almost a psychological approach from the Anthropological aspect as well as the rigorous, scientific and historical approach from the Archaeological perspective. However, the longer one does the course, the apparent divide between the two subjects fades, until, after a few essays, you realize that one really cannot be studied without the other. This is what I enjoy most about this course; the endless possibilities of forming arguments and constructing theoretical approaches, as well as rigorously examining concrete examples and making links between seemingly unlikable phenomena. The vast range of material studied, as well as the tutors' encouragement not to 'be afraid' and instead argue, think unconventionally and dispute, is exactly what I was looking for in this university course.

However, finally deciding to apply for Archaeology and Anthropology was not an easy step; particularly in the current uncertain economic climate, my family, while being extremely supportive, was afraid that this



course is not something that will secure me a bright financial future. Again, however, I was taken by surprise at how 'useful' the course is. While most of the general public see it as Indiana-Jones Studies or putting broken pots back together (and usually do not even know what Anthropology is), it is the set of skills that one learns that is invaluable for later employment. Such skills are, for example, not only efficient and convincing essay writing, thinking of rigorous arguments on the spot, and being able to argue efficiently with relevant use of examples, but also having good analytical skills and handling problems on which we have very little background information. Moreover, the sheer quantity and range of material covered gives us the ability to quickly digest and process new information and also gives us a well-rounded general as well as academic knowledge, overlapping many disciplines. All of these skills are relevant to virtually any job. In this respect, although many people do not realize it, Archaeology and Anthropology opens many doors; and I am grateful to be one of those selected few who are able to study it in one of the best institutions in the world.

## Natasha Rees

Originally, I wanted to take Classics at university, as Latin was my favourite subject at school. However, I changed my mind when I studied Ted Hughes as part of my English A-Level and did some background research on him. I discovered that he studied Archaeology and Anthropology at university (admittedly he was at 'the other place in the fens') and I wasn't sure what that was, so looked it up. I was fascinated by what I found out, and realized that I didn't just have to study the Greeks and Romans, but I could learn about every group of people of every size in every part of the world at every point in human history! What could be more exciting than that? Immediately I decided that this was the course for me – and probably the course for everyone if only they knew about it sooner. The next step, of course, was to try and work out where I wanted to study it.

The main reason I wanted to study Archaeology and Anthropology here in Oxford was due to the course structure. I had also looked at 'the other place' mentioned above, but at the time I was applying the way the degree there was structured meant that at the end of your first year you had to choose only one of the three parts of the course (Archaeology, Social Anthropology and Biological Anthropology) to study for the rest of your degree. I spoke to some of the first-year undergraduates there, and they hadn't got long left to decide, and still didn't know which they preferred. I decided that wasn't a decision I wanted to be faced with – as I've said, most of the appeal of the course for me came from its breadth, and I wanted to keep that for as long as possible. I decided that I wanted to come to Oxford more than anywhere else.



Over the last two years I have realized just how lucky I am to have been one of the selected applicants, as these have been the best two years of my life, which is in large part down to the subject I study. At Oxford, you can't get away from your subject – there's always more work you could be doing! – and so I think here more than anywhere else it is really important to love what you study. It's a great feeling knowing that I'm not just going to learn something new at each lecture, but something both new and really interesting, put across more often than not by one of the academics who have contributed to leading research in the area. Reading for essays isn't a chore like it is for some of my friends in other subjects. If I've enjoyed writing every essay, I've enjoyed having every tutorial even more. I can't imagine being happier taking any course other than Archaeology and Anthropology at Oxford. Long may it continue.



## Maira Seeley

I became interested in archaeology as a more hands-on approach to the past. I had originally thought to study either history or anthropology, but I preferred archaeology's use of physical evidence to interpret the past to history's more document-based methods. Archaeology was also attractive because of its potential to address a broader social past than that usually reflected in documentary sources. I was particularly interested in the daily lives of non-elites and 'social history', which is a subject that archaeology seems uniquely suited to address. Although biases such as the effects of taphonomy exist in the archaeological record, they usually have a similar influence on all social groups' material records. While this does not mean that the same amount of archaeological information is available for all social groups, it can result in a more balanced image of a given society than we can gain from a document-based approach. Before I applied to Oxford, I had volunteered on several archaeological excavations and knew that I enjoyed the field-work aspects of the discipline. I like being outdoors and working with my hands, as well as travelling, which made me better suited to archaeology than to an exclusively library-based course.

Oxford was attractive because of the Arch and Anth course syllabus, its location, and Oxford's reputation. My decision to apply was largely based on the syllabus' content: I liked the balance between the study of contemporary societies and the archaeological record. I am strongly interested in the contemporary world but felt that a thorough grasp of the past was necessary for any



understanding of the present, so the combination of archaeology and anthropology was ideal. The decision was mostly academic, but I also was attracted to the chance of studying abroad. It seemed logical to study anthropology in a foreign country so that I would be forced to engage in participant observation and could put anthropological techniques into daily practice. To an American, Britain is also a much more interesting place to study archaeology than the USA. I had heard of the Oxford tutorial system's reputation for encouraging critical thinking and providing a challenge, and I wanted to improve my reasoning skills. The fact that Oxford is a very liveable city helped too – I didn't want to live in a huge urban area and had enjoyed Oxford on previous visits.

# Selected Publications

## Nick Barton

- 2012: Revisiting 'intentional breakage' in the British Late Upper Palaeolithic. In Niekus, M.J.L.T., Barton, R.N.E., Street, M. and Terberger, T. (eds.), *A Mind Set on Flint. Studies in Honour of Dick Stapert* (Groningen, Groningen Archaeological Studies 16), 183–92.
- 2012 (with Bouzouggar, A.): The identity and timing of the Aterian in Morocco. In Hublin, J.-J. and McPherron, S. (eds.), *Modern Origins: A North African Perspective* (Dordrecht), 93–105.
- 2012 (with d'Errico, F.): North African origins of symbolically mediated behaviour and the Aterian. In Elias, S. (ed.), *Origins of Human Innovation and Creativity* (Amsterdam), 21–32.
- 2012 (with Humphrey, L., Bello, S.M., Turner, E. and Bouzouggar, A.): Iberomaurusian funerary behaviour: evidence from Grotte des Pigeons, Taforalt, Morocco. *Journal of Human Evolution* 62, 261–73.
- 2012 (ed. with Stringer, C.B. and Finlayson, J.C.): *Neanderthals in Context. A Report of the 1995–1998 Excavations at Gorham's and Vanguard Caves, Gibraltar* (Oxford, OUSA Monograph 75).

## Lisa Bendall

- 2011: How much makes a feast at Knossos? Banqueting in Crete at the time of the Linear B administration. In Vlazaki, M. (ed.), *Proceedings of the 10th International Cretological Congress, Chania, Crete, October 2006*.

## Amy Bogaard

- 2011: Farming practice and society in the central European Neolithic and Bronze Age: an archaeobotanical response to the secondary products revolution model. In Hadjikoumis, A., Robinson, E. and Viner, S. (eds.), *The Dynamics of Neolithisation in Europe: Studies in Honour of Andrew Sherratt* (Oxford), 266–83.
- 2012: *Plant Use and Crop Husbandry in an Early Neolithic Village: Vaihingenan der Enz, Baden-Württemberg* (Bonn, Frankfurter Archäologische Schriften 16).

## Nicole Boivin

- 2011 (with Fuller, D.Q., Hoogervorst, T. and Allaby, R.): Across the Indian Ocean: the prehistoric movement of plants and animals. *Antiquity* 85, 544–58. [Winner Ben Cullen Prize.]
- 2012 (with Blinkhorn, J., Taçon, P.S.C. and Petraglia, M.D.): Rock art research in India: historical approaches and recent theoretical directions. In McDonald, J. and Veth, P. (eds.), *A Companion to Rock Art* (Chichester), 179–96.
- 2012 (with Fuller, D. and Crowther, A.): Old World globalization and the Columbian Exchange: comparison and contrast. *World Archaeology* 44(3), 452–69.

- 2012 (with Helm, R.M., Crowther, A., Shipton, C., Tengeza, A. and Fuller, D.): Exploring agriculture, interaction and trade on the eastern African littoral: preliminary results from Kenya. *Azania* 47(1), 39–63.
- 2012 (with Shipton, C., Petraglia, M., Koshy, J., Bora, J., Brumm, A., Korisettar, R., Risch, R. and Fuller, D.): Lithic technology and social transformations in the South Indian Neolithic: the evidence from Sanganakallu-Kugpal. *Journal of Anthropological Archaeology* 31(2), 156–73.

## Peter Bray

- 2012: Before <sup>29</sup>Cu became copper: tracing the recognition and invention of metallurgy in Britain and Ireland during the third millennium B.C. In Allen, M., Gardiner, J. and Sheridan, A. (eds.), *Is there a British Chalcolithic: People, Place and Polity in the Later 3rd Millennium* (Oxford, The Prehistoric Society Research Paper 4), 56–70.
- 2012: Life histories of Scottish Bronze Age objects: biography, prosopography and things. Contribution to the Scottish Archaeology Research Framework. Society of Antiquaries of Scotland (ScARF). Accessible at <http://www.scottishheritagehub.com/>
- 2012 (with Pollard, A.M.): A new interpretative approach to the chemistry of copper-alloy objects: source, recycling and technology. *Antiquity* 86, 853–67.

## Fiona Brock

- 2011 (with Lee, S., Housley, R.A. and Bronk Ramsey, C.): Variation in the radiocarbon age of different fractions of peat: a case study from Ahrenshöft, northern Germany. *Quaternary Geochronology* 6(6), 550–5.
- 2012 (with Dee, M.W., Bowles, A. and Bronk Ramsey, C.): Using a silica substrate to monitor the effectiveness of radiocarbon pretreatment. *Radiocarbon* 53(4), 705–11.
- 2012 (with Housley, R.A., Lane, C.S., Cullen, V.L., Weber, M.-J., Riede, F. and Gamble, C.S.): Icelandic volcanic ash from the Late-glacial open-air archaeological site of Ahrenshöft LA 58 D, North Germany. *Journal of Archaeological Science* 39, 708–16.
- 2012 (with Nagakawa, T., Gotanda, K., Haraguchi, T., Danhara, T., Yonenobu, H., Brauer, A., Yokoyama, Y., Tada, R., Takemura, K., Staff, R.A., Payne, R., Bronk Ramsey, C., Bryant, C., Schlolaut, G., Marshall, M., Tarasov, P., Lamb, H. and Suigetsu 2006 Project Members): SGo6, a fully continuous and varved sediment core from Lake Suigetsu, Japan: stratigraphy and potential for improving the radiocarbon calibration model and understanding of late Quaternary climate changes. *Quaternary Science Reviews* 36, 164–76.
- 2012 (with Ostapkowicz, J., Bronk Ramsey, C., Higham, T., Widenhoef, A.C., Ribechini, E., Lucejko, J.J. and

Wilson, S.): Chronologies in wood and resin: AMS  $^{14}\text{C}$  dating of pre-Hispanic Caribbean wood sculpture. *Journal of Archaeological Science* 39, 2238–51.

### Anwen Cooper

2012 (with Yarrow, T.): ‘Permanently travelling from place to place’: oral histories of the 1960s digging circuit in Britain. *International Journal of Historical Archaeology* 16(2), 300–18.

### Barry Cunliffe

2012: Calleva in context. In Fulford, M. (ed.), *Silchester and the Study of Romano-British Urbanism* (Portsmouth, R.I.), 14–21.

### Michael Dee

- 2011 (with Brock, F., Bowles, A.D. and Bronk Ramsey, C.): Using a silica substrate to monitor the effectiveness of radiocarbon pretreatment. *Radiocarbon* 53(4), 705–11.
- 2012 (with Quiles, A., Aubourg, E., Berthier, B., Delque-Kolika, E., Pierrat-Bonnefoise, G., Andreu-Lanöee, G., Bronk Ramsey, C. and Moreau, C.): Bayesian modelling of an absolute chronology for Egypt’s 18th Dynasty by astrophysical and radiocarbon methods. *Journal of Archaeological Science* 40, 423–32.
- 2012 (with Rowland, J.M., Higham, T., Shortland, A.J., Brock, F., Harris, S.A. and Bronk Ramsey, C.): Synchronising radiocarbon dating and the Egyptian historical chronology by improved sample selection. *Antiquity* 86 (333), 868–83.

### Janet DeLaine

2012: Housing Roman Ostia. In Balch, D.L. and Weissenrieder, A. (eds.), *Contested Spaces: Houses and Temples in Roman Antiquity and the New Testament* (Tübingen), 327–51.

### Peter Ditchfield

- 2011 (with Harrison, T.): Sedimentology, lithostratigraphy and depositional history of the Laetoli area. In Harrison, T. (ed.), *Paleontology and Geology of Laetoli: Human Evolution in Context, Vol. 1* (New York), 47–76.
- 2011 (with Haslam, M., Roberts, R.G., Shipton, C., Pal, J.N., Fenwick, J., Boivin, N., Dubey, A.K., Gupta, M.C. and Petraglia, M.): Late Acheulean hominins at the Marine Isotope Stage 6/5e transition in north-central India. *Quaternary Research* 75, 670–82.
- 2011 (with Pollard, A.M., Allen, T., Gibson, M., Boston, C., Clough, S., Marquez-Grant, N. and Nicholson, R.A.): ‘These boots were made for walking’: the isotopic analysis of a  $\text{C}^4$  Roman inhumation from Gravesend, Kent, UK. *American Journal of Physical Anthropology* 146, 446–56.
- 2012 (with Petraglia, M.D., Jones, S., Korisettar, R. and Pal, J.N.): The Toba volcanic super-eruption, environmental change, and hominin occupation history in India over the last 140,000 years. *Quaternary International* (The Toba Super-eruption Special Volume) 258, 119–34.
- 2012 (with Pollard, A.M., Piva, E., Wallis, S., Falys, C. and Ford, S.): ‘Sprouting like cockle amongst the wheat’: the St Brice’s Day Massacre and the isotopic analysis of

human bones from St John’s College, Oxford. *Oxford Journal of Archaeology* 31, 83–102.

### Katerina Douka

- 2011 (with Benazzi, S., Fornai, C., Bauer, C.C., Kullmer, O., Svoboda, J., Pap, I., Mallegni, F., Bayle, P., Coquerelle, M., Condemi, S., Ronchitelli, A., Harvati, K. and Weber, G.W.): Early dispersal of modern humans in Europe and implications for Neanderthal behaviour. *Nature* 479 (7374), 525–8.
- 2011 (with Perlès, C., Valladas, H., Vanhaeren, M. and Hedges, R.E.M.): Franchthi Cave revisited: the age of the Aurignacian in south-eastern Europe. *Antiquity* 85 (330), 1131–50.
- 2012 (with Grimaldi, S., Boschian, G., del Lucchese, A. and Higham, T.F.G.): A new chronostratigraphic framework for the Upper Palaeolithic of Riparo Mochi (Italy). *Journal of Human Evolution* 62(2), 286–99.
- 2012 (with Spinapolice, E.): Neanderthal shell tool production: evidence from Italy and Greece. *Journal of World Prehistory* 25(2), 45–79.
- 2012 (with Wood, R.E., Boscato, P., Haesaerts, P., Sinitsyn, A. and Higham, T.F.G.): Testing the ABOx-SC method: dating known age charcoals associated with the Campanian Ignimbrite. *Quaternary Geochronology* 9, 16–26.

### Ceiridwen J. Edwards

- 2012 (with Bower, M.A., Campana, M.G., Nisbet, R.E.R., Weller, R., Whitten, M., Stock, F., Barrett, E., O’Connell, T.C., Hill, E.W., Wilson, A.M., Howe, C.J., Barker, G. and Binns, M.): Truth in the bones: resolving the identity of two founding elite Thoroughbred racehorses, Eclipse and Bend Or. *Archaeometry*, published online 11 April 2012.
- 2012 (with Campana, M.G., Lister, D.L., Whitten, C.M., Stock, F., Barker, G. and Bower, M.A.): Complex relationships between mitochondrial and nuclear DNA preservation in historic DNA extracts. *Archaeometry* 54, 193–202.
- 2012 (with Carden, R.F., McDevitt, A.D., Zachos, F.E., Woodman, P.C., O’Toole, P., Rose, H., Monaghan, N.T., Campana, M.G. and Bradley, D.G.): Phylogeographic, ancient DNA, fossil and morphometric analyses reveal ancient and modern human introductions of a large mammal: the complex case of red deer (*Cervus elaphus*) in Ireland. *Quaternary Science Reviews* 42, 74–84.
- 2012 (with Hall, S.J.G., Lenstra, J.A., Deeming, D.C. and European Cattle Genetic Diversity Consortium): Prioritization based on neutral genetic diversity may fail to conserve important characteristics in cattle breeds. *Journal of Animal Breeding and Genetics* 129, 218–25.
- 2012 (with O’Meara, D.B.,\* Sleeman, D.P., Cross, T.F., Statham, M.J., McDowell, J.R., Dillane, E., Coughlan, J.P., O’Leary, D., O’Reilly, C., Bradley, D.G. and Carlsson, J.): Genetic structure of Eurasian badgers *Meles meles* (Carnivora: Mustelidae) and the colonisation history of Ireland. *Biological Journal of the Linnean Society* 106, 893–909 (\*joint first author with CJE).



**Irene Good**

- 2011: Up from the ice: a look at dress in the Iron Age Altai (a review article of Barkova and Polos'mak's *Costume and Textiles of the Pazyryk Altai*). *Silkroad Newsletter* 9, 146–53.
- 2012: Textiles in the ancient Near East. In Potts, D.T. (ed.), *A Companion to the Archaeology of the Ancient Near East* (Oxford, Blackwell Companions to the Ancient World).
- 2012: Changes in fiber use and spinning technologies on the Iranian Plateau: a comparative and diachronic study of spindle whorls ca. 4500–2500 BCE. In Breniquet, C. and Tengberg, M. (eds.), *Palaerient special volume*.
- 2012 (with Ditchfield, P. and Pollard, A.M.): Below the salt: Late Achaemenid textiles from the Chehr Abad salt mine, Iran. In Stollner, T. (ed.), *Interim Report of the Zanjan Saltmine Archaeological Project* (Bodum Mining Museum).

**Chris Gosden**

- 2012: Post-colonial archaeology. In Hodder, I. (ed.), *Archaeological Theory Today* (2nd ed.) (Cambridge), 251–66.
- 2012: Extended and condensed relations: bringing together landscapes and artefacts. In Jones, A.M., Pollard, J., Allen, M.J. and Gardiner, J. (eds.), *Image, Memory and Monumentality; Archaeological Engagements with the Material World (a Celebration of the Academic Achievements of Professor Richard Bradley)* (Oxford, Prehistoric Society Research Paper 5), 127–35.
- 2012 (with Garrow, D.): *Technologies of Enchantment? Exploring Celtic Art: 400 BC to AD 100* (Oxford).

**Chris Green**

- 2011: *Winding Dali's Clock: The Construction of a Fuzzy Temporal-GIS for Archaeology* (Oxford, BAR Int. Ser. 2234).
- 2011: It's about time: temporality and intra-site GIS. In Jerem, E., Redó, F. and Szeverényi, V. (eds.), *On the Road to Reconstructing the Past. Computer Applications and Quantitative Methods in Archaeology (CAA). Proceedings of the 36th International Conference, Budapest, April 2–6, 2008* (Budapest, Archaeolingua Foundation), 206–11.

**Helena Hamerow**

- 2011: Rural settlement: an overview. In Hamerow, H., Hinton, D. and Crawford, S. (eds.), *The Oxford Handbook of Anglo-Saxon Archaeology* (Oxford), 121–9.
- 2011: Timber buildings and their social context. In Hamerow, H., Hinton, D. and Crawford, S. (eds.), *The Oxford Handbook of Anglo-Saxon Archaeology* (Oxford), 130–57.
- 2011 (ed. with Hinton, D. and Crawford, S. [Hamerow acted as lead editor]): *The Oxford Handbook of Anglo-Saxon Archaeology* (Oxford).
- 2012: *Rural Settlements and Society in Anglo-Saxon England* (Oxford).

**Michael Haslam**

- 2012: Towards a prehistory of primates. *Antiquity* 86, 299–315.

- 2012: Review of 'Experimental and Archaeological Studies of Use-wear and Residues on Obsidian Artefacts from Papua New Guinea', by Nina Kononenko. *Lithic Technology* 37, 57–8.
- 2012 (with Clarkson, C., Roberts, R.G., Bora, J., Korisettar, R., Ditchfield, P., Chivas, A., Harris, C., Smith, V., Oh, A., Eksambekar, S., Boivin, N. and Petraglia, M.): A southern Indian Middle Palaeolithic occupation surface sealed by the 74 ka Toba eruption: further evidence from Jwalapuram Locality 22. *Quaternary International* 258, 148–64.
- 2012 (with Harris, C., Pal, J.N., Shipton, C., Crowther, A., Koshy, J., Bora, J., Price, K., Dubey, A.K., Clarkson, C. and Petraglia, M.): Dhaba: a new Acheulean, Middle Palaeolithic and microlithic locality in the Middle Son Valley, north-central India. *Quaternary International* 258, 191–9.

**Robert Hedges**

- 2011: Anglo-Saxon migration and the molecular evidence. In Hamerow, H., Hinton, D.A. and Crawford, S. (eds.), *The Oxford Handbook of Anglo-Saxon Archaeology* (Oxford), 79–90.
- 2012 (with Honch, N.V. and McCullagh, J.S.O.): Variation of bone collagen amino acid  $\delta^{13}C$  values in archaeological humans and fauna with different dietary regimes: developing frameworks of dietary discrimination. *American Journal of Physical Anthropology* 148(4), 495–511.
- 2012 (with Marom, A., McCullagh, J.S.O., Higham, T.F.G. and Sinitsyn, A.A.): Single amino acid radiocarbon dating of Upper Paleolithic modern humans. *Proceedings of the National Academy of Sciences of the United States of America* 109(18), 6878–81.
- 2012 (with McCullagh, J.): Mass spectrometry in archaeology. In Lee, M.S., *Mass Spectrometry Handbook* (Hoboken, NJ), 765–96.
- 2012 (with Shin, J.Y.): Diagenesis in bone and enamel apatite carbonate; the potential of density separation to assess the original composition. *Journal of Archaeological Science* 39(4), 1123–30.

**Tom Higham**

- 2011 (with Compton, T., Stringer, C., Jacobi, R., Shapiro, B., Trinkaus, E., Chandler, B., Gröning, F., Collins, C., Hillson, S., O'Higgins, P., FitzGerald, C. and Fagan, M.): The earliest evidence for anatomically modern humans in northwestern Europe. *Nature* 479 (7374), 521–4.
- 2011 (with Higham, C., Ciarla, R., Douka, K., Kijngam, A. and Rispoli, F.): The origins of the Bronze Age of Southeast Asia. *Journal of World Prehistory* 24(4), 227–74.
- 2011 (with Jacobi, R.M., Basell, L., Bronk Ramsey, C., Chiotti, L. and Nespoulet, R.): Precision dating of the Palaeolithic: a new radiocarbon chronology for the Abri Pataud (France), a key Aurignacian sequence. *Journal of Human Evolution* 61(5), 549–63.
- 2012 (with Douka, K., Grimaldi, S., Boschian, G. and del Lucchese, A.): A new chronostratigraphic framework for the Upper Palaeolithic of Riparo Mochi (Italy). *Journal of Human Evolution* 62, 286–99.

2012 (with Marom, A., McCullagh, J., Sinitsyn, A. and Hedges, R.): Single amino acid radiocarbon dating of Upper Palaeolithic modern humans. *PNAS*, doi:10.1073/pnas.1116328109

### Linda Hulin

2011: Pragmatic technology: issues in the interpretation of Libyan material culture. In Duistermaat, K. and Reguluski, I. (eds.), *Intercultural Contacts in the Ancient Mediterranean* (Leuven, Orientalia Lovaniensia Analecta 202), 101–14.

2012: Conversations between objects: ambience and the Egyptian ceramic world at Beth Shan. In Bader, B. and Ownby, M.F. (eds.), *Functional Aspects of Egyptian Ceramics within their Archaeological Context* (Leuven, Orientalia Lovaniensia Analecta 217), 351–71.

### Zena Kamash

2012: Towards an archaeology of science: reuniting theories of matter and material culture. *Archaeological Review from Cambridge* 27(1), 140–54.

2012: Irrigation technology, society and environment in the Roman Near East. *Journal of Arid Environments*, doi:10.1016/j.jaridenv.2012.02.002

2012: An exploration of the relationship between shifting power, changing behaviour and new water technologies in the Roman Near East. *Water History* 4(1), 79–93.

### Jane Kershaw

2011: Vikingernes bosættelse i England. *Skalk* June, 18–26.

2011: *Viking-Age Scandinavian Art Styles and their Appearance in the British Isles. Part 2: Late Viking-Age Art Styles* (Finds Research Group Datasheet).

### Christine Lane

2011 (with Blockley, S.P.E., Lotter, A.F. and Bronk Ramsey, C.): Tephrochronology and absolute centennial scale synchronisation of European and Greenland records for the last glacial to interglacial transition: a case study of Soppensee and NGRIP. *Quaternary International* 246, 145–56. doi:10.1016/j.quaint.2010.11.028

2012 (with Blockley, S.P.E., Lotter, A.F., Finsinger, W., Filippi, M.L. and Matthews, I.P.): A regional tephrostratigraphic framework for central and southern European climate archives during the Last Glacial to Interglacial Transition: comparisons north and south of the Alps. *Quaternary Science Reviews* 36, 50–8. doi:10.1016/j.quascirev.2010.10.015

2012 (with Blockley, S.P.E., Mangerud, J., Smith, V.C., Lohne, Ø.S., Tomlinson, E.L., Matthews, I.P. and Lotter, A.F.): Was the 12.1 ka Icelandic Vedde Ash one of a kind? *Quaternary Science Reviews* 33, 87–99. doi:10.1016/j.quascirev.2011.11.011

2012 (with de Klerk, P. and Cullen, V.L.): A tephrochronology for the Lateglacial vegetation record of Endinger Bruch, Vorpommern. *Journal of Quaternary Science* 27, 141–9. doi:10.1002/jqs.1521

2012 (with Lowe, J., Barton, N., Blockley, S., Bronk Ramsey, C., Cullen, V.L., Davies, W., Gamble, C., Grant, K., Hardiman, M., Housley, R., Lee, S.,

Lewis, M., MacLeod, A., Menzies, M., Müller, W., Pollard, M., Price, C., Roberts, A.P., Rohling, E.J., Satow, C., Smith, V.C., Stringer, C.B., Tomlinson, E.L., White, D., Albert, P., Arienzo, I., Barker, G., Borić, D., Carandente, A., Civetta, L., Ferrier, C., Guadelli, J.-L., Karkanas, P., Koumouzelis, M., Müller, U.C., Orsi, G.O., Pross, J., Rosi, M., Shalamanov-Korobar, L., Sirakov, N. and Tzedakis, P.C.): Volcanic ash layers illuminate the resilience of Neanderthals and early modern humans to natural hazards. *Proceedings of the National Academy of Science*, doi:10.1073/pnas.1204579109

### Julia Lee Thorp

2011 (with Mitchell, P.J., Plug, I., Bailey, G.B., Charles, R., Esterhuysen, A., Parker, A.G. and Woodborne, S.): Fishing at the Place of the Tobacco Plants: a high-resolution open-air record of late Holocene hunter-gatherers from highland Lesotho. *Antiquity* 85, 1225–42.

2011 (with Pellegrini, M. and Donahue, R.E.): Exploring the variation of the d18Op and d18Oc relationship in enamel increments. *Palaeogeography, Palaeoclimatology, Palaeoecology*, doi:10.1016/j.palaeo.2011.02.023

### Gary Lock

2011: Hillforts, emotional metaphors, and the good life: a response to Armit. *Proceedings of the Prehistoric Society* 77, 355–62.

2011 (with Pouncett, J.): Modelling colluviation: land use and landscape change in the South Cadbury Environs. In Jerem, E., Redó, F. and Szeverényi, V. (eds.), *On the Road to Reconstructing the Past. Computer Applications and Quantitative Methods in Archaeology. Proceedings of the 36th International Conference, Budapest, April 2–6, 2008* (Budapest, Archaeolingua Foundation), 240–8.

2012 (with Wu, M.-C.): The spatial construct of social relations: human interaction and modelling agency. In Chrysanthi, A., Flores, P.M. and Papadopoulos, C. (eds.), *Thinking Beyond the Tool. Archaeological Computing and the Interpretive Process* (Oxford, BAR Int. Ser. 2344), 88–102.

### Peter Mitchell

2011 (with Plug, I., Bailey, G.B., Charles, R., Esterhuysen, A., Lee Thorp, J.A., Parker, A.G. and Woodborne, S.): Fishing at the Place of the Tobacco Plants: a high-resolution open-air record of late Holocene hunter-gatherers from highland Lesotho. *Antiquity* 85, 1225–42.

### Philipp Niewöhner

2011: The riddle of the market gate. Miletus and the character and date of the earlier Byzantine fortifications of Anatolia. In Dally, O. and Ratté, C. (eds.), *Archaeology and the Cities of Asia Minor in Late Antiquity* (Ann Arbor, Michigan, Kelsey Museum Publication 6), 103–22.

2011: Who is afraid of the fall of Rome? Prosperity and the end of antiquity in central western Anatolia. In Bilgen, A.N. and Von den Hoff, R. (eds.), *Archaeological Research in Western Central Anatolia* (Kütahya), 164–83.

2011: Germia and vicinity. Western Galatia during the Roman and Byzantine periods. *Araştırma Sonuçları Toplantısı* 28 (2010), I, 47–66.

- 2011 (with Prochaska, W.): Konstantinopolitanisches Formenrepertoire in Mazedonien. Zur Bischofskirche von Stobi und den Marmorbrüchen von Prilep. *Istanbul Mitteilungen* 61, 433–9.
- 2011 (with Stümpel, H., Bariş, Ş., Paşteka, R. and Rabbel, W.): A newly discovered Byzantine church in Iznik/Nicaea. In Şahin, M. (ed.), *Uluslararası İznik I. Konsil Senato Sarayının Lokalizasyonu Çalıştayı* (Bursa), 105–27.

### Michael Petraglia

- 2011: Archaeology: trailblazers across Arabia. *Nature* 470, 50–1.
- 2011 (with Alsharekh, A., Crassard, R., Drake, N., Groucutt, H., Parker, A.G. and Roberts, R.G.): Middle Paleolithic occupation on a Marine Isotope Stage 5 lake-shore in the Nefud Desert, Saudi Arabia. *Quaternary Science Reviews* 30, 1555–9.
- 2012 (with Ditchfield, P., Jones, S., Korisettar, R. and Pal, J.N.): The Toba volcanic super-eruption, environmental change, and hominin occupation history in India over the last 140,000 years. *Quaternary International* (The Toba Super-eruption Special Volume) 258, 119–34.
- 2012 (ed. with Korisettar, R. and Pal, J.N.): *The Toba Super-Volcanic Eruption of 74,000 Years Ago: Climate Change, Environments, and Evolving Humans*. *Quaternary International* (The Toba Super-eruption Special Volume) 258.

### Thomas Pryce

- 2011: XIX Technical analysis of Bronze Age Ban Non Wat copper-base artefacts. In Higham, C.F.W. and Kijngam, A. (eds.), *The Excavation of Ban Non Wat: The Bronze Age* (Bangkok, The Fine Arts Department), 489–98.
- 2011 (with Brauns, M., Chang, N., Pernicka, E., Pollard, M., Ramsey, C., Rehren, T., Souksavady, V. and Sayavongkhamdy, T.): Isotopic and technological variation in prehistoric primary Southeast Asian copper production. *Journal of Archaeological Science* 38, 3309–22.
- 2011 (with Pollard, M., Martinón-Torres, M., Pigott, V.C. and Pernicka, E.): Southeast Asia's first isotopically-defined prehistoric copper production system: when did extractive metallurgy begin in the Khao Wong Prachan Valley of Central Thailand? *Archaeometry* 53, 146–63.
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### Christopher Ramsey

- 2011 (with Bayliss, A., van der Plicht, J., McCormac, G., Healy, F. and Whittle, A.): Towards generational time-scales: the quantitative interpretation of archaeological chronologies. In Whittle, A., Healy, F. and Bayliss, A. (eds.), *Gathering Time: Dating the Early Neolithic Enclosures of Southern Britain and Ireland* (Oxford), 17–59.
- 2011 (with Ostapkowicz, J., Wiedenhoef, A., Ribechini, E., Wilson, S., Brock, F. and Higham, T.): 'Treasures of

black wood, brilliantly polished': five examples of Taíno sculpture from the tenth–sixteenth century Caribbean. *Antiquity* 85, 942–59.

- 2011 (with Staff, R.A., Bryant, C.L., Brock, F., Payne, R.L., Scholaut, G., Marshall, M.H., Brauer, A., Lamb, H.F., Tarasov, P., Yokoyama, Y., Haraguchi, T., Gotanda, K., Yonenobu, H., Hakagawa, T. and Suigetsu 2006 Project members): New 14C determinations from Lake Suigetsu, Japan, 12,000 to 0 cal BC. *Radiocarbon* 53(3), 511–28.
- 2011 (with Wagner, M., Wu, X., Tarasov, P., Aisha, A., Schultz, M., Schmidt-Schultz, T. and Gresky, J.): Radiocarbon-dated archaeological record of early first millennium B.C. mounted pastoralists in the Kunlun Mountains, China. *PNAS*, early edition, doi:10.1073/pnas.1105273108
- 2012 (with Denham, T. and Specht, J.): Dating the appearance of Lapita pottery in the Bismarck Archipelago and its dispersal to Remote Oceania. *Archaeology in Oceania* 47, 39–46.

### Jessica Rawson

- 2011: *Ancestors and Eternity, Essays on Chinese Archaeology and Art* (in Chinese *Zuxian yu yongheng*) (Beijing).
- 2012: The Han Empire and its northern neighbours: the fascination of the exotic. In Lin, J.C.S. (ed.), *The Search for Immortality: Tomb Treasures of Han China* (New Haven and London), 23–36.
- 2012: Inside out: creating the exotic within early Tang dynasty China in the seventh and eighth centuries. *World Art* 2(1), 25–45.

### Damian Robinson

- 2011 (ed. with Wilson, A.I.): *Maritime Archaeology and Ancient Trade in the Mediterranean* (Oxford, OCMA Monograph 6).

### Mark Robinson

- 2012: Macroscopic plant and invertebrate remains. In Hayman, G., Jones, P. and Poulton, R., *Settlement Sites and Sacred Offerings. Prehistoric and Later Archaeology in the Thames Valley, near Chertsey* (Surrey, Surrey Archaeological Unit), 180–4.
- 2012: Carbonised plant remains. In Hammond, S. and Preston, S., *Excavation of a Roman landscape and prehistoric features at Elsenham Quarry, Elsenham, Essex*. *Essex Society for Archaeology and History* 1, 41–3.
- 2012: Charred plant remains. In Preston, S., *Archaeological Investigations in Surrey, 1997–2009* (Reading, Thames Valley Archaeological Services Monograph 11), 196–9.

### Rick Schulting

- 2011: The radiocarbon dates from Tullahedy. In Cleary, R.M. and Kelleher, H. (eds.), *Excavations at Tullahedy, Co. Tipperary, Neolithic Settlement in North Munster* (Cork), 145–61.
- 2011 (with Armit, I., Knüsel, C. and Shepherd, I.): Death, decapitation and display? The Bronze and Iron Age human remains from the Sculptor's Cave, Covesea, NE Scotland. *Proceedings of the Prehistoric Society* 77, 251–78.



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### J.-L. Schwenninger

- 2011 (with Bennett, J.A., Brown, A.G. and Rhodes, E.J.): Holocene channel changes and geoarchaeology of the Exe River, Devon, UK, and the floodplain paradox. *Special Paper of the Geological Society of America* 476, 135–52.
- 2012 (with Briant, R., Bates, M.R., Marshall, G.D. and Wenban-Smith, F.F.): Terrace reconstruction and long profile projection: a case study from the Solent river system near Southampton, England. *Proceedings of the Geologists' Association* 123, 438–49.
- 2012 (with Briant, R.M., Kilfeather, A.A., Parfitt, S., Penkman, K.E.H., Preece, R.C., Roe, H.M., Wenban-Smith, F.F. and Whittaker, J.E.): Integrated chronological control on an archaeologically significant Pleistocene river terrace sequence: the Thames-Medway, eastern Essex, England. *Proceedings of the Geologists' Association* 123, 87–108.
- 2012 (with Deschodt, L., Salvador, P.G. and Feray, P.): Transect partiel de la plaine de la Scarpe (Bassin de l'Escaut, Nord de La France). Stratigraphie et évolution paléogéographique du Pléiniglaciaire Supérieur à L'Holocène récent. *Quaternaire* 23(1), 87–116.
- 2012 (with Harding, P., Bridgland, D.R., Allen, P., Bradley, P., Grant, M., Peat, D., Scott, R., Westaway, R. and White, T.S.): Chronology of the Lower and Middle Palaeolithic in NW Europe: developer funded investigations at Dunbridge, Hampshire, southern England. *Proceedings of the Geologists' Association* 123, 584–607.

### Bert Smith

- 2011: Marble workshops at Aphrodisias. In D'Andria, F. and Romeo, I. (eds.), *Roman Sculpture in Asia Minor* (Portsmouth, R.I., *Journal of Roman Archaeology* Supplement 80), 62–76.
- 2012: Aphrodisias, 2010. 33. *Kazı Sonuçları Toplantısı* (Ankara) IV, 25–58.
- 2012: The second lives of classical monuments at Aphrodisias. In Stephanidou-Tiveriou, T. (ed.), *Klasikē paradosē kai veōterika stoicheia stēn plastikē tēs rōmaikēs Elladas (Roman Sculpture in Greece: Classical Tradition and New Elements)* (Thessaloniki), 57–73.
- 2012: Defacing the gods at Aphrodisias. In Dignas, B. and Smith, R.R.R. (eds.), *Historical and Religious Memory in the Ancient World* (Oxford), 283–326.
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### Victoria Smith

- 2011 (with Isaia, R. and Pearce, N.J.G.): Tephrostratigraphy and glass compositions of post-15 kyr Campi Flegrei

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- 2011 (with Pearce, N.J.G., Matthews, N.E., Westgate, J.A., Petraglia, M.D., Haslam, M., Lane, C.S., Korisettar, R. and Pal, J.N.): Geochemical fingerprinting the widespread Toba tephra using biotite compositions. *Quaternary International* 246, doi:10.1016/j.quaint.2011.05.012
- 2012 (with Matthews, N.E., Costa, A., Durant, A.J., Pyle, D.M. and Pearce, N.J.G.): Ultra-distal tephra deposits from super-eruptions: examples from Toba, Indonesia and the Taupo Volcanic Zone, New Zealand. *Quaternary International* (The Toba Super-eruption Special Volume) 258, 54–79.
- 2012 (with Matthews, N.E., Pyle, D.M., Wilson, C.J.N., Huber, C. and van Hinsberg, V.): Quartz zoning and the pre-eruptive evolution of the ~340 ka Whakamaru magma systems, New Zealand. *Contributions to Mineralogy and Petrology* 163, 87–107.

### Letty ten Harkel

- 2011: De Vikingen en de Zeeuwse ringwalburgen: enkele vraagstukken. *Madoc: Tijdschrift over de Middeleeuwen* 25(3), 161–72.
- 2011 (with Gosden, C.): English landscapes and identities. The early medieval landscape: a perspective from the past. *Medieval Settlement Research* 26, 1–10.
- 2012 (with Gosden, C., Cooper, A., Creswell, M., Green, C., Kamash, Z., Morley, L., Pybus, J. and Xiong, X.): The English Landscape and Identities Project. *Antiquity* 86 (332). Available at <http://www.antiquity.ac.uk/projgall/gosden332/>
- 2012 (with Gosden, C., Cooper, A., Creswell, M., Green, C. and Morley, L.): Understanding the relationship between landscape and identity: a case study from Dartmoor and the Tamar Valley, Devon, c. 1500 BC–AD 1086. *eTopoi: Journal for Ancient Studies*. Available at <http://journal.topoi.org/index.php/etopoi/article/view/105>

### Andrew Wilson

- 2011 (ed. with Robinson, D.): *Maritime Archaeology and Ancient Trade in the Mediterranean* (Oxford, OCMA Monograph 6).
- 2012 (ed. with Bowman, A.K.): *Settlement, Urbanisation, and Population* (Oxford, Oxford Studies in the Roman Economy 2).

# Major Grants 2011–2012

## **Nick Barton**

*Earliest symbolism and cemeteries in prehistoric North Africa – Research Fellowship* (Leverhulme Trust)

## **Chris Gosden**

*EngLAID – Landscape and Identities: The case of the English landscape 1500 BC–AD 1086* (European Research Council)

## **Michael Haslam**

*PRIMARCH* (European Research Council)

## **Thomas Higham**

*A forensic investigation of bones found in the reliquary of the Monastery of John the Forerunner and the Baptist, on St Ivans Island, Bulgaria* (National Geographic Society)

## **Thomas Higham**

*Seeing genes in space and time – Woolly mammoth* (Natural Environment Research Council)

## **Jane Kershaw**

*The bullion economy of Viking England – Postdoctoral Fellowship* (British Academy)

## **Christine Lane**

*Tephra records of east African changing environments* (Leverhulme Trust)

## **Julia Lee-Thorp**

*Evaluating hunter-gatherer subsistence strategies in Late-Glacial central Italy* (Leverhulme Trust)

## **Julia Lee-Thorp**

*Ranging behaviour of *Equus* and *Cervus** (British Academy)

## **Julia Lee-Thorp**

*Dietary ecology of cross-river gorillas* (Leakey Foundation)

## **Gary Lock**

*An atlas of hillforts in Britain and Ireland* (with Edinburgh University) (Arts and Humanities Research Council)

## **Peter Mitchell**

*At the transition: Resolving human/climate relationships across the Pleistocene/Holocene boundary in southern Africa* (Leverhulme Trust)

## **Michael Petraglia**

*Hominin dispersals and Palaeolithic archaeology at the Jubbah Palaeolake, Saudi Arabia* (Leakey Foundation)

## **Michael Petraglia**

*PALAEODESERTS: Climate change and hominin evolution in the Arabian Desert* (European Research Council)

## **Mark Pollard**

*Chemical structure and new behaviour: A new model for prehistoric metallurgy* (Leverhulme Trust)

## **Mark Pollard**

*Rewriting the chronology of the Neolithic to Bronze Age in Iran* (British Academy)

## **Mark Pollard**

*Mass migration and apartheid in Anglo-Saxon Britain? An ancient DNA re-evaluation* (Leverhulme Trust)

## **Mark Pollard**

*Transition to ironworking in ancient Cholcis* (National Geographic Society)

## **Oliver Pryce**

*The hunt for ancient metalworkers and the prehistory of the sub-Himalayan Silk Road in Nagaland, northeast India* (National Geographic Society)

## **Jessica Rawson**

*China and Inner Asia (c.1000–200 BC): Interactions that changed early China* (Leverhulme Trust)

# Lectures and Seminars

## Lectures

### Oxford Roman Economy Project Special Lecture

8 May Jean-Pierre Brun (Paris)  
*Roman water-mills in Tres Galliae and in Germania Superior*

### School of Archaeology Meyerstein Lecture 2012

24 May Tony Wilkinson (Durham)  
*Water supply and hydraulic landscapes in the Ancient Near East: an archaeological perspective*

### Other Special Lecture

6 June Mark Robinson  
*Sacrifices and offerings in the peristyle gardens of Pompeii*

## Seminars

### African Archaeology Seminar

29 November Mark McGranaghan  
*Foragers on the frontiers: /Xam hunter-gatherers in transition in the nineteenth century Cape Colony*

24 January Charles Arthur  
*Archaeologists and dam projects in Africa: whose side are we on?*

7 February Tim Forrsmann  
*Gathering dust: a look at foragers on the Mapungabwe landscape and a preliminary fieldwork report*

24 February Peter Mitchell  
*Hunter-gatherer archaeology in Southern Africa: an embarrassment of riches?*

### Ancient Architecture Discussion Group

3 February Tiffany Chezum  
*Funding of traditional temple construction in Ptolemaic and Roman Egypt*

10 February Alejandra Albuérne  
*An engineer's perspective on the Basilica of Maxentius in the Roman Forum*

17 February Lilly Withycombe-Taperell (Royal Holloway)  
*The Temple of Jupiter Tonans on the Capitoline hill in Augustan Rome: location and reconstruction*

24 February Chen Li  
*Origins of Chinese Han Dynasty (206 BC–AD 220) stone chamber tombs*

2 March Javier Martinez  
*Visigothic public architecture*

9 March Jen Thum  
*A painted Old Testament textile from Late Antique Egypt and its possible links to the program in the synagogue at Dura Europos*

### Ancient Maritime Worlds

25 October Brian Fahy  
*Cricket run or home run? Correlations between emporia and non-emporium based trade from the wreck of the Lena Shoal*

8 November Damian Robinson  
*Shipwreck 43: a 5th century BC vessel from the port of Heracleion, Egypt*

22 November Ania Kotarba-Morley  
*Maritime trade in the Arabian Sea – ocean of questions*

17 January Robert Barnes  
*Maritime background to Eastern Indonesian population and history*

24 January Cyprian Broodbank (UCL)  
*Before 'corruption': the making of the Middle Sea (jointly with Barbarian Archaeology)*

31 January Giles Richardson  
*Extraordinary vessels: moving the obelisks of antiquity*

14 February Greg Votruba  
*anchors outside of the Mediterranean (until c.1500 CE) (jointly with Barbarian Archaeology)*

6 March Mark Horton (Bristol University)  
*Ancient geographies and modern archaeology: understanding East Africa 2000 years ago (jointly with African Archaeology Seminar)*



- 8 May Katia Schorle and Candace Rice  
*The development of maritime infrastructure and its effects on trade: Gaul and Italy between 200 BC and AD 200*
- 22 May Leif Isaksen (Southampton)  
*Geography, chorography, and the sources of Ptolemy's Geōgraphikē Hyphēgēsis*
- 5 June Veronice Walker Vadillo  
*Nautical Angkor: an iconological study of Khmer vessels from the Angkor era*

### Archaeobotany Discussion Group

- 24 October Amy Bogaard  
*Coping with complexity: exploring variation in plant-related activity at Neolithic Çatalhöyük, central Anatolia*
- 7 November Erica Rowan and Lisa Lodwick  
*Figuring out Roman plant food consumption: contrasting archaeobotanical data from Herculaneum and Silchester*
- 21 November Alison Crowther  
*Archaeobotany in coastal East Africa: new insights into agriculture, forager-farmer interactions, and biological exchanges across the Indian Ocean*
- 31 January Ferran Antolin (Universitat Autònoma de Barcelona)  
*Formation processes of charred cereal grain assemblages and the potential of archaeobotanical studies to contribute to taphonomic discussions*
- 14 February Mark McKerracher  
*Saxon cereal cultivation: interim results from the Thames valley*
- 28 February Jade Whitlam (University of Reading)  
*The Central Zagros Archaeological Project*
- 30 April Ferran Antolin (Universitat Autònoma de Barcelona)  
*New data on crop husbandry in the Early Neolithic lakeshore site of La Draga (Banyoles, Spain)*
- 21 May Ilaria Grimaldi  
*Biomolecular archaeology of taro (Colocasia esculenta) at Quseir al Qadim. Implications for Islamic trade*
- 11 June Dana Challinor  
*Charcoal analysis in developer-funded projects*

### Asian Archaeology, Art and Culture Seminar Series

- 2 November Dr Clare Harris  
*Locating Tibetan art: the ethics and aesthetics of the Younghusband Mission to Tibet 1903–4*
- 16 November Dr Wang Tao (SOAS)  
*Xia Nai and his London years: new evidence from his diary*
- 23 November Dr Nicole Coolidge Rousmaniere (Sainsbury Institute)  
*China for Japan, Chinese ceramics in medieval Japan and the formation of the Japanese porcelain industry*
- 29 November Professor Hirofumi Kato (Centre for Ainu and Indigenous Studies, Hokkaido University, Japan)  
*New excavations on Rebun Island – part of the new Baikal-Hokkaido Archaeological Project*
- 15 February Professor Daniel Waugh (University of Washington)  
*Mongolia's archaeological heritage: old and new approaches to understanding 'nomadic' empires*
- 29 February Dr Margaret Sax (British Museum)  
*The evolution of the technology of jade carving in China*
- 14 March Professor Mark Hudson (University of Western Kyushu, Japan)  
*The Ainu and hunter-gatherer studies*
- 2 May Rüdiger Krause (Goethe-University)  
*The Sintashta-culture and the metallurgy of the Eurasian steppe*
- 23 May Michael Sullivan  
*Chinese export ceramics in Southeast Asia and the Philippines: how it looked fifty years ago*
- 30 May Akira Matsuda (UEA)  
*Burial mounds and sense of place in Japan*

### Barbarian Prehistory Seminar Series

- 15 November Thomas Kiely (British Museum)  
*Archaeology, politics and commerce in late 19th century BC or 'How the Maroni Crater got to Oxford'*
- 28 February Dr Paul J. Lane (University of York)  
*Iron Age imageries and barbarian encounters: European prehistory's African past*

6 March Dr Jago Cooper (UCL)  
*Vulnerable island vs. resilient islanders: comparative archaeological narratives from the Pacific and Caribbean*

### Graduate Skills Seminar

4 November Introduction to teaching – Fiona Bradshaw  
*How to find teaching, and how to lead a tutorial*

11 November Kathryn Reusch  
*Human remains*

25 November Erica Rowan  
*Archaeobotany*

3 February Kathryn Reusch  
*Human bones*

8 February Ian Cartwright  
*Photographing small finds – an Introduction*

17 February Erika Nitsch and Jamie Anderson  
*Publishing and grant writing*

9 March Rachel Hesse  
*Introduction to zooarchaeology*

### Graduate Work in Progress

25 January Andreas Duering  
*From burials to settlements. A computer simulation of early medieval population numbers*

8 February Elizabeth Brophy  
*Looking at Cleopatra: the placement of statues of Ptolemaic Queen*

22 February Philippa Puzey-Broomhead  
*Desired landscapes and disappointing realities: Black Loyalist land petitions and land grants in late eighteenth century New Brunswick*

24 February Javier Martinez  
*Fieldwork methodology – an introduction on how to dig and set up a fieldwork project*

7 March Natasha Reynolds  
*The mid Upper Palaeolithic of Russia and Ukraine in its European context*

30 May Marlena Whiting  
*Accessing the Mesopotamian frontier in Late Antiquity: routes and logistics*

6 June Chelsea Budd  
*Early prehistory in the Dneiper Basin of the Ukraine: diet, dating, and reservoir effects*

13 June Carrie Wright  
*Calcium isotope analysis in archaeological science: working toward a new approach for detecting milk consumption in mammals*

### Greek Archaeology Group

13 October Chrysanthi Gallou (Nottingham)  
*Mycenaean chamber tombs at Epidaurus Limera in south-eastern Laconia*

27 October Debbie Challis (Petrie Museum)  
*Defining ‘Greek’ at the Petrie Museum of Egyptian Archaeology*

10 November Matthew Haysom (Cambridge)  
*Archaeology as evidence for long-term religious change: a case study from Crete*

24 November Janett Morgan (Royal Holloway)  
*An absence of evidence or evidence of absence? Mobility, status and housing in early Greece*

19 January Jane Anderson  
*Social standing: body language and status in Hellenistic art*

2 February Lin Foxhall (Leicester)  
*Athletic space in Archaic and Classical Greece*

16 February Isabelle Algrain  
*New lights on the potter’s work: the case of the Group of the Negro Alabastra*

1 March Nigel Spivey (Cambridge)  
*Homer and the Muses: a sculptural account*

26 April Oliver Dickinson (Durham)  
*The ‘Coming of the Greeks’ and all that*

10 May Robin Osborne (King’s College, Cambridge)  
*Intoxication and sociality: the symposium in the ancient Greek world*

24 May Gauthier Grousset (Clare College, Cambridge)  
*Representing Blacks on Attic vases: means and purpose*

7 June Dyfri Williams (British Museum)  
*‘Up close and personal’: revisiting the Parthenon’s East Pediment*

### Medieval Archaeology Seminar

17 October Mark Pollard  
*The Viking mass burial at St John’s College, Oxford*

- 31 October Letty ten Harkel  
*Material culture and urbanisation: the case of Viking-Age Lincoln*
- 21 November Ivo Stefan (Charles University)  
*Great Moravia as a socio-economic system. The emergence and collapse of an early medieval polity in Central Europe*
- 23 January Maureen Mellor  
*The archaeology of stuff: scorched interiors from mid-Saxon to Late Medieval*
- 6 February Eleanor Standley  
*Dress accessories and their role in everyday life in two regions of Britain, c.AD 1300–1700*
- 20 February Chris Fern  
*The Anglo-Saxon cemetery at Tranmere House (Sutton Hoo)*
- 27 February Hajnalka Herold  
*Between the Carolingian West and the Byzantine East: fortified elite settlements of the 9th and 10th centuries AD in Central Europe*
- 5 March Isaac Sastre-de Diego  
*Early Spanish churches through their liturgical sculpture*
- 6 February Dr Jane Anderson (British Museum)  
*Fresh from the field: recent archaeological discoveries in the Berber-Abidiya region of Sudan*
- 13 February Dr Gabor Thomas (University of Reading)  
*Excavations at Lyminge and Bishopstone, Kent*
- 20 February Dr Tim Williams (Institute of Archaeology, UCL)  
*The Silk Road and excavations at Merv, Turkmenistan*
- 27 February Dr Sally Crawford and Dr Katharina Ulmschneider  
*Refugees, Nazis and archaeology: a war-time archive from the Institute of Archaeology, Oxford*
- 30 April Jack Carlson  
*Imperial power and the Imperial tombs of Rome and Qin-Han Chin*
- 14 May Paul Collins  
*Oxford in ancient Mesopotamia: the excavations at Kish*
- 21 May Tara-Jane Sutcliffe (English Heritage)  
*Mapping Millennia: The North York Moors National Park Mapping Programme*

### Oxford University Archaeological Society

- 24 October Dr Clive Waddington (Archaeological Research Services)  
*Fin Cop: a hillfort at war*
- 7 November Dr Chris Ferguson  
*Landscapes of life and religion in Anglo-Saxon Northumbria*
- 23 November Dr Cameron Petrie (University of Cambridge)  
*Land, water and settlement: approaching urbanisation in north-west India from the ground up*
- 28 November Dr Gill Hey (Oxford Archaeology)  
*New light on ancient (prehistoric) Dorchester-on-Thames*
- 23 January Dr Eleanor Standley  
*Trinkets and charms: the use and meaning of dress accessories from two British regions, c.1300–1700 AD*
- 30 January Liam McNamara  
*The redeveloped Egyptian Galleries at the Ashmolean Museum*
- 28 May Matt Edgeworth (Leicester)  
*The archaeology of rivers*

### Palaeolithic and Quaternary Seminar

- 13 October Michael Haslam  
*Humans, apes and monkeys: reuniting the primate family through archaeology*
- 20 October Brian Stewart (University of Cambridge)  
*Did African moderns master 'hard habitats' before leaving the continent? A perspective from the South*
- 27 October Huw Groucutt  
*The prehistory of the Arabian Peninsula: deserts, dispersals and demography*
- 3 November Penny Spikins (University of York)  
*'I'll get by with a little help from my friends': moral emotions and the Middle–Upper Palaeolithic transition*
- 10 November Andrew Garrard (UCL)  
*Epipalaeolithic and Neolithic communities at the steppe and forest margins of the Levantine corridor*



- 24 November Mark Thomas (UCL)  
*Modelling the spread of Aurignacian material culture: were the first modern humans in Europe ethno-linguistically structured?*
- 1 December Fernando Sanchez (Rovira i Virgili University)  
*Geospatial models for the analysis of land-use patterns among Pleistocene hominid communities: the case of the Sierra de Atapuerca (Burgos, Spain)*
- 19 January Peter Mitchell  
*The drought that wasn't: developing the archaeology of Marine Isotope Stage 3 in Southern Africa*
- 26 January Cassian Bramham Law  
*To boldly go: tracing the final Palaeolithic re-occupation of the North European Plain*
- 2 February Geoff Smith (UCL)  
*New data from old bones: a new project investigating the Neanderthal site of La Cotte de St Brelade, Jersey*
- 9 February Robyn Inglis (University of York)  
*80,000 years of dust? Site formation and environmental change during the MSA and LSA at the Haua Fteah, Libya*
- 16 February Ryan Rabett (University of Cambridge)  
*Late Pleistocene to Mid-Holocene settlement of sub-coastal uplands in northern Vietnam*
- 23 February Philip Nigst (University of Cambridge)  
*The Aurignacian of Willendorf II*
- 1 March Chris Stringer (Natural History Museum)  
*Some current issues in modern human origins research*
- 8 March Iza Romanowska (University of Southampton)  
*Looking for the Lower Palaeolithic of Central and Eastern Europe: history of research, agent based modelling of the dispersal, and the loess hypothesis*
- 26 April James Cole (University of Southampton)  
*Hominin cognitive and behavioural complexity in the Pleistocene: a new assessment through identity, intentionality and visual display*
- 3 May Fiona Coward (Royal Holloway)  
*How stuff made us: material engagement in the evolution of human social networks*
- 10 May Michael Petraglia  
*The Palaeodeserts Project: climate change and human occupation in the Arabian Peninsula*
- 17 May C. Reid Ferring (University of North Texas)  
*Lower Pleistocene site formation and hominin occupations at Dmanisi in the Georgian Caucasus*
- 31 May Huw Barton (Leicester)  
*Foragers in the late-Pleistocene rain forests of Borneo*
- 7 June Paul Pettitt (University of Sheffield)  
*The aesthetics of surfaces. New research on hand stencils in French and Spanish cave art from experiment to observation*
- 14 June Bruce Bradley (Exeter)  
*Across Atlantic ice: the origin of America's Clovis culture*
- Prehistoric and Early Greece Graduate Seminar**
- 18 October Sarah Finlayson (University of Sheffield)  
*The meandering Paths of Writing in the Bronze Age Aegean*
- 1 November Barry Molloy (University of Sheffield)  
*Malice in Wonderland: the role of warfare in Cretan societies of the Bronze Age*
- 15 November Sam Farnham (University of Nottingham)  
*Pollution and purity in the Corinthia during the Early Iron Age*
- 29 November Emma Johnston (University of Bristol)  
*Recreating the tephra dispersal pattern and seasonality of the Bronze Age eruption of Santorini (Greece)*
- 24 January Kristin Leith (University College London)  
*The shaft grave Penthisileia*
- 7 February Vana Orfanou (UCL)  
*Researching for the EIA Greece: bronze votive offerings from the sanctuary of Enodia at ancient Pherae*
- 21 February Eleftheria Pappa (VU University Amsterdam)  
*Greek trade in the West? New finds and chronologies in the Iberian Peninsula*
- 6 March Joanna Palermo  
*Iron production in the Eastern Mediterranean: was Cyprus first?*

- 1 May Petros Kounoukias (University of Bristol)  
*The Late Helladic IIIC Middle–Early proto-geometric settlement at Kynos in central Greece*
- 15 May Alexandra Markou (King's College, London)  
*Mycenaean ritual wares in Late Cypriote context: comparing Enkomi and Kition*
- 29 May Eleni Karouzou  
*Changes in settlement patterns in coastal Thessaly, ca. 1200–900 BC*
- 12 June Daniel Sakellariou  
*The Islands of the Cyclades from the Bronze Age to the Early Iron Age: is the geographical term 'Cyclades' misleading for this period?*
- and Vera Sichelschmidt  
*Gods, heroes or humans? The early Archaic kolossos of the Naxians on Delos*
- RLAHA Seminar Series**
- 19 October Christine Lane (RLAHA)  
*Volcanic ash tie-lines in the Mediterranean Palaeolithic record*
- 26 October Patrik Flammer (RLAHA)  
*Molecular Archaeoparasitology*
- 2 November James Blinkhorn (RLAHA)  
*Uncovering a landscape buried by the super-eruption of Toba, 74,000 years ago*
- 9 November Isabella von Holstein (University of York)  
*Stable isotope analysis of archaeological wool samples*
- 16 November Professor Gabriele Macho (Institut Català de Paleontologia (ICP))  
*Hominin dietary ecology: how can we know and why does it matter*
- 23 November Professor Tom Higham (RLAHA)  
*On the trail of John the Baptist: excavations on the island of Sveti Ivan, Bulgaria*
- 18 January Simon Blockley (Department of Geography, Royal Holloway)  
*Star Carr and all that: environmental reconstruction and Late-glacial and early Holocene human occupation in North Western Europe*
- 25 January Simion McGrory (Department of Archaeology, University of York)  
*Dairy cattle, dentists and DNA: combining biomolecules and zooarchaeology to reconstruct ancient husbandry systems*
- 8 February Dr Hannes Schroeder (Centre for GeoGenetics, University of Copenhagen)  
*Back to the roots: targeted resequencing of full mitochondrial genomes yields insights into the ancestral origins of enslaved Africans*
- 22 February Professor Achim Brauer (GFZ German Research Centre for Geosciences, Potsdam)  
*Rapid climate changes recorded in varved lake sediments*
- 29 February Dustin White (School of Archaeology, University of Oxford)  
*The Baikal-Hokkaido Archaeology Project – Holocene hunter-gatherers of NE Asia*
- 7 March Dr Beatrice Demarchi (Department of Archaeology, University of York)  
*Breaking the egg: new perspectives on amino acid racemisation dating*
- 25 April Mike Haslam (RLAHA)  
*Pounding tools project*
- 2 May Keith Wilkinson (University of Winchester)  
*Middle-Upper Pleistocene geoarchaeology and geochronology of the Razdan Valley, central Armenia*
- 9 May Robert Hedges (RLAHA)  
*Stable isotopes (C&N) and Neolithic subsistence; what we have learnt from the LBK project*
- 23 May Katerina Douka (RLAHA)  
*Dating the arrival of the first modern humans in southern Europe using novel radiocarbon methods*
- Roman Discussion Forum**
- 12 October Dr Ioana Oltean (University of Exeter)  
*Defining rurality in ancient Lower Moesia: a spatial approach*
- 19 October Erik Carlsson-Brandt (University of Santiago de Compostela)  
*An archaeological approach to northwestern Iberia, rural settlement in Galicia during the Roman period*
- 26 October Dr Michael Squire (King's College, London)  
*Visualising and verbalising epic on the Tabulae Iliacae*
- 2 November Dr Ursula Quatember (Österreichisches Archäologisches Institut)  
*Was the Temple of Hadrian truly Hadrian's temple? New research on the monument on Curetes Street in Ephesos*

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| 9 November  | Dr Meaghan Mcevoy<br><i>On the different circumstances (and their political implications) of imperial baptisms in the 4th and 5th centuries</i>                                  | 29 February | Dr Arthur Segal (University of Haifa)<br><i>Hippos-Sussita of the Decapolis: the town plan and architecture of a Roman provincial city</i>    |
| 16 November | Dr Jas Elsner<br><i>Art and rhetoric in Roman culture</i>  | 7 March     | Dr Janet DeLaine<br><i>Hard truths about the economy of Roman construction – material, technology and scale; or, the trouble with columns</i> |
| 23 November | Dr Maaïke Groot (VU University Amsterdam)<br><i>Livestock for sale: market-driven developments in animal husbandry in the civitas Batavorum</i>                                  | 25 April    | Professor Jean-Pierre Brun (College de France)<br><i>The archaeology of water-mills in Roman Italy</i>  |
| 30 November | Dr Anthony King (University of Winchester)<br><i>Deposition chronologies for samian ware (terra sigillata) in the late 2nd to mid 3rd centuries AD, and their interpretation</i> | 2 May       | Andrew Wilson<br><i>Water, nymphs and ‘the place of palms’: the Hadrianic Baths and South Agora at Aphrodisias</i>                            |
| 18 January  | Professor Chris Howgego<br><i>The monetization of temperate Europe</i>   | 9 May       | Jean-Pierre Brun (Paris)<br><i>Roman water-mills in Gallia Narbonensis</i>  |
| 25 January  | Kristine Merriman<br><i>The preservation and interpretation of organic residues in archaeology</i>   | 16 May      | Annalisa Marzano (Reading)<br><i>Organization and methods of large-scale fishing in the Roman Mediterranean</i>                               |
| 8 February  | Dr James Andrews (University of Reading)<br><i>Up the wooden hill: rented apartments at Herculaneum and their impact on the urban fabric</i>                                     | 23 May      | Dr Ross Burns (Sydney)<br><i>Turning the city inside out: the revolution in urban landscapes in the East under Rome</i>                       |
| 15 February | Meike Weber (University of Reading)<br><i>Quo vadis, terra sigillata? – Analyzing samian trade patterns in the north-western Roman provinces</i>                                 | 6 June      | Georgy Kantor<br><i>Mediterranean trade in the province of Lycia-Pamphylia: looking at documentary evidence</i>                               |
| 22 February | Nicola Barham (University of Chicago)<br><i>Vital form: reassessing the status of ornament in the Roman world</i>  | 13 June     | Greg Votruba<br><i>Greek and Roman anchors: classification, distribution, reconstruction and experimentation</i>                              |





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