



McDonald Institute
for
Archaeological
Research

*Annual
Report
2006–2007*

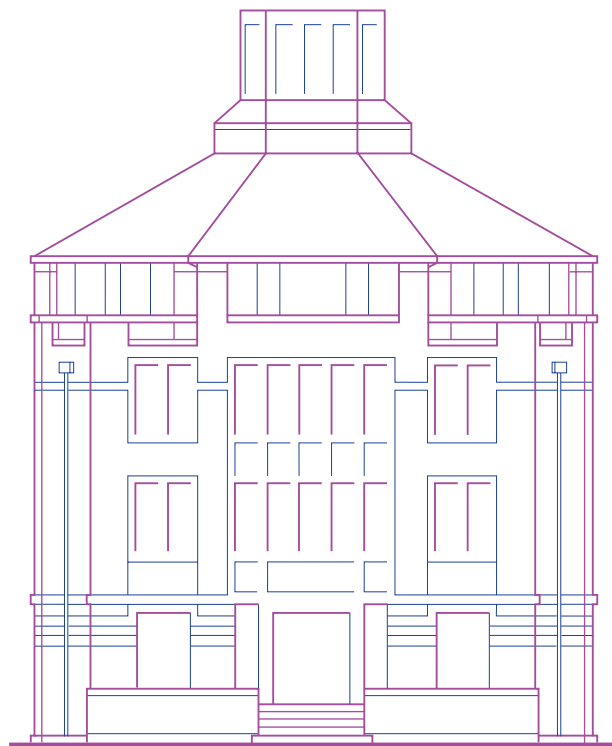






McDonald Institute for Archaeological Research

Annual Report 2006–2007



In 2006–2007 the Institute continued to provide invaluable support for the research of Cambridge’s large and diverse archaeological community (in the Institute, the Department of Archaeology, the Cambridge Archaeological Unit, the Leverhulme Centre for Human Evolutionary Studies, the Museum of Archaeology and Anthropology, and the Faculties of Classics, Continuing Education, and Oriental Studies) through its laboratories, project space, seminar facilities, research grants, and publications. Our overarching strategy is to promote archaeology at Cambridge as a discipline concerned with the entirety of the human career from early prehistory to the most recent past, combining innovative theory and practice across the humanities–science spectrum and drawing on active field programmes throughout the world to develop new research directions.

In support of this mission we hosted a typically diverse series of seminars, meetings, and conferences, the latter including on the archaeology of ritual (‘Cult Without Context’, December), medieval Suakin on the Red Sea (February), landscape and ethnicity in the eastern Mediterranean (March), rock art (May), Egyptian royal ideology (July), archaeological science (August), archaeogenetics (September), ancient seafaring (September), and the sapient mind (September).

In addition to an outstanding McDonald Lecture in December delivered by Professor Barry Cunliffe on cultural connections across the English channel in prehistory, in May we hosted a marvellous inaugural R.R. Inskeep Memorial Lecture delivered by Professor Carmel Schrire in which she wove Ray Inskeep’s lifetime contributions to African archaeology into an up-to-the-minute assessment of current trends and future directions.

The projects supported by our grants programme ranged from the effects of volcanic eruptions on Palaeolithic populations to Japanese Mesolithic rituals to Etruscan settlement in central Italy to the archaeology of European colonialism on the Cape Verde islands.

Two significant departures from the Institute during the year were the project base of Professor Ian Hodder’s Çatalhöyük project which moved to University College London in April, and the winding down of the Illicit Antiquities Research Centre at the end of September (see p. 23). The Institute has supported both these internationally acclaimed projects for nearly 10 years and wishes their members every success in the future.

Finally we welcome the Institute’s new Deputy Director, James Barrett, who strengthens Cambridge’s research portfolio with his expertise in both archaeozoology and medieval archaeology.

Graeme Barker (Director)

Events

The Eighteenth McDonald Lecture

The major public event in the Institute's diary during the academic year 2006–2007 was the McDonald Lecture held on 29 November 2006 in the Mill Lane lecture rooms. The speaker was Barry Cunliffe, Professor of European Archaeology at the Institute of Archaeology, University of Oxford. Professor Cunliffe's main interest is in first-millennium BC to early first-millennium AD European archaeology focusing on social and economic dynamics and the relationships between the Mediterranean world and 'barbarian' Europe. He provides a summary of his McDonald Lecture below.

Celts and Britons: Some Themes and Variations

In recent years there has been a lively, if sometimes rather shrill, debate about Celts and in particular whether or not the Britons can be referred to as Celtic, a debate which Patrick Sims-Williams has neatly characterized as 'Celtomania, Celtosceptism'. In the 1990s discussions focused largely on conventional philology and archaeology: lately genetics and the phylogenetic approach to philology have entered the arena. But as is so often the case at this formative phase of multidisciplinary debate, while the different disciplines are often cognizant of each other's literature they seldom engage in creative dialogue.

In this lecture we trace the history of thought reviewing the contributions made by each discipline. The story begins with the publication of Edward Lhuyd's *Archaeologia Britannica* in 1707 in which the author discussed the extant languages of the Atlantic fringe referring to them as 'celtic'. Views on the development of the Celtic languages led to the theory that they were developed in middle Europe and introduced into the British Isles by waves of invaders — a view formalized by John Rhys in 1884. This was accepted, largely without question, by archaeologists who thereafter spent much effort in interpreting the later prehistory of Britain and Ireland in terms of the linguistic model until the 1960s when invasion hypotheses came under intense scrutiny.

That the Celtic languages may have developed much earlier than was conventionally believed was first mooted by Miles Dillon in 1967 who suggested a Beaker origin. Recent studies of Celtic word lists using a phylogenetic approach (by Forster & Toth and Gray & Atkinson) favour an early origin for the language group in the Neolithic or Early Bronze Age, though other scholars are sceptical of the validity of this kind of dating since it takes little cognizance of contact-induced changes resulting from systems of exchange.

The great strength of archaeology is that it can demonstrate the extent and intensity of contact within a tight chronological framework. The lecture reviewed the evidence for contact along the Atlantic façade of Europe highlighting, through a study of material culture, the increasing intensity



Professor Barry Cunliffe and Professor Colin Renfrew at a reception following the Eighteenth McDonald Lecture.

of connectivity along the Atlantic sea-ways from the Mesolithic period until the Late Bronze Age by which time there is a remarkable similarity of culture from Iberia to the Shetlands with communities sharing not only material culture and technology but also belief and value systems. Recent DNA studies (independently presented by Oppenheimer, Sykes and McEvoy) add strong support to the view that the Atlantic communities were biologically interconnected from the Mesolithic period. It is argued, therefore, that it was within this constantly developing and intensifying maritime network that the Celtic language group developed, perhaps first as a lingua franca, and that by the Late Bronze Age it was spoken along much of the Atlantic zone and its riverine hinterland as the common language by those involved in the exchange of commodities and ideas. Subsequent disruptions in the Atlantic network after the eighth century BC led to some areas becoming isolated. This could provide a context to explain the appearance of the different language groups which philologists are able to distinguish. Archaeology has much to offer the continuing debate and should indeed set the agenda in a multidisciplinary study of the Britons and their language.

The R.R. Inskeep Lecture

The inaugural lecture in the R.R. Inskeep Memorial Lecture series took place on 17 May 2007 in the Mill Lane Lecture Rooms. This formed the first of a series of biennial lectures devoted to the memory of Dr Raymond Inskeep, supported by a benefaction from his wife, Adi Inskeep. Ray Inskeep was a lecturer in the Department of Archaeology at Cambridge in the late 1950s, and a member of St John's College. He subsequently went on to a distinguished career in the Archaeology of southern Africa, based first at the University of Cape Town and later at the University of Oxford.

The lecture was delivered by Professor Carmel Schrire, of the Department of Anthropology at Rutgers University, on 'The archaeology of the impact of European colonialism at the Cape of Good Hope' and was introduced by Dame Marilyn Strathern, William Wise Professor of Social Anthropology, and Mistress of Girton College, who studied archaeology and anthropology together with Professor Schrire at Cambridge, while they were both students at Girton College. The lecture was followed by a wine reception at the McDonald Institute.



Professor Carmel Schrire who delivered the inaugural R.R. Inskeep Memorial Lecture.

Seminars

The McDonald Institute Seminar Room is a focal point for supporting the research activities of archaeologists at the University of Cambridge. This past year it has hosted lectures, seminars, and meetings virtually on a daily basis throughout the year and major conferences in the vacations. Reports of a few of these events are detailed in the following pages. The weekly series of McDonald Institute Lunchtime Seminars provided an opportunity for researchers connected with, or supported by, the Institute to update colleagues on the current state of their research (see p. 5). Other regular seminar groups using the Institute's facilities were the Garrod Research Seminars organized by the Department of Archaeology, the Cognitive Archaeology Groups and the Medieval Archaeology seminars, as well as meetings of the Leverhulme Project and the George Pitt-Rivers Laboratory for Bioarchaeology.

McDonald Institute Lunchtime Seminars 2006–2007

| | |
|-----------------------|---|
| PAUL HEGGARTY | <i>Archaeology and Language, Take II</i> |
| MARTIN JONES | <i>On the Mammoth Trail in Moravia: Exploring Ecology and Seasonality in the Central European Palaeolithic</i> |
| JANINE BOURRIAU | <i>Sherd Games: a Nile Valley Perspective on How and Why Pottery Changes</i> |
| CHRIS EVANS | <i>Haddenham Revisited and the Archaeology of the Lower Ouse Valley</i> |
| CAROLINE MALONE | <i>Ritual, Space and Structure in Prehistoric Malta: New Views on Old Sites</i> |
| MARIE LOUISE SØRENSEN | <i>Living the Bronze Age: Excavation of the Tell at Szazhalombatta, Hungary</i> |
| NEIL BRODIE | <i>Illicit Antiquities: Ethics and Values</i> |
| COLIN RENFREW | <i>Solving the Keros Enigma</i> |
| GRAEME LAWSON | <i>Some Early Survivals of Melody and their Implications for the Recollection of Text in Prehistory</i> |
| GRAEME BARKER | <i>The Cultured Rainforest: Long-term Human Ecological Histories in the Highlands of Borneo (or Why Oh Why Did I Apply for the AHRC Grant?)</i> |
| PETER BIEHL | <i>The Çatalhöyük West Mound Excavation 2006, One Community in Two Tells: Rethinking the Relationship Between Çatalhöyük East and West</i> |
| DUŠAN BORIĆ | <i>New Discoveries at the Mesolithic–Early Neolithic Site of Vlasac (Serbia)</i> |
| ALISON GASCOIGNE | <i>The Nubian–Egyptian Frontier at Aswan During the Sixth to Ninth Centuries AD: the Fort of Al-Bab</i> |
| DIANE LISTER | <i>Genetic Analysis of Historic Cereal Landraces Aids in Understanding the Spread of Agriculture Across Europe</i> |
| SIMON STODDART | <i>Recent Research at Grotte di Castro and Related Work in Central Italy</i> |
| BARRY MOLLOY | <i>Martial Arts and Materiality: Locating the Warrior in Bronze Age Society</i> |
| PRESTON MIRACLE | <i>'P' is for 'Palaeolithic', not 'Pyramids'! The Palaeolithic of Northern Bosnia: Survey and Excavations in 2006</i> |
| ELEANOR ROBSON | <i>The Archaeology of Intellectual Life in Ancient Iraq</i> |
| CHRIS CHIPPINDALE | <i>Stonehenge as a Heritage Site: the Last 23 Endless Years of Planning for its Perfect Future</i> |
| RHIANNON STEVENS | <i>Reconstructing Seasonal Climate at Archaeological Sites</i> |
| ELIZABETH DEMARRAIS | <i>Recent Research in the Calchaquí Valley</i> |
| ALISON BLYTH | <i>Alchemy in the Underworld (or How to Get Fat Out of a Rock)</i> |
| AUGUSTA McMAHON | <i>Death and the City</i> |

Changing Beliefs of the Human Body

A two-day seminar in Cambridge was organized by members of the Leverhulme Trust-funded research programme 'Changing Beliefs of the Human Body', on the topic of 'Human/Non-Human Bodies', which brought together archaeologists and anthropologists interested in the question of body transformations and negotiation of boundaries in the constitution of a 'human body'. The first part entitled 'Permeable Boundaries' explored differences and similarities in the treatment of human and non-human bodies in the past and present, particularly examining culture-specific attitudes to humanity and animality as these notions are critical for the construction of human identities cross-culturally. The second part 'Shaman's Body: Animal-Human Hybrids and Shamanistic Visions' focused on the relationship between depictions of animal-human hybrid bodies and shamanistic practice. The seminar brought together approaches that range from neurologically-based studies that emphasize wired sensations produced in the modern human brain during altered states of consciousness, to anthropological approaches of Amerindian perspectivism that stress the complexity of day-to-day negotiations between human and non-human aspects of personhood, of which shamanism is one medium. The speakers included Aparecida Vilaça, Vanessa Elisa Grotti, Dušan Borić, Preston Miracle, Jessica Hughes, Aleks Pluskowski, Rebecca Cassidy, Marilyn Strathern, Shahar Arzy, David Lewis-Williams and Robert Layton.



Human-fish hybrid, stone boulder, Lepenski Vir (Serbia), c. 6300–5900 BC. (National Museum, Belgrade.)

Workshops

'Suakin Project' and 'Museums and Conservation in Sudan' (17–18 February 2007)

Two one-day workshops on archaeology and conservation within Sudan were organized by Laurence Smith, Michael Mallinson, Federica Sulas and Jacke Phillips. Currently, Sudan is concerned with the preservation and presentation of the country's historical and archaeological sites, and is establishing regional museums to complement the National Museum in Khartoum.

The first workshop focused on the 'Suakin Project' that, under the direction of NCAM, is investigating the history of the medieval town and conserving its most architecturally and historically significant buildings. Papers were presented on Sudan cultural heritage (H.E. the Minister of Culture), the significance of Suakin Project for the Red Sea State (H.E. the Governor), history of studies at Suakin (Hassan Hussein Idris); significance of Suakin to Islamic archaeology in Sudan (Intisar el-Zein); summary of Suakin finds and the 2006 Aqiq survey (Laurence Smith); excavations at Khorshid Effendi's House (Jacke Phillips); integrated terrestrial and underwater investigations at Suakin (Colin Breen, Wes Forsythe, Dan Rhodes and Gerry Breen); excavations in the Shafa'i Mosque (Ahmed Hussein Abdel-Rahman and Abdel-Rahman Ibrahim Said); being the first Sudanese marine archaeologist (Balsam Abdel-Hamid); conservation 'Master Plan' for Suakin (Michael Mallinson); causes of deterioration and history of conservation at Suakin (Khalid Babikir El-Karim); artefact conservation at the site (Barbara Wills and Lucy Skinner); local ship-building traditions at Suakin (Dionisius Agius); Turkish sources for Ottoman Suakin (Andrew Peacock); comparative study of locating Classical ports on the African Red Sea coast (Lucy Blue); and the Pharaonic port at Wadi Gawasis, Egypt and the University of Naples survey at Aqiq (Rodolfo Fattovich).

The second workshop, presented by Crispin Paine and Lucy Skinner, concerned more general museum management and conservation issues. The visit was concluded by a tour of the Fitzwilliam Museum, hosted by Julie Dawson.

This event successfully brought together Sudanese central and state authorities with the Sudanese and foreign academics involved in the work. Final discussion resolved to develop a 'Master Plan' for historic-building conservation on the Sudanese Red Sea coast, including a major new funding initiative for conservation and restoration that, potentially, will expand the project currently centred on Suakin to other areas along the coast.



Sudan workshop participants.

Participants in the Suakin and Conservation and Museum Workshops 2007: H.E. Mohamed Yousef Abdullah, H.E. Mohamed Tahir Eila, H.E. Mohamed Ahmed Ali Mutamad, H.E. Omer M.A. Siddiq, Salah Mohamed Ahmed, Hassan Said Ahmed, Awad Abdullah Mohamed Awad, Ahmed Hussein Abdel-Rahman, Colin Breen, Mr and Mrs James Duiguid, Mohamed el-Naeem Fazzari, Wes Forsythe, Balsam Abdel-Hamid, Yusuf Fadl Hassan, Hassan Hussein Idris, Khalid Babikir Awad el-Karim, Michael Mallinson, Khalid F. Omer, Jacke Phillips, Crispin Paine, Abdel-Rahman Ibrahim Said, Osheik A. Seidi, Lucy Skinner, Laurence Smith, Taj el-Din Ibrahim el-Tahir and Intisar el-Zein.

Landscape and Ethnicity in the Archaic Mediterranean Area (13–14 March 2007)

This workshop, organized by Dr Simon Stoddart and Dr Gabriele Cifani (Marie Curie European Research Fellow) took place at Magdalene College and the McDonald Institute with the generous support of the Institute and the Leverhulme Foundation.

The seminar explored many approaches to identity and ethnicity across the archaic Mediterranean. Some of the topics discussed were: the diversity of the construction of identity and ethnicity within the Mediterranean landscape between the eighth and fifth century BC; how the changing and unchanging natural landscape forms a framework for the construction of identity; the role of landmarks in the construction of place; and, above all, how a landscape is employed in the construction of identity and ethnicity.

Professor Andrea Carandini (University of Rome 'La Sapienza') opened the workshop with an inaugural lecture about the ethnicity and foundation of Rome, followed by a discussion with professors Tim Cornell (University of Manchester), Robin Osborne (University of Cambridge), Christopher Smith (University of St Andrew), and Anthony Snodgrass (University of Cambridge). Other participants were: Professor John Bintliff (University of Leiden), Professor Dr Hans Lohmann (Universitaet Bochum), Dr Gert-Jan Burgers (University of Groningen), Dr Alessandro Naso (Università del Molise) and Dr Katherine Lomas (UCL).

*The Developing International
Geoarchaeology Conference (18–21 April)*

The Charles McBurney Geoarchaeology laboratory of the McDonald Institute hosted the second ‘Developing International Geoarchaeology Conference’ at the end of April, preceded by the Soil Micromorphology Working Group’s annual workshop. The conference was organized by Karen Milek and Charles French, with much help from many laboratory members, past and present, all of whom are greatly acknowledged. About 80 delegates attended from around the world. Two days of papers, a conference dinner at Corpus Christi College and a field-trip to the Cambridgeshire fens explored a diverse range of issues in the analysis of landscapes and palaeosol sequences. Some

highlights were: the keynote address by Professor Vance Holliday on his life-time of geoarchaeological surveys in the American southwest; the paper by Susan Mentzer on sediment chemistry, mineralogy and preservation environments of Pleistocene and Holocene deposits at Obi-Rakhmat and Paltau Cave in Uzbekistan — awarded the best presentation by a PhD research student from a very strong field of candidates; the best poster by the laboratory’s own Manuel Arroyo-Kalin on the significance of dark earths or *terras pretas* in the central Amazon basin prior to European colonization and the identification of pre-Columbian soil management beyond the areas of ‘dark earths’ in this region; and Professor Paul Goldberg’s paper evaluating where we go from here as a discipline in terms of presenting our data to a wider archaeological audience.



The Developing International Geoarchaeology Conference field-trip to Must Farm in the Cambridgeshire fens.



Participants in the fourth GeneTime workshop.

*The Fourth GeneTime Workshop
(4–5 September 2007)*

This autumn the McDonald was delighted to host the fourth GeneTime Workshop. GeneTime is the Marie Curie training consortium coordinated by Professor Matthew Collins, York, for early stage researchers to experience in the latest molecular approaches applied to ancient samples. GeneTime offers workshops, short-term visits and three-year PhD programs to talented and motivated students from the EU and further afield.

This fourth and final GeneTime workshop focused on the genetic impact of the domestication of plants and animals and featured presentations from GeneTime PhD students on

topics as wide-ranging as cattle domestication and breed improvement to the spread of tetraploid wheat around the Mediterranean basin. The Workshop also featured tutorial sessions on various aspects of archaeogenetics as a discipline, including discussions on understanding of archaeozoological data, sample selection, taphonomy etc. to key skills in the statistical manipulation of genetic data from experienced researchers such as Dr Anne Tresset (CNRS), Dr Emma Finaly (Dublin), Dr Oliver Craig (York) and Dr Greger Larson (Durham).

Professor Dan Bradley, of Trinity College Dublin gave the keynote address, entitled 'How to get ahead with domestic DNA: cattle as a case study' in which he gave an excellent overview of the past ten years of archaeogenetics research on the domestication of plants and animals and shared his insight of the potential future directions into which this maturing field might develop.

The fourth GeneTime Workshop was organized by Dr Ceiridwen Edwards (Trinity College Dublin) and Dr Mim Bower (McDonald Institute). The workshop organizers would like to thank Carol Smith for providing delicious refreshments over which many fruitful discussions took place. The GeneTime Workshop was brought to a close by a fabulous Chinese banquet held at the Hakka Restaurant, Cambridge, which was enjoyed by all.

Conferences

The World of Rock Art, British Rock Art Group Conference, Cambridge (5–6 May 2007)

The 'World of Rock Art' brought together researchers, heritage professionals, educators and intellectual property rights' holders in assessing the current state of rock-art research, management and preservation from Europe, Australia, Americas and Africa. Rock art is a unique record that allows us to pose a variety of questions from different viewpoints, and provides the basis for a multidisciplinary field of study reflecting modern concerns. These include issues of identification, management and preservation of this often very vulnerable and ephemeral art, creating a global debate that governments, researchers and societies at large have to address, particularly in the face of the massive changes accompanying globalization in recent decades. The presentation and discussion of rock art as a subject has been a medium for providing evidence of a tangible link between past and present, accessible to a modern-day audience; there is often no restriction on rock art owing to its outdoor location: everyone can see it, visit it and make sense of it. The visual narratives captured in this type of art allow for communication between artists in the past and subsequent viewers. Contributions to the conference included topics such as representing and interpreting rock art in the digital age, looking



Rock art from Alta, Norway (left) and a computer visualization based on the rock carvings of Zalavruga, Russia (right).

for artists who created particular depictions, presenting new ways of interpreting rock art and showing new discoveries. The conference was organized by Dr Liliana Janik, Mr Craig Alexander and Ms Thea Thompson, with the support of the McDonald Institute and Department of Archaeology.

Egyptian Royal Ideology Conference (16–17 July 2007)

The Fifth Symposium on Egyptian Royal Ideology, generously supported by the Thomas Mulvey Fund, was organized by Kate Spence and Janine Bourriau of the McDonald Institute in collaboration with Professor Rolf Gundlach of the Institut für Ägyptologie und Altorientalistik of the University of Mainz. At the meeting, entitled 'Palace and Temple: Architecture, Decoration and Ritual', fourteen papers were presented by scholars based in the UK, Europe, North America and Egypt. These were linked thematically but drew on a broad spectrum of textual, artistic and archaeological sources. Topics ranged from reports on recent fieldwork to analyses of individual buildings and building programmes, discussion of ritual activities and institutions and the role of individual courtiers in linking palace and temple.

Global Origins and Development of Seafaring (19–21 September 2007)

Ancient seafaring was the theme of this conference which reviewed regional evidence of the advent of seafaring and its main developments, such as sailing, from around the world and sought to understand the similarities and differences, and the main factors of change, at a global level.



The Scandinavian diaspora of the Viking Age was one of many comparative case studies presented at the Global Origins and Development of Seafaring conference.

Seafaring is mainly about travel upon the sea and thus the origin and development of boats and ships and their uses was a prominent subject of discussion. In addition, the conference considered how the very earliest seafaring, going back at least 50,000 years, could be inferred from archaeological, genetic and other sources of evidence. The relationship of seafaring to changes in human population size, the dispersal of the modern human species, and climatic and sea-level changes through and after the last Ice Age, were additional topics. One major change in seafaring was the development of sailing, which seems to have occurred quite late, within the last 5000–7000 years in different regions, and delegates discussed current evidence of its origins and of the way in which sailing transformed maritime

societies and underpinned the immense expansion in maritime interaction which, within the last millennium, culminated in globalization.

Amongst delegates to the conference were leading authorities on the evolution of boats, and specialists in European and Mediterranean seafaring, scholars of seafaring in the Americas and in the Indo-Pacific. Supported jointly by the McDonald Institute, the Research School of Pacific and Asian Studies at the Australian National

University and the Wenner-Gren Foundation, the conference was convened by Atholl Anderson, James Barrett and Katie Boyle.

The Sapient Mind: Archaeology Meets Neuroscience (14–16 September 2007)

In this symposium, jointly organized by Professor Colin Renfrew, Professor Chris Frith (Department of Imaging Neuroscience, UCL), and Dr Lambros Malafouris, leading neuroscientists, archaeologists and anthropologists from around the world met in order to explore how recent developments in the cognitive and social neurosciences, particularly the combination of imaging technologies like (fMRI) with methods of experimental psychology, may shed new light to some of the most important archaeological questions concerning the long-term development of human cognition. The symposium, which was funded by The British Academy and the Guarantors of Brain, comprised three main thematic sessions, namely, tool use, self/agency and social intelligence. The presentations and discussion covered topics ranging from the neural correlates and evolutionary significance of stone tool-making, to the possible ways that more recent cultural practices and changes in the human material culture may seem to interact with brain plasticity and the long-term development of human cognitive architecture. It is planned that a symposium volume will be published in the *Philosophical Transactions of the Royal Society* in early 2008.

UK Archaeological Sciences Conference (31 August–3 September)

For the first time in its history, the McDonald Institute and the Department of Archaeology co-hosted the biennial UK Archaeological Sciences Conference — UKAS2007. Over 130 participants from universities in the UK, Europe and North America attended, with the lectures being held close by in the Department of Plant Sciences. The organizing committee, comprising Tamsin O'Connell, Mim Bower, Emma Lightfoot, Harriet



Seafaring conference delegates (left to right): (front row) Sean McGrail, Albert Ammerman, Atholl Anderson, Sue O'Connor, Duncan Howitt-Marshall; (second row) Ole Crumlin-Pedersen, Roger Blench, Rob Carter, Geoffrey Clark; (third row) Axel Ducourneau, Bill Keegan, Helen Dawson, Boel Bengtsson, Matthew Spriggs; (back row) Katie Boyle, Christer Westerdahl, Michael Balter, Geoff Bailey, Junko Habu, James Barrett, Jim O'Connell, Helen Farr, Jago Cooper, Robert Dewar, Cyprian Broodbank, Jon Erlandson, Ben Fitzhugh.



'The Sapient Mind' symposium participants: (back row) Andreas Roepstorff, Chris Gosden, Güenther Knoblich, Paul Mellars, Richard Gregory, Dietrich Stout, Scott H. Frey, J. Scott Jordan, Daniel Wolpert; (middle row) Dwight Read, Koji Mizoguchi, Nicholas Humphrey, Sander Ernst van der Leeuw, Maurice Bloch, Michael Balter, Amy Williams, Colin Renfrew; (front row) Lambros Malafouris, Chris Frith, Tim Ingold, William C. McGrew, Giacomo Rizzolatti, Fiona Coward.



UKAS 2007 delegates.

Hunt, Cameron Petrie and Rhiannon Stevens, co-ordinated a full programme of talks and posters spread over three days, covering a diverse range of topics in archaeological science: including domestication, landscape, dating, palaeo-environment, life-histories, materials analysis and zooarchaeology. The conference provided an excellent opportunity to showcase the archaeological-science-based research being carried out in the McDonald Institute and the Department of Archaeology, including a large number of presentations by current MPhil and PhD students, many of whom simultaneously did a sterling job helping out and making sure everything ran smoothly.

The techniques discussed ranged from X-ray diffractometry to proteomics, Bayesian calibration methods and stable isotope analysis, and lively discussions ensued after each paper. On Saturday evening Professor Noreen Tuross (Harvard University) gave the keynote speech, comparing trends in archaeological science in the UK and the United States, and this was followed by a discussion session on 'the future of UK science-based archaeology', with talks from Dr Chris Franklin (NERC), Professor Matthew Collins (University of York), Professor Terry Brown (University of Manchester) and Professor Terry O'Connor (University of York), and then an open debate. The committee would like to express their gratitude to the McDonald Institute and the Department of Plant Sciences for hosting the proceedings and to GeneTime for sponsorship of the 'Domestication' session.



UKAS 2007 delegates awaiting the first talk of the day in the lecture theatre of the Department of Plant Sciences. (Photograph: Clea Paine.)

Science Week

The McDonald Institute once again took an active role in this year's University-wide Science week. Exhibitions for Science on Saturday (17 March 2007) — designed to fit within the theme, 'The Past Under the Microscope' — were set up collaboratively by the McDonald Institute, the Department of Archaeology and the Cambridge Archaeological Unit. They were well attended and greatly appreciated by the public. The displays were:



Children participating in the 'You are what you eat' display helped by Rhiannon Stevens.

- **WHAT COLOUR WAS ATTILA THE HUN'S HORSE?:** Forensic science can help to reconstruct an animal's general physique and a single, very small change in the DNA of a horse can completely change how it looks (Mim Bower, Dan Leighton & Michael Campana);
- **WHERE'S MY COW?:** After the Black Death, cows at Dudley Castle suddenly got bigger. If we can answer this question, we can understand how medieval cattle breeders tried to change their world (Mim Bower, Dan Leighton & Michael Campana);
- **AN ACCIDENT IN THE KITCHEN!:** Archaeologists use a special process called 'flotation' to recover the remains of a prehistoric dinner. By examining the seeds and bones preserved in the soil after falling from the fire they can reveal which plants and animals people ate in the past (Harriet Hunt & Hugo Oliviera);
- **CHARRED REMAINS...:** Archaeologists reconstruct ancient environment and diet through the study of charred plant materials and show how a big tree becomes a tiny fragment of charcoal and how a crop can be identified from a small seed (Professor Martin Jones, Dr Liliana Janik, Carla Lancelotti and Xin Yi Liu);
- **YOU ARE WHAT YOU EAT!:** Showing how we can tell what food ancient peoples ate from their skeletons (Tamsin O'Connell, Rhiannon Stevens & Emma Lightfoot);
- **WHAT CAN TEETH TELL US?:** Dental x-rays can be very useful in telling us the age at which animals discovered on archaeological sites died. X-rays on display from research on cows and sheep from the sites of Barley and Ferry Fryston (David Orton, Natalie White, David Klinge & Chris Stimpson);
- **WHAT DID THE ROMANS EAT?:** Food in Roman Britain including some of the more gruesome recipes (David Orton, Natalie White, David Klinge & Chris Stimpson) (see p. 31);
- **THE DEAD DO TALK:** David Klinge explains how can archaeologists tell a person's sex and age from their skeleton;
- **THE McDONALD GREAT CAVE:** An opportunity to dig for bones in our small, but perfectly formed cave and then identify them (Chris Stimpson);
- **THE ANSWER LIES IN THE SOIL:** The evidence of human settlement and their impact on landscape — what we can see under the microscope (Dr Charly French, Manuel Arroyo-Kalin, Dr Karen Milek, Heejin Lee and Miranda Semple);
- **EGYPT: THE BIG AND THE SMALL:** A Powerpoint projection by Billy Morin.



Harriet Hunt demonstrating flotation techniques to Science on Saturday visitors.



Liliana Janik showing the public what archaeologists can do with human remains.

People

PUBLICATIONS

Graeme Barker

- 2007 (with R. Rabett). Through the looking glass: new evidence on the presence and behaviour of late Pleistocene humans at Niah Cave, Sarawak, Borneo, in *Rethinking the Human Revolution: New Behavioural and Biological Perspectives on the Origin and Dispersal of Modern Humans*, eds. P. Mellars, K. Boyle, O. Bar-Yosef & C. Stringer. (McDonald Institute Monographs.) Cambridge: McDonald Institute for Archaeological Research, 411–24.
- 2006 (with P. Daly & P. Newson). Impacts of imperialism: Nabataean, Roman and Byzantine landscapes in the Wadi Faynan, southern Jordan, in *Space and Spatial Analysis in Archaeology*, eds. E.C. Robertson, J.D. Seibert, D.C. Fernandez & M.U. Zender. Albuquerque (NM) & Calgary: University of New Mexico Press & University of Calgary Press, 269–77.
- 2006 (with H. Barton, M. Bird, P. Daly, I. Datan, A. Dykes, L. Farr, D.D. Gilbertson, B. Harrison, C.O. Hunt, T. Higham, J. Krigbaum, H. Lewis, S. McLaren, V. Paz, P.A. Pike, P. Piper, B. Pyatt, R. Rabett, T.E.G. Reynolds, J. Rose, G. Rushworth, M. Stephens, C. Stringer, G. Thompson & C. Turney). The ‘human revolution’ in tropical southeast Asia: the antiquity of anatomically modern humans, and of behavioural modernity, at Niah Cave (Sarawak, Borneo). *Journal of Human Evolution* 52, 243–61.
- 2006 (with R. Rabett & P. Piper). Bones from Hell: preliminary results of new work on the Harrison faunal assemblage from the deepest part of Niah Cave, Sarawak, in *Uncovering Southeast Asia's Past: Selected Papers from the 10th International Conference of the European Association of Southeast Asian Archaeologists*, eds. E.A. Bacus, I.C. Glover & V.C. Pigott. Singapore: National University of Singapore Press, 46–59.

Director

In my third year as Director I continued to hold the parallel role of Head of the Department of Archaeology, invaluable supported as in the previous year by Dr Katie Boyle as Acting Deputy Director and by Jane Woods as Departmental Administrator.

The major focus of my research has continued to be the complexity of the relations between people and environment in the creation of human landscapes, the theme of my inaugural lecture as Disney Professor in November 2006. A major effort during the year was bringing to publication the landscape archaeology project in the Wadi Faynan in the Jordanian desert that I co-directed with David Gilbertson (University of Portsmouth) and David Mattingly (University of Leicester) in the 1990s, now in press with the Council for British Research in the Levant and Oxbow. The book is entitled *Archaeology and Desertification* because it sets out to demonstrate the contribution archaeologists can make to understanding the complexity of desertification processes in arid lands. I began a new desert project during the year, the re-investigation of the deep stratigraphy of the Haua Fteah cave in northeast Libya, excavated by Cambridge's Dr Charles McBurney c. 50 years ago. I went out to Libya in September 2006 with my key collaborators to finalize arrangements with the Libyan archaeological authorities, and directed the first pilot field season, funded by the Society for Libyan Studies, in April 2007. Dr McBurney found human remains with Neanderthal-like features at the base of the stratigraphy, and the project is addressing questions of human migration and adaptation, and of the emergence of modern humans in North Africa. In many respects this leads on from the Niah Cave project that I completed recently in Sarawak, Malaysian Borneo, a key summary of which was published by the project team in 2007 in the *Journal of Human Evolution*.

Two other projects for which I am the Principal Investigator began during the year. The first, funded by the Leverhulme Trust, is Cambridge-based and is combining studies of ancient and modern DNA (Dr Mim Bower) and formal archaeozoological studies (Dr Marsha Levine) to address questions regarding the origins of horse use on the Russian steppes and in China (see pp. 32 & 51). The second, entitled ‘The Cultured Rainforest’, is funded by the AHRC within their Landscape and Environment strategic initiative, and links Cambridge with the Universities of Greenwich, Leicester, Oxford and Queens Belfast, and



Graeme Barker and local Kelabit informant Sinah Lugun Aren sieving in the jungle of Sarawak, Borneo. (Photograph: Monica Janowski.)

combines archaeological, anthropological, and palaeoecological approaches to the history of rainforest peoples in the central highlands of Borneo. The first field season in July 2007 was particularly challenging in terms of physical conditions and logistical complexities. Cambridge is coordinating the archaeological component of the project, potentially of great political significance in Sarawak in the local population's attempts to resist the inroads of commercial logging on their traditional foraging and farming lands.

In December 2006 I went to Vietnam at the request of the British Embassy and a Vietnamese entrepreneur to assess the potential for a new field project (a cave excavation and landscape study). The indicators were positive, and the eventual outcome was a successful initial field season in May 2007 led by Dr Ryan Rabett (Templeton-funded Post-doctoral Research Fellow) (see p. 47). I am delighted at this initiative, which represents the first modern archaeological excavation project by a UK team in Vietnam, and I hope the beginning of a significant collaboration.

Alongside a range of undergraduate and post-graduate teaching and PhD supervision, I was actively involved in University affairs, serving on the Board of the Centre for Research, Arts, Social Sciences & Humanities (CRASSH), the Council of the School of Humanities and Social Sciences, and joining the General Board and various of its sub-committees in January

PUBLICATIONS

James Barrett

- 2007 The pirate fishermen: the political economy of a medieval maritime society, in *West over Sea: Studies in Scandinavian Sea-borne Expansion and Settlement Before 1300*, eds. B. Ballin Smith, S. Taylor & G. Williams. Leiden: Brill, 299–340.
- 2007 (with C. Johnstone, J. Harland, W. Van Neer, A. Ervynck, D. Makowiecki, D. Heinrich, A.K. Hufthammer, E.B. Enghoff, C. Amundsen, J.S. Christiansen, A.K.G. Jones, A. Locker, S. Hamilton-Dyer, L. Jonsson, L. Lõugas, C. Roberts & M. Richards). Detecting the medieval cod trade: a new method and first results. *Journal of Archaeological Science*, doi:10.1016/j.jas.2007.06.004.
- 2007 (with A. Hall, C. Johnstone, H. Kenward, T. O'Connor & S. Ashby). Interpreting the plant and animal remains from Viking-age Kaupang, in *Kaupang and Skiringssal*, ed. D. Skre. Aarhus: Aarhus University Press.
- 2007 (with E.H. Fairnell). Fur-bearing species and Scottish islands. *Journal of Archaeological Science* 34, 463–84.
- 2007 (with N. Milner & J. Welsh). Marine resource intensification in Viking-age Europe: the molluscan evidence from Quoynegrew, Orkney. *Journal of Archaeological Science* 34, 1461–72.

Janine Bourriau

- 2007 Imported amphorae from Buto dating from c.750 BC to the early 6th century AD, in *Cahiers de la Ceramique 8: Amphores d'Égypte*, eds. S. Marchand & A. Marangou. Cairo: Institut français d'Archeologie Orientale, 115–33.

Harriet Crawford

- 2007 Steady states, in *Regime Change in the Ancient Near East: from Sargon of Agade to Saddam Hussein*, ed. Harriet Crawford. (*Proceedings of the British Academy* 136.) London: British Academy, 1–6.

PUBLICATIONS

Harriet Crawford (cont.)

2007 Architecture, in *The Babylonian World*, ed. Gwendolyn Leick. London: Routledge.

Joan Oates

2007 (with A. McMahon, P. Karsgaard, S. Al Kuntar & J. Ur). Early Mesopotamian urbanism: a new view from the north. *Antiquity* 81, 585–600.

2007 (with J. Ur & P. Karsgaard). Early urban development in the Near East. *Science* 317, 1188.

2007 Review of L. Cooper, Early urbanism on the Syrian Euphrates. *Antiquity* 81, 480–81.

2006 (with D. Oates). Ebla and Nagar, in *Ina Kibrat Erbeti: Studi di Archeologia orientale dedicati a Paolo Matthiae*, eds. J.L. Montero, B. Muller, S. Mazzoni & F. Pinnock. Rome: Università la Sapienza, 399–424.

Colin Renfrew

2007 (with P. Bahn). *Archaeology Essentials*. New York (NY): Thames & Hudson.

2007 (with B.K. Hanks & A.V. Epimakhov). Towards a refined chronology for the Bronze Age of the southern Urals, Russia. *Antiquity* 81, 353–67.

2006 (with L. Marangou, C. Doumas and G. Gavalas). *Markiani, Amorgos: an Early Bronze Age Fortified Settlement*, (Supplementary volume No. 40.) London: British School at Athens.

Anthony Snodgrass

2007 What is classical archaeology?, in *Classical Archaeology*, eds. S.E. Alcock & R. Osborne. (Blackwell Studies in Global Archaeology.) Oxford: Blackwell, 13–29.

Kate Spence

2007 Court and palace in ancient Egypt: the Amarna period and later Eighteenth Dynasty, in *The Court and Court Society in Ancient Monarchies*, ed. A.J.S. Spawforth. Cambridge: Cambridge

2007. My major external involvement has continued to be as council member of the Arts and Humanities Research Council, which also involved me chairing its Knowledge and Evaluation Committee, serving on its post-graduate training review group, and chairing a working group reviewing its decision-making structures. I also chaired the Steering Committee of the AHRC's Centre for Human Evolution and Cultural Diversity at UCL.

Deputy Director

Having just moved to the Institute this summer my report must look ahead rather than back. In the year to come, I look forward to meeting everyone associated with the Institute and learning how it can best meet the needs of the Cambridge archaeological community. My objectives are fourfold:

- to enhance the flow of information (starting with a redesigned website);
- to help ensure that the Institute effectively supports the practice of interdisciplinary archaeological research in Cambridge;
- to begin to teach in my fields of expertise (medieval archaeology and historical ecology); and
- to progress my current research projects on the political economy of the Viking Age and the origins of sea fishing.

My welcome took the stimulating form of the Institute-sponsored 'UK Archaeological Science' and 'Global Origins and Development of Seafaring' conferences, the latter of which I was particularly involved in (see p. 10). The year to come looks equally eventful with a full programme of seminars, lectures, conferences, fieldwork and publications.

Core Staff

The core staff of the Institute has seen two changes this year with the arrival of Sara Harrop as PA to the Director and Steve Topper as the Institute's new custodian. The remaining core staff is as in previous years with Liz Farmar as Secretary to the Managing Committee and Secretary to the Deputy Director and Colin Lomas as Assistant to the Deputy Director with special responsibility for accounts and for the Institute buildings.

The publications programme — under the overall responsibility of the Director — was ably handled by Dora Kemp (Production Editor), with the aid of Nick Jakins (Editorial Assistant) and Liz

Farmar (Administrator and Marketing Manager) (see p. 20). Dora Kemp and Liz Farmar have attended a number of training workshops over the past year relating to project management and the marketing of academic publications. They have also continued respectively as Production Editor and Secretary to the *Cambridge Archaeological Journal* working together with the editor, Dr John Robb and the deputy editor Dr Nicholas James.

PUBLICATIONS

Kate Spence (cont.)

University Press, 267–328.
2007 Architecture, in *The Egyptian World*, ed. T. Wilkinson. London: Routledge, 366–87.

Conference arrangements were managed by Dr Katie Boyle, who was also research facilitator with a view to identifying potential funding sources, and, in her role as Acting Deputy Director, was responsible for certain extra financial and administrative responsibilities.

Researchers employed on individual projects are referred to in the reports which follow. The McDonald Institute also houses research and administrative staff supported by externally-funded projects, notably the Amarna Project funded by the Egypt Exploration Society (Dr Pamela Rose), the Leverhulme Trust-funded project 'From Chariotry to Equestrian Pastoral Nomadism' (Dr Marsha Levine, Dr Mim Bower and Professor Graeme Barker), the Tell Brak project jointly funded by the McDonald Institute and the British Institute in Iraq (Dr Joan Oates and Dr Augusta McMahon), the Body Project (Dr Dušan Borić, Dr Jessica Hughes and Dr Katharina Rebay) and several projects funded by the Templeton Foundation (Dr Caroline Malone, Dr David Barrowclough, Professor Colin Renfrew, Dr Iain Morley, Dr Ryan Rabett, Dr Liliana Janik).

Arrivals

The Institute welcomes two new Post-doctoral Fellows, Drs Alison Blyth and Rhiannon Stevens, working respectively on stalagmite biomarkers and isotope signatures of seasonality, and in particular the Institute's new Deputy Director, Dr James Barrett, formerly of the University of York, who strengthens Cambridge's research portfolio with his expertise in both archaeozoology and medieval archaeology.



Dr Alison Blyth.

Departures

Two significant departures from the Institute during the year were the project base of Professor Ian Hodder's Çatalhöyük project, headed by Shahina Farid and Katerina Johnson, which moved to University College London in April, and the winding down of the Illicit Antiquities Research Centre at the end of September. In the almost ten years of support that the Institute provided, the IARC played a significant role in highlighting the disastrous effects of the illicit antiquities trade on the global archaeological heritage. Its voice has been influential in the development of more robust legislative structures and codes of practice for museums and auction houses in the UK, and of greater ethical awareness internationally. The Institute acknowledges the inspirational leadership of Professor Colin Renfrew, its founding Director, in establishing, directing and promoting the IARC, and the commitment and flair of the staff of the IARC, Dr Neil Brodie and Ms Jenny Doole. Dr Brodie is moving to a new post in Stanford University, USA, to develop what is certain to be a world-class Masters course in heritage ethics and Ms Doole has left Cambridge; the Institute wishes them every success for the future. The final two issues (19 and 20) of the IARC's influential Newsletter *Culture Without Context* are available in print and on the Institute's website: www.mcdonald.cam.ac.uk (see p. 23).

We celebrate the successes of Post-doctoral Fellows Drs Alison Gascoigne and Aleks Pluskowski, moving to lectureships at the Universities of Southampton and Reading respectively. And finally, Dr Marc Vander Linden who, after his one-year Visiting Fellowship at the Institute, now works as senior research assistant and project manager for the Cambridge Archaeological Unit.

Fellows

The Fellows of the McDonald Institute continue to play a valuable part in the research life of the Institute.

Dr Janine Bourriau has been working on several ceramic-based projects in Egypt: at Saqqara at the Ptolemaic temple-town of the Anubieion; at Memphis on an industrial site for the manufacture of faience in the second century AD; and at Buto, a town of eighth–seventh century BC. In addition she gave lectures in Cairo and Liverpool.

Over the past year **Dr Harriet Crawford** has been developing an alternative model for the study of the role of women in third-millennium Mesopotamia. An article on the topic has just been submitted to the *Cambridge Archaeological Journal* and is currently being reviewed.

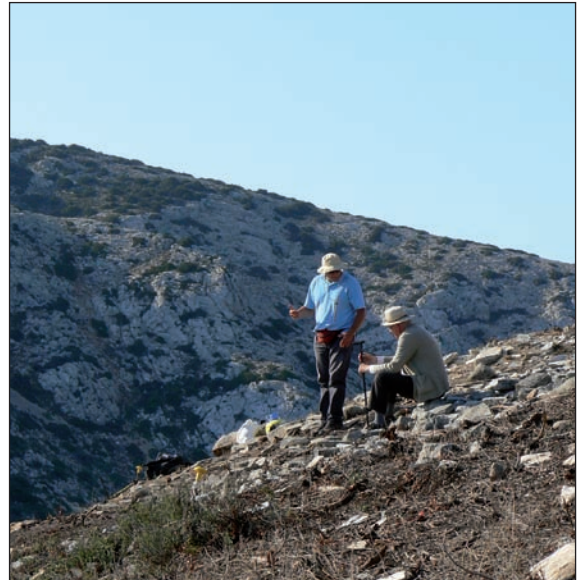
Whilst continuing his scientific studies of ancient musical surfaces and of music's broader, cognitive implications — especially the roles of tonality and melodic organization in processes of memory and tradition — **Dr Graeme Lawson** has begun a number of new initiatives in 'music-archaeological' science, including a major re-assessment of finds from the early Iron Age of the British Isles and Europe. Invited papers to international conferences have included 'Conflicts between musical reality and musical representation in the Late Roman world' and 'Conserving the future of music's distant past: on the development of music-archaeological conservation science' (Berlin, September 2006); and most recently 'Continuity, change, invention and the evolution of sound-related behaviours' (Durham, June 2007). Amongst a number of overseas engagements during the year, he marked the discovery of the Trossingen lyre grave with an invited performance to the annual awards ceremony of the Baden-Württemberg Archäologie Preis in Stuttgart in November 2006.

Dr John MacGinnis has just completed the 2007 season at Ziyaret Tepe with excellent results. In the lower town more of Building 2 (Area G) has been uncovered, and work has concentrated on the west of the major mosaiced courtyard, the building which yielded a number of cuneiform texts dating to 611 BC, i.e. one year after the fall of Nineveh, which makes them of extraordinary interest. In addition, work has commenced on a city gate (Area Q) with investigations into an anomaly appearing in the magnetometry survey (Area P). On the high mound a large area has now been excavated down to Neo-Assyrian levels (Area L) while a resumption of work on the remains of the monumental building at the east end of the high mound uncovered an extraordinary rich cremation burial, colourful painted plaster and a monumental door socket *in situ* (Area N). This all suggests that there is more to be gained from excavation of these remains than previously realized. John MacGinnis has also been continuing his work on Neo-Babylonian cuneiform texts and has completed the manuscript of his monograph on the armed forces of the Ebabbara temple and an article commenting on exploring the ramifications of a text preserving a judgement delivered by Darius I.

Dr Joan Oates continued as Project Director of Tell Brak in Syria (see p. 46). This involved organizing a study season in autumn 2006 for the survey project, which has explored the region in a 20-km radius around Brak, as well as participating in the excavations in spring 2007. In addition she has been working towards

the publication of previous excavations (*Excavations at Tell Brak*, vol. 3), to be published by the Institute, as well as a monograph on results of the survey work.

Professor Colin Renfrew continues to supervise ‘The Roots of Spirituality’ project (John Templeton Foundation, see p. 50), ‘The Material Engagement’ project (Balzan Foundation) and ‘The Languages and Origins in Europe’ project (Leverhulme Trust). In May and June he continued excavations on Dhaskalio Kavos, Keros and was supported in the preparatory work by Dr Barry Molloy, his research associate, during February and March. He gave the keynote lecture at the ‘Regionalism and Globalism in Antiquity’ conference in Vancouver in March 2007 and followed this with the Biggs Residency at the Washington University in St Louis, Missouri. He attended the National Geographic Society’s ‘Genographic Project Annual Conference’ in Shanghai in August. During 2007 he was made a Foreign Honorary Member of the Archaeological Institute of America and in June 2007 he received an honorary doctorate from the University of Kent.



Professor Colin Renfrew and Giorgos Gavalas at the excavations on Dhaskalio Kavos, Keros (June 2007). (Photograph: Jenny Doole.)

Dr Laurence Smith continued with the post-excavation work of the Suakin project, including further study of the ceramics indicating the furthest trading links of the port during the later fifteenth and early sixteenth century AD. Other activities relating to the work at Suakin included organizing a workshop on the site and the work of the project, held at the McDonald Institute in February (see p. 6), and co-ordinating the preparation of an invited joint paper on the archaeological investigations there for the publication of the workshop on the ‘Frontiers of the Ottoman World’ held at the British Academy in February. He has also continued with pottery studies by preparing for publication the chapters relating to petrographic and chemical analysis of transport amphorae fabrics for the final monograph on the Canaanite Jar Project.

Professor Anthony Snodgrass’s main research activity this year has been in the closing stages of the preparation (in close coordination with Dora Kemp) of the first part of the final publication of the Boeotia Project, *Testing the Hinterland*, in the McDonald Institute Monographs series and especially of its very complicated graphics. Work is already far advanced on the next volume, *The City of Thespiai*, which involved short field trips in August of both 2006 and 2007, to resolve outstanding problems.

Dr Kate Spence’s research continued to focus on analysis of the domestic architecture at El-Amarna in Middle Egypt, looking in particular at the spatial layout of houses and at its implications for social interaction. The work was presented at the ‘Cities and Urbanism in Ancient Egypt’ conference in Vienna in November 2006 and in March 2007 at a symposium in Philadelphia entitled ‘Amarna: New Research and Discoveries in the Age of Akhenaten and Tutankhamun’. She also worked on an analysis of the stone installations known as ‘lustration slabs’ at the site, arguing that they are settings for domestic cult; a preliminary report on the study was presented at the ‘Cult in Context’ conference organized by Caroline Malone and David Barrowclough in Cambridge in December 2006.

Publications Office

Cambridge Archaeological Journal

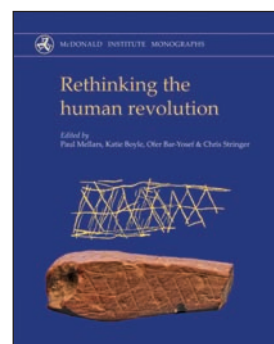
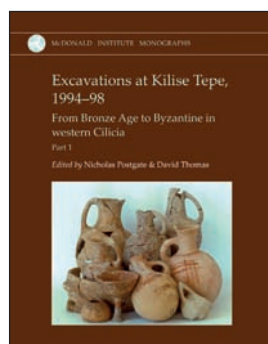
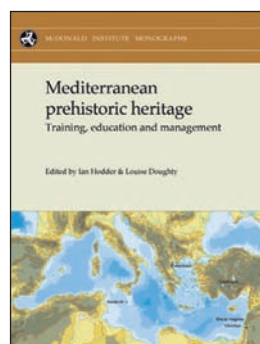
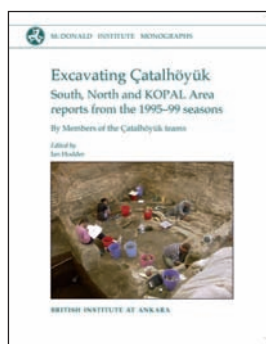
In the 2006–2007 academic year, the *Cambridge Archaeological Journal* published issues 16.3 (October 2006), 17.1 (February 2007) and 17.2 (June 2007). *CAJ* also published a special supplement issue associated with 17.1, a theoretically important, methodologically groundbreaking study of the use of Bayesian calibration to create fine-resolution histories of early Neolithic monuments. These issues kept up the standard expected of *CAJ*, with a wide range of articles on topics ranging from Palaeolithic art through Egyptian architecture and Maya site-formation processes. Special features included a forum on the development and current state of archaeological theory in the 25 years since the publication of *Symbolic and Structural Archaeology*, which launched post-processualism as a movement.

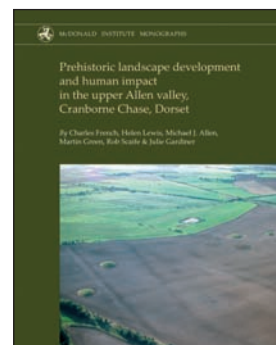
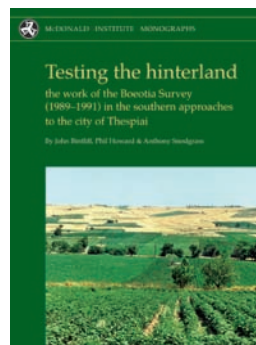
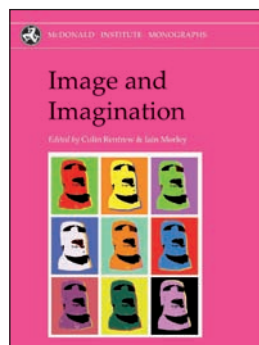
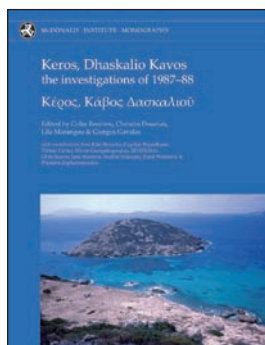
There is little to report in terms of journal management, except to note that submissions to the journal are keeping pace well with the expansion of *CAJ* from two to three issues, and that all issues have come out promptly due to dedicated and efficient work by our editorial and production team. We have renewed our revenue-sharing arrangement with Cambridge University Press; CUP have made moderate price increases, with our agreement, but the journal is still reasonably priced compared to other archaeological journals and returning a good profit. As is true throughout the academic journal world, traditional individual subscriptions are falling, but this is compensated for by sales of ever wider access through worldwide electronic journal consortia; the range of institutions at which *CAJ* is now available is much greater than it was even a few years ago.

Monograph Series

This past year has been busier than ever for the Publications Office as the Research Assessment Exercise enters its final stages. In addition to producing four issues of the *Cambridge Archaeological Journal* – both hard copy and on-line – two project monographs have been printed: Volume 3 of the Çatalhöyük series entitled *Excavating Çatalhöyük: South, North and KOPAL Area Reports from the 1995–99 Seasons* which is a major work by Members of the Çatalhöyük teams (and the last volume in the Çatalhöyük series to be produced by the Institute); and *Mediterranean Prehistoric Heritage*, edited by Ian Hodder & Louise Doughty, comprising the published results of the TEMPER project (sponsored by the European Commission) which explores the issues inherent in managing, interpreting and presenting Mediterranean prehistoric archaeological sites.

A further six important volumes stemming from the research of Institute members are due for publication by the end of 2007: *Excavations at Kilise Tepe, 1994–98*, a two-volume excavation report edited by Nicholas Postgate & David Thomas; *Rethinking the Human Revolution* edited by Paul Mellars, Katie Boyle, Ofer Bar-Yosef & Chris Stringer





& Chris Stringer which arises from a major conference held in Cambridge of the same name; *Keros, Dhaskalio Kavos* edited by Colin Renfrew, Christos Doumas, Lila Marangou & Giorgos Gavalas; *Image and Imagination*, a Templeton Project monograph edited by Colin Renfrew and Iain Morley; *Testing the Hinterland* edited by John Bintliff, Phil Howard & Anthony Snodgrass which comprises the results of the Boeotia Survey (1989–1991); and *Prehistoric Landscape Development and Human Impact in the Upper Allen Valley, Cranborne Chase, Dorset* edited by Charles French, Helen Lewis, Michael J. Allen, Martin Green, Rob Scaife & Julie Gardiner.

Other projects currently underway include the *Nostratic Dictionary* by Aharon Dolgopolsky which will be published in a searchable CD format, *Horizons* edited by Neil Brodie, Jenny Doole, Giorgos Gavalas & Colin Renfrew that arose from the Ὀρεῖζων Conference on the archaeology of the Cyclades held at the Institute, and *Simulations, Genetics and Human Prehistory* edited by Shuichi Matsumura, Peter Forster & Colin Renfrew.

With the ever-increasing workload, the Production Editor expanded the operation by seeking extra help in several ways: a full-time editorial assistant, Nick Jakins was employed from July–October 2007. After a period of training, Nick took responsibility for typesetting and proofreading the *Image and Imagination* volume as well as providing editorial assistance towards other projects such as the *Nostratic Dictionary*, the Boeotia volume and this Annual Report. In addition, freelance typesetters and indexers were engaged for selected monographs.

The McDonald Institute publication programme has achieved an international reputation for the quality of its output and in the coming years we intend to build on this even further and put new initiatives into place.

Monograph Marketing

The introduction of the info@mcdonald.cam.ac.uk publicity address on our recent marketing material continues to produce exciting results with an increasing number of individuals wishing to subscribe to the list to receive updates about the monographs. info@mcdonald.cam.ac.uk also handles queries and requests for review copies on a regular basis; tangible proof that the marketing is reaching its target audience and achieving its aim of raising awareness and attracting interest in the monograph series. New initiatives are planned and it is hoped that with regular promotion throughout the year, this heightened visibility will be maintained. An important part of future publicity will be to expand the content of our publication pages on the newly redesigned website of the McDonald Institute and plans are in progress to make these more interesting and informative.

To subscribe to our email list and receive regular news and updates, contact Liz Farmar at: info@mcdonald.cam.ac.uk

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- Late Prehistoric Exploitation of the Eurasian Steppe*, by Marsha Levine *et al.* £40/US\$70; ISBN 1-902937-03-1
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- A Woodland Archaeology: Neolithic Sites at Haddenham*, edited by Chris Evans & Ian Hodder £35/US\$75; ISBN 1-902937-31-7

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- Nostratic: Examining a Linguistic Macrofamily*, edited by Colin Renfrew & Daniel Nettle £30/US\$54; ISBN 1-902937-00-7
- Time Depth in Historical Linguistics*, edited by Colin Renfrew, April McMahon & Larry Trask £50/US\$80; ISBN 1-902937-06-6

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Illicit Antiquities

In October, the interactive museum exhibition ‘History Lost’, designed and prepared by Anemon Productions of Greece, the Illicit Antiquities Research Centre, and the Cypriot Department of Antiquities, with the support of a grant from the European Union’s Culture 2000 Framework Programme, opened at the Benaki Museum in Athens. It proved to be a great success, and with the further support of the Hellenic Foundation for Culture, it is scheduled to be shown at Trieste in Italy, Lisbon in Portugal, and at UNESCO in Paris, France. Arrangements are also being made to show the exhibition in Serbia, Germany, Egypt and the United Kingdom.

In April, Neil Brodie presented a paper at the annual meeting of the Institute of Field Archaeologists. Also in April, he was an invited speaker at the seminar ‘Criminalizing the Market in Looted Antiquities’ held at the Oñati International Institute for the Sociology of Law in Spain. Jenny Doole lectured at the University of Leicester and for the US Students Abroad Program in Cambridge. Both staff again taught a module on the Department of Archaeology’s MPhil Archaeological Heritage and Museums course.



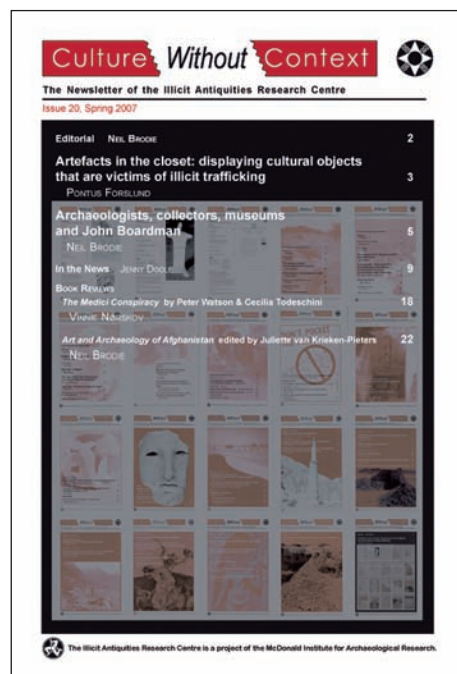
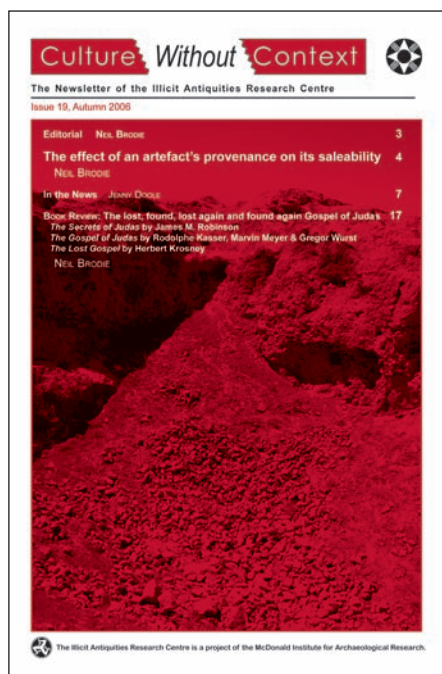
Neil Brodie and Jenny Doole.

STAFF

Neil Brodie, Jenny Doole

Honorary Fellows: Colin Renfrew, Peter Watson

PhD students: Morag Kersel, Gordon Lobay



The last two issues of Culture Without Context, the newsletter of the Illicit Antiquities Research Centre.

Laboratories

PUBLICATIONS

Charles French

- 2007 Sustaining past and modern landscape systems in semi-arid lands, in *Reconstructing Human–Landscape Interactions*, eds. L. Wilson, P. Dickinson & J. Jeandron. Newcastle-upon-Tyne: Cambridge Scholars Publishing.
- 2007 (with P. Patrick, C. Osborne & R. Middleton). Rescue excavation of a pagan Saxon settlement at Gunthorpe, Peterborough. *Anglo-Saxon Studies in Archaeology and History* 14.
- 2006 The dykeside investigations: micromorphological analysis, in *A Woodland Archaeology: Neolithic Sites at Haddenham*, eds. C. Evans & I. Hodder. (McDonald Institute Monographs.) Cambridge: McDonald Institute for Archaeological Research, 39–41.
- 2006 The long barrow: micromorphological analysis, in *A Woodland Archaeology: Neolithic Sites at Haddenham*, eds. C. Evans & I. Hodder. (McDonald Institute Monographs.) Cambridge: McDonald Institute for Archaeological Research, 78–81.
- 2006 Barrow investigations: the buried soils, in *Marshland Communities and Cultural Landscapes*, eds. C. Evans & I. Hodder. (McDonald Institute Monographs.) Cambridge: McDonald Institute for Archaeological Research, 21–4.
- 2006 HAD V enclosure: soil micromorphology, in *Marshland Communities and Cultural Landscapes*, eds. C. Evans & I. Hodder. (McDonald Institute Monographs.) Cambridge: McDonald Institute for Archaeological Research, 100–105.

Judith Bunbury

- 2007 (with J.K. Hillier & A. Graham). Monuments on a migrating Nile. *Journal of Archaeological Science* 34, 1011–15.

Helen Lewis

- 2007 Preliminary soil micromorphology studies of landscape and occupation history at Tabon cave,

Charles McBurney Geoarchaeology Laboratory

News and People

This year has witnessed a large number of researchers completing their PhD research projects and moving on to ‘new pastures’. These include Fraser Sturt, a lecturer at Southampton, Karen Milek who has now taken up a lectureship at Aberdeen, Gabriella Kovacs who is assistant archaeological curator at Szazhalombatta Museum in Hungary, Ann-Maria Hart has returned to Australia and is lecturing part-time at the University of Queensland and working as a cultural heritage officer at Queensland Main Roads, and Andrea Balbo who is now at the British Antarctic Survey in Cambridge. We have also had the pleasure of Dr Lenke Lisa from Brno University in the Czech Republic in the laboratory this year as a visiting scholar. Lenke is on an EU Marie Curie fellowship investigating the composition, origin and climatic signatures of Middle–Upper Palaeolithic loessic and palaeosol sequences at Dolni Vestonice in the Czech Republic. A major event hosted by the laboratory was the second ‘Developing International Geoarchaeology conference’ (see p. 8).

Project work

A number of projects have been completed, others have continued with further fieldwork and analyses, and some new projects have begun. Importantly, Karen Milek and Charles French completed and published the analysis of one Viking structure in the early



Test pitting in the Avon valley outside the eastern entranceway of the Durrington Walls henge showing historic period alluvial/colluvial silts over a Bronze Age reed peat.

trading hamlet of Kaupang in Norway (Milek & French 2007) in Dagfinn Skre's (2007) superlative excavation volume on this site. The second and last year of fieldwork were completed in the upper Tejo valley of central Portugal (British Academy funded) and in the lower Benta valley of central Hungary (NSF funded). In the Tejo, fieldwork by Marco Madella, Will Fletcher, Chris Scarre and Charles French has begun to devise a model of early–mid-Holocene landscape development which suggests that few and scattered inroads were made into the post-glacial oak forest in the Neolithic.

In the Benta valley, a combination of new palynological investigations and an associated radiocarbon dating programme by Pal Sumegi and Sandor Guylas of Szeged University, and palaeosol investigations by Gabi Kovacs and Charles French have indicated that Bronze Age farmsteads were established on the lower slopes above the floodplain, already within an open grassland landscape. But the severe erosion of the loessic component of this landscape resulting in large amounts of colluvium on the lower slopes and infilling the floodplain probably did not begin in earnest until after the Iron Age in the later first millennium BC.

A third year of fieldwork was undertaken at Durrington Walls in Wiltshire, this time focusing on the Avon valley immediately outside the entranceway of the site (see photograph p. 24). Increasingly the palaeo-environmental evidence is pointing



An in situ floor within the Early Bronze Age settlement on Dhaskalio Kavos, Keros.

PUBLICATIONS

Helen Lewis (cont.)

- Palawan, Philippines.
Geoarchaeology 22(7), 685–708.
- 2007 (with G. Barker, H. Barton, M. Bird, P. Daly, I. Datan, A. Dykes, L. Farr, D.D. Gilbertson, B. Harrison, C. Hunt, T. Higham, L. Kealhofer, J. Krigbaum, S. McLaren, V. Paz, A. Pike, P. Piper, B. Pyatt, R. Rabett, T. Reynolds, J. Rose, G. Rushworth, M. Stephens, C. Stringer, J. Thompson & C. Turney). The 'human revolution' in lowland tropical southeast Asia: the antiquity and behavior of anatomically modern humans at Niah cave (Sarawak, Borneo). *Journal of Human Evolution* 52, 243–61.
- 2007 (with N. Boivin, A. Brumm, D. Robinson & R. Korisettar). Sensual, material, and technological understanding: exploring prehistoric soundscapes in south India. *Journal of the Royal Anthropological Institute* 13, 267–94.
- 2006 (with C. French). Soil micromorphology, in *The Archaeology of the Wallingford Bypass 1986-92*, eds. A.M. Cromarty, A. Barclay, G. Lambrick & M. Robinson. (Monograph 22.) Thames Valley: Oxford Archaeology, 194–6.
- 2006 (with J. Lewis, F. Brown, A. Batt, N. Cooke, J. Barrett, R. Every, L. Mephram, K. Brown, K. Cramp, A.J. Lawson, F. Roe, S. Allen, D. Petts, J.I. McKinley, W.J. Carruthers, D. Challinor, P. Wiltshire, M. Robinson & M.R. Bates). Framework archaeology, in *Landscape Evolution in the Middle Thames Valley: Heathrow Terminal 5 Excavations*, vol. 1: *Perry Oaks*. (Framework Archaeology Monograph 1.) Oxford & Salisbury: Framework Archaeology.

Karen Milek

- 2007 (with G. Sveinbjarnardóttir, E. Erlendsson, K. Vickers, T.H. McGovern, K.J. Edwards, I.A. Simpson & G. Cook). The palaeoecology of a high status

PUBLICATIONS

Karen Milek (*cont.*)

- 2007 Icelandic farm. *Environmental Archaeology* 12(2), 197–216. (with C. French). Soils and sediments in the settlement and harbour at Kaupang, in *Kaupang in Skiringssal*, ed. D. Skre. Aarhus: Aarhus University Press, 321–60.

Mary Ownby

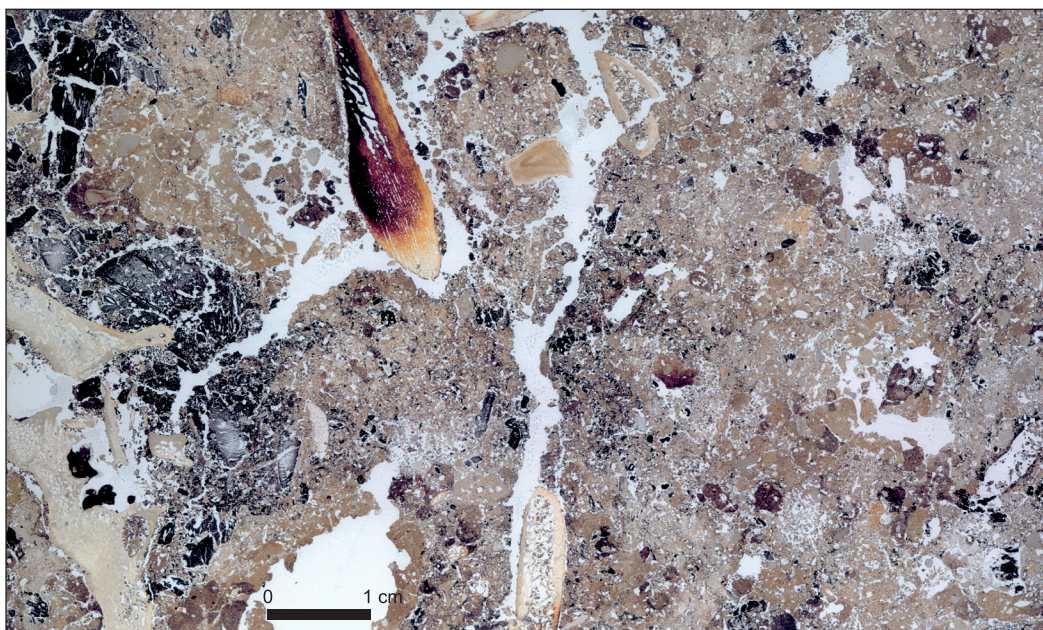
- 2006 (with D. Griffiths). Assessing the occurrence of Egyptian Marl C ceramics in Middle Bronze Age Sidon archaeology and history, in *Lebanon* 24, 63–77.

Gillian W. Wallace

- 2006 Eutrophication, in *Encyclopedia of Environment and Society*, ed. P. Robbins. London: Sage Publications, 620–21.
- 2006 Buffer zones, in *Encyclopedia of Environment and Society*, ed. P. Robbins. London: Sage Publications, 176–7.
- 2006 Man and biosphere program, in *Encyclopedia of Environment and Society*, ed. P. Robbins. London: Sage Publications, 1095–6.

towards major change occurring in the vegetation complex and land use in the earlier Neolithic prior to the construction of the major henge monuments in the later Neolithic.

New fieldwork was begun in association with Colin Renfrew (Templeton and British Academy funded) on the island of Keros and the adjacent islet of Dhaskalio in the Greek Cycladic Islands, Vlasac in the Danube Gorges of Serbia with Dušan Borić, and at Cheonan in South Korea with Heejin Lee and the Cheonan Cultural Properties Research Institute. Although the votive deposits of Keros north have been much disturbed by past robbing and indiscriminant trenching, at least some of the deposits of Keros south appear to have some depositional integrity despite some effects of hillwash and tree-throw holes. But on the adjacent Dhaskalio, the relatively well-preserved structures of probably contemporary settlement appear to have well-preserved floors *in situ* (see photograph p. 25). Thus this site has enormous potential for an extensive investigation of the use of space. New excavations by Dušan Borić at Vlasac (British Academy/McDonald Institute funded) on the edge of the modern Danube have revealed both Mesolithic burials and possible settlement features comparable to Lepinski Vir, just a kilometre upstream, but probably even earlier than at Lepinski Vir. The abrupt change of slope from the water's edge, of c. 35–50°, has meant that there are considerable amounts



Thin-section photomicrograph of the midden material composed of repeated dumped deposits of mainly animal bone, charcoal and wood ash overlying the floor of a Neolithic dwelling just outside the eastern entranceway of Durrington Walls (plane-polarized light). (Photograph courtesy of Julie and Steve Boreham.)

of limestone rubble hillwash and slope erosion effects on the archaeology. Nonetheless, there appears to be an early Mesolithic land surface surviving associated with structural remains (see photograph, right). Problems remain, however, in attempting to set these exceptional sites in their landscape environs owing to the steep slopes, modern afforestation and the calcareous nature of the geology. The project in South Korea resulted from an invitation to give a guest lecture by Charles French at the Institute of Archaeology, University of Korea, at the end of May. As in Cambridgeshire, there is much developer-funded archaeology in advance of large housing projects which is destroying large areas of the floodplain edge. The site at Cheonan is an extensive Bronze Age (first-millennium BC) settlement site (40+ structures) (see photograph below) to the south of Seoul with a small dry valley in between containing possible evidence of the transition from dry/wet or rice paddy field agriculture. As well as contributing to the identification of floor levels, constructional aspects and the use of the structures, the soil micromorphological, geochemical and phytolith analyses should contribute to the discussion of land-use and agrarian change in this part of the world, and in particular the change to wet rice cultivation.



A standstill surface (marked by the knife) beneath colluvial rubble at the Mesolithic site of Vlasac in the Danube Gorges.



The Bronze Age settlement site of Cheonan in South Korea.

STAFF

Director: Dr Charles French

Senior research technician: Julie Boreham

PhD students:

Manuel Arroyo-Kalin,
Andrea Balbo, Heejin Lee, Karen Milek,
Ivy Owens, Mary Ownby, Clea Paine,
Miranda Semple, Federica Sulas

MPhil student: Lindsay Friedman

Affiliated researchers:

Judith Bunbury
Dr Ken Hamilton (Norfolk Landscape Archaeology),
Dr Helen Lewis (University College, Dublin),
Dr Lenke Lisa (EC Marie Curie Fellow),
Professor Marco Madella (ICREA, Barcelona),
Dr Laurence Smith (McDonald Institute),
Dr Gillian W. Wallace (International Office,
University of Cambridge),

PUBLICATIONS

Preston Miracle

- 2007 *The Krapina Neandertal Site: Zooarchaeology, Taphonomy, and Catalog of the Faunal Remains*. Zagreb: Croatian Natural History Museum.
- 2007 (with J. Robb). Beyond 'migration' versus 'acculturation': new models for the spread of agriculture, in *Going Over: the Mesolithic–Neolithic Transition in Western Europe*, eds. A. Whittle & V. Cummings. London: British Academy, 97–113.
- 2006 (with A.L. Balbo & D. Komšo). Prehistory of the open-air karst, further discoveries from the geoarchaeological survey of Polje Čepić, Croatia. *Histria Archaeologica* 35 (2004), 31–40.

David Orton

- 2007 A local barrow for local people? the Ferry Fryston cattle in context, in *TRAC 2006: Proceedings of the Sixteenth Annual Theoretical Roman Archaeology Conference, Cambridge 2006*, eds. B. Croxford, N. Ray, R. Roth & N. White. Oxford: Oxbow, 77–91.

Ryan Rabett

- 2007 (with G. Barker). Through the looking glass: new evidence on the presence and behaviour of late Pleistocene humans at Niah Cave, Sarawak, Borneo, in *Rethinking the Human Revolution*, eds. P. Mellars, K. Boyle, O. Bar-Yosef & C. Stringer. (McDonald Institute Monographs.) Cambridge: McDonald Institute for Archaeological Research, 411–24.
- 2007 (with P.J. Piper & Earl of Cranbrook). Confirmation of the presence of the tiger *Panthera tigris* (L.) in Late Pleistocene and Holocene Borneo. *Malayan Nature Journal* 59(3), 259–67.
- 2007 (with G. Larson, T. Cucchi, M. Fujita, E. Matisoo-Smith, J. Robins, A. Anderson, B. Rolett, M. Spriggs, G. Dolman, Tae-Hun Kim, Nguyen Thi Dieu Thuy, E. Randi, M. Doherty, Rokus Awe Due, R. Bollt, T. Djubiantono, B.

Grahame Clark Zooarchaeology Laboratory

In 2006–2007, the Grahame Clark laboratory members once again conducted research on materials from many diverse locations around the world.

Dr Preston Miracle was on research leave this past academic year, working on 'The Palaeolithic and Mesolithic Body' within the Leverhulme Research Programme 'Changing Beliefs of the Human Body'. This work, in collaboration with Dr Dušan Borić (project post-doc), focused on mortuary and iconographic evidence of the treatment of human and animal bodies in western Asia, the Danube Gorges, and southern Scandinavia. Results were presented at several conferences including, 'Human and Non-human Bodies: Permeable Bodies' (January 2007, Cambridge, see p. 6) and 'Bodies in Pieces: the Changing Relations Between Body Parts and Bodies Whole' (September 2007, Zadar). The fruits of Dr Miracle's research leave are currently being prepared for a monograph.

He continued with his survey and excavation work in northern Bosnia in the spring and summer of 2007. 'The Palaeolithic of Northern Bosnia' project focused on the Vrbas river valley north of Banja Luka in collaboration with the Office for the Protection of Cultural Monuments, and the Museum of the Republic of Srpska. Survey and excavation seasons co-directed with Tonko Rajkovača (CAU) discovered 65 lithic scatters, and test excavations in the summer at the open-air site of Pećine produced extremely rich



Faunal field laboratory, Vela Spila, Korcula (Croatia). Preston Miracle and Pia Spry-Marques at work.

Middle and Upper Palaeolithic stone artefact collections that are being analysed by Dr Terry Hopkinson (University of Leicester). Preston also embarked on new faunal work from the site of Vela Spila on Korčula Island (Croatia). This cave preserves extremely rich assemblages spanning from the Last Glacial Maximum (c. 20,000 BP) to the Early Bronze Age (c. 4000 BP). To complement the Ice Age remains of red deer, wild ass, and aurochs, there is a fired clay figurine of an equid(?) – the first of its kind known from the wider region. This faunal work was assisted by Pia Spry-Marques (Cantab, 2005).

Work continues on faunal collections from Istria, Croatia, and results from new analyses of Vela Peć were presented with Siniša Radović at the recent European Archaeological Association meetings in Zadar, Croatia.

Jessica Rippengal continues to develop the lab's reference collection and provide support for research students. She is also the faunal specialist for the Higher Education Field Academy programme run by Dr Carenza Lewis which looks at settlement patterns throughout East Anglia using 14-year-olds from local schools to help in the excavations.

Professor Tony Legge (Leverhulme Senior Research Fellow) continued work on *Village on the Euphrates*, vol. 2. This project, supported by the Leverhulme Trust, will make available all of the original data from the Abu Hureyra excavations, as an online publication. The site occupation spans the period 11,500–7000 BP and it has a detailed record of the process of the first domestication of sheep, goat and cattle. The publication will comprise: a) the primary data set as recorded of species and bones identified (these data will include the phase to which each specimen belongs and information relating to the context in which each was found; whether house floor, pit fill, midden and so on; and the data set will comprise c. 30,000 identified bones and 2000 identified teeth and jaws; it will be possible to download the data for research and study purposes); b) the full measurement data base of all mammals, wild and domestic; c) a photographic record of worked bones, of the rare species and other bone modifications; d) a definitive list of avian (bird) species found at Abu Hureyra; and e) an environmental and economic narrative of the trenches where the faunal remains are hitherto unpublished; trenches A, C, F, and G.

PUBLICATIONS

Ryan Rabett (*cont.*)

- Griffin, M. Intoh, E. Keane, P. Kirch, Kuang-Ti Li, M. Morwood, L. M. Pedriña, P. J. Piper, P. Shooter, G. Van den Bergh, E. West, S. Wickler, Jing Yuan, A. Cooper & K. Dobney. Phylogeny and ancient DNA of *Sus* provides insights into Neolithic expansion in Island and Oceania. *PNAS* 104(12), 4834–9.
- 2006 (with G. Barker, H. Barton, M. Bird, P. Daly, I. Datani, A. Dykes, L. Farr, D.D. Gilbertson, B. Harrisson, C.O. Hunt, T. Higham, J. Krigbaum, H. Lewis, S. McLaren, V. Paz, P.A. Pike, P. Piper, B. Pyatt, T.E.G. Reynolds, J. Rose, G. Rushworth, M. Stephens, C. Stringer, G. Thompson & C. Turney). The 'human revolution' in tropical southeast Asia: the antiquity of anatomically modern humans, and of behavioural modernity, at Niah Cave (Sarawak, Borneo). *Journal of Human Evolution* 52, 243–61.
- 2006 (with P.J. Piper). A report on a small assemblage of animal bones recovered from Panguma Cave, Niah. *Sarawak Museum Journal* 83 (New Series), 45–58.

Chris Stimpson

- 2007 Raptor and owl bone from Niah: preliminary identifications and morphological variation in the humerus and tarsometatarsus of selected raptors. *International Journal of Osteoarchaeology*.

Natalie White

- 2007 Catering for the cultural identities of the deceased in Roman Britain: interpretative potential and problems, in *TRAC 2006: Proceedings of the Sixteenth Annual Theoretical Roman Archaeology Conference, Cambridge 2006*, eds. B. Croxford, N. Ray, R. Roth & N. White. Oxford: Oxbow Books, 115–32.
- 2007 (ed. with A. Stevenson). The materiality of burial practices. *Archaeological Review from Cambridge* 22(1).

PUBLICATIONS

Natalie White (cont.)

- 2006 Book review of *Deconstructing Context: a Critical Approach to Archaeological Practice* by D. Papaconstantinou, in *Embodied Identities*, ed. I.V. Gregory. *Archaeological Review from Cambridge* 21(2), 132–6.

Dr Ryan Rabett has been working on his project 'Regionalism in the development of modern human behaviour' (Templeton Foundation 2006–2008). This project is exploring the degree of variability in early modern human behaviour, primarily as evidenced through food-management strategies, across a sample of sites from mainland and island southeast Asia. In May 2007, he began a new excavation at a cave site in northern Vietnam (Hang Boi) (see p. 47). This project is under the co-direction of Ryan and Dr Vu (Institute for Archaeology, Hanoi). The field team for this first season (twelve people) came from, additionally, the

Australian National University, Birkbeck College, the Ninh Binh Museum, Queen's University, Belfast and the University of York. The first season of fieldwork was supported by the McDonald Institute. We look forward to Ryan's continuing involvement in the Grahame Clark Laboratory once he takes up his position as Post-doctoral Fellow in the McDonald Institute. In addition to this busy field schedule, Ryan also taught the course A7 (The Upper Palaeolithic from the Alps to the Americas: Consequences of the Human Revolution) while Preston Miracle was on leave in 2006–2007.

Paul Ewonus began his PhD research in 2006 into prehistoric social landscapes in the Strait of Georgia region of the Pacific Northwest Coast. Critical to this study is zooarchaeological analysis of fine-screen faunal material from several coastal shell midden sites. Paul worked as a visiting scholar at the University of Victoria, Canada during August and September 2007 on the analysis of animal bone from the Dionisio Point site. He also undertook laboratory research over the summer at Simon Fraser University in Vancouver on previously archived faunal collections from the Pender Canal site. A related aspect of his work in British Columbia was archival research, primarily at the library of the British Columbia Archaeology Branch, the government agency responsible for administering the archaeological permitting process in the province. Field survey and/or limited testing was undertaken at three large shell midden sites: Dionisio Point on Galiano Island, and Kosapsum and Storey's Beach on Vancouver Island. Paul also presented a conference paper co-authored with Dr Dongya Yang of Simon Fraser University entitled 'Archaeological site use, seasonality and social life: a case study from the southern Strait of Georgia, Pacific Northwest Coast' at the 2007 Meeting of the Canadian Archaeological Association in St John's Newfoundland.

David Orton has spent much of the year engaged in the writing-up phase of his PhD on wild and domestic animal use in the Neolithic central Balkans. In addition, he and Sara Robinson completed the primary analysis and write-up of the fauna from the Lismore Landscape Project. A more detailed study is to follow next year. Over the summer David again joined the zooarchaeology team at Çatalhöyük for a month's work in the field laboratory, taking particular responsibility for the fauna from the renewed West Mound excavations.

Patrick Skinner (AHRC funded) is researching human–bear interactions during the Pleistocene, with a focus on the Middle and Upper Palaeolithic periods (roughly 60–20 kya) in the Czech Republic. In September 2006 he gave a paper at the annual bear conference in Japan on how our understanding of living bears can help us understand human relations with bears in the past, and more recently presented preliminary results of his research to the Pal-Meso Group in Cambridge. During the summer of 2007 he spent three months in the Czech Republic studying cave bear teeth and bones from Pod hradem, Šipka, and Barová Caves for his PhD dissertation. In addition to analysing and writing up these results, he is organizing a conference to be held



Wrinkle-lipped bats, Tadarida plicata, leaving a cave in northern Borneo.

at the McDonald Institute in January 2008 on hominin–environment relations during OIS 3 (60–24 kya).

Recipient of a three-year NERC PhD studentship, Chris Stimpson has completed his first year of research on the small vertebrate assemblages from two key cave sites in southeast Asia; the Niah Caves (Sarawak, Borneo) and Liang Bua (Flores, Indonesia). To date, he has conducted taxonomic and taphonomic assessments of raptor, owl, hornbill, pheasant and swiftlet bones from Niah and successfully completed a comprehensive survey of Pleistocene bat bone assemblages from the Harrison Archive at the Sarawak Museum in Kuching. His research is bringing new

insights into the Pleistocene environments and hominin subsistence strategies in the Old World tropics and is developing healthy collaborations with colleagues in Malaysia, Indonesia, Australia and the Netherlands.

Natalie White has been continuing her PhD research focusing on the food remains within Romano-British burials in England, delivering a paper on her current research at the first ‘Food in Archaeology Conference’ in Nottingham, and a much extended version at one of the department graduate seminars (Cambridge). Natalie also represented the lab by designing a display and associated activities on the subject of food in Roman Britain for the University’s ‘Science on Saturday’ event (see photograph below). During the summer, Natalie returned to Professor Martin Millett’s excavation at Thwing, East Riding, Yorkshire.

STAFF

Laboratory director: Dr Preston Miracle

Zooarchaeology and Chief technician:
Jessica Rippengal

Research students (2005–2006):
Helen Farr, David Klinge,
Lindsay Lloyd-Smith, Andy McLaren,
Stephanie Meece, David Orton, Krish Seetah,
Patrick Skinner, Chris Stimpson, Natalie
White, Jo Wilson

Associated researchers (2005–2006):
Katie Boyle, Tony Legge, Iain Morley,
Philip Piper, Ryan Rabett



Roman meal prepared for ‘Science on Saturday’, courtesy of Natalie White. (NB rice and potatoes are included as red herrings!)

PUBLICATIONS

Mim Bower

- 2007 (with E. Barrett). Sampling in central and east Asia in search of the genetic signatures of horse domestication: do isolated horse populations retain rare genetic types? *NES Journal of Equine Studies* 3, 26–30.
- 2007 (with M.K. Jones). Ancient DNA and archaeogenetics, in *Encyclopaedia of Archaeology*. Oxford: Elsevier.

Glyn Daniel Archaeogenetics Laboratory

The Archaeogenetics Laboratory hosts a wide range of projects exploring the domestication geographies of various plant and animal species from the Neolithic to the recent past. There are three well-established post-doctoral projects: Mim Bower continues work on horse and cattle archaeogenetics, Diane Lister is studying the spread of wheat and barley cultivation, while Harriet Hunt is exploring the domestication of broomcorn millet. As these projects have matured over recent months, related avenues have opened up which have brought successful applications for further external funding. In 2006 the lab was joined by two MPhil students, Michael Campana and Hugo Oliveira, both of whom will be staying on in the lab from October 2007 for PhD projects.

Laboratory members have presented research and forged new collaborations at international conferences in Cracow, Poland, at the 14th Symposium of the International Work Group for Palaeoethnobotany; in Uppsala, Sweden, at the 11th Congress of the European Society of Evolutionary Biology; and at the Society for Molecular Biology and Evolution Conference in Halifax, Canada. Closer to home, the lab co-organized and gave papers at the UK Archaeological Sciences Conference in the McDonald Institute (see pp. 11–12). As a follow-on to this conference, the lab hosted the fourth GeneTime workshop on domestication of plants and animals, a forum for research presentations by PhD students, including those sponsored by the Marie Curie GeneTime programme (see pp. 8–9). Experts in the field, including Professor Dan Bradley (Trinity College Dublin), who gave the keynote speech, held tutorial and workshop sessions on technical and theoretical aspects of archaeogenetics research.

From Chariotry to Equestrian Pastoral Nomadism: the Evolving Role of the Horse in the Second and First Millennia BC

MIM BOWER

This year saw the beginning of a major Leverhulme Trust-funded multidisciplinary project on the evolving role of the horse in the second and first millennia BC in central and east Asia. Working collaboratively with Equine Archaeozoologist and Palaeopathologist Dr Marsha Levine (McDonald Institute) and her team (see p. 51), the lab will be providing the genetic component of the project. Its role is to elucidate the circumstances of the spread of the horse and chariot complex eastwards to China between c. 2000 and 1250 BC and to understand the timing and circumstances of the emergence of equestrian pastoralism, most particularly whether the change was gradual or sudden.

Building on work carried out as part of the Isaac Newton Trust and McDonald Institute-funded 'Archaeogenetics of Horse Husbandry' project, the genetics of isolated living horse populations in central and east Asia have continued to be studied. Thanks to the lab's collaborators (Elizabeth Barrett and Lisa Quilter, Suffolk and Jacqueline Rippart, Kyrgyz Horse Foundation, Kyrgyzstan and colleagues from the Centre for Animal Husbandry and Veterinary Medicine at the Ministry of Agriculture, Kazakhstan) we have returned to sample more horses in China and Kazakhstan, and have managed to gain the first ever horse samples from Tajikistan. The preliminary results, modelling the relationships between the mitochondrial DNA of these isolated populations and regionally

specific breeds of horses, were presented at the Society for Molecular Biology and Evolution Conference 2007 in Halifax, Nova Scotia and at the UK Archaeological Sciences Conference 2007 hosted by the Department of Archaeology and the McDonald Institute here in Cambridge. Colleagues in the Department of Biochemistry, Cambridge and School of Biological Sciences, Liverpool have assisted the lab in using complex Bayesian analysis to determine relationships in the data set and the results are currently in the process of being written up. More sampling trips, to further locations in central and east Asia are planned as part of this project, and will result in probably the largest and most geographically diverse sample sets of all domestic animals.

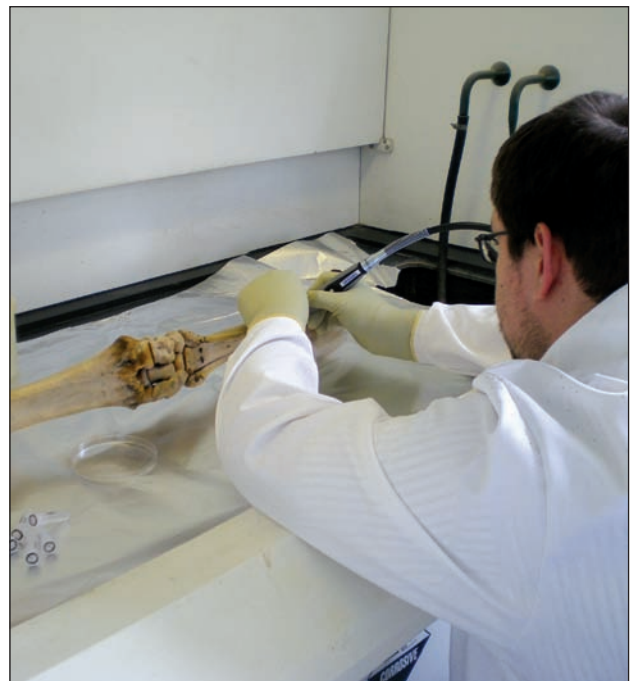
The core aspect of the lab's part of this project, however, is to analyse ancient DNA from horses from a remarkable collection of second- and first-millennia chariot burials from central and east Asia. This research is in its infancy, but we are awaiting the first results with anticipation. The background research on the genetics of living horse populations will add the framework for the interpretation of these results.

The Isaac Newton Trust has once again been most generous in funding an adjunct project to the Leverhulme Trust Chariot Project, which will allow the collection and collation of ethnographic data on horse husbandry in central and east Asia. This ethnographic data will not only expand the understanding of the position of the horse in human society but will also generate data that will aid in the interpretation of the archaeozoological, palaeopathological and archaeogenetic data of the Chariot Project. This is a collaborative project with Equine Ethnographer Dr Rebecca Cassidy, UCL. The first undertaking will be to attend the festival of the Kyrgyz Horse in the Issyk Kul region of Kyrgyzstan to observe and record the testimonies of horse herders to better understand the role of the horse in the Kyrgyz socio-cultural and economic framework.

It is hoped that this project will act as a springboard for funding a major ethnographic project in the coming year, which if successful would be the largest and most geographically diverse of its kind.

Genetic Variation in Historic Thoroughbred Horses

Data collection continues in the final year of this Horserace Betting Levy Board (HBLB)-funded collaborative project with Professor Matthew Binns, Royal Veterinary College, London and Paula Jenkins, Natural History Museum, London, on characterizing genetic variation in thoroughbred horses. Ancient DNA has been analysed from a remarkable collection of historic elite thoroughbreds, from the Natural History Museum, Newmarket Horseracing Museum, the Zoology Museum, Cambridge, the Royal Veterinary College and private collections and the project members are now in the process of writing up the results. We have discovered that, as may have been expected, DNA preservation in these historic samples is excellent, and this allows for the exploration of more of the genome than possible in older samples.



Mark Whitten, research technician on the HBLB-funded 'Genetic Variation in Historic Thoroughbred Horses' project, sampling post-cranial material from the elite thoroughbred Eclipse (1764) at the Royal Veterinary College Historical Collection at Hawkshead.



Konik horses from Poland, pictured here at the Konik Horse Stud founded by Professor Tadeusz Vetulani of Poznan University, form part of the largest and most geographically diverse mitochondrial DNA data set for living horse populations.

This opens the way for comparisons between living genetic studies of traits described by nuclear DNA, for example tracing inherited diseases back through time, an area particularly pertinent to thoroughbred horses, which are prone to serious genetic defects.

The lab is delighted to announce that Mark Whitten, the research technician dedicated to this project, has taken up a post-graduate studentship at the Max Planck Institute for Evolutionary Anthropology and we wish him well in his future career.

Post-Black Death 'Improvement' in Animal Husbandry

The lab's joint British Academy-funded project with Richard Thomas of the University of Leicester has now drawn to a close. Working on medieval populations of cattle from Dudley Castle, West Midlands, the aim of this project was to explore the feasibility of analysing nuclear DNA in archaeozoological samples. Previously, a team at Trinity College Dublin had successfully amplified nuclear DNA from remarkably well-preserved cattle from Viking Dublin. Together with the lab's own results from historic thoroughbreds, there is hope of success. And indeed, thanks to the efforts of Michael Campana, who carried out the experimental work as part of his MPhil research, the lab was able to reliably amplify nuclear DNA from a proportion of the

cattle bones we worked on. As expected, many of the bones did not contain sufficient nuclear DNA for reliable amplification, even though mitochondrial DNA could be amplified from all of the bone samples.

The reliable amplification of several nuclear DNA microsatellites indicates that genotyping and characterization of the cattle populations at Dudley Castle is challenging, but feasible. This is the first time that data of this kind has been collected from material from a non-waterlogged archaeological context. Data such as this will enable us to use archaeozoological material to look into the fine detail of cattle husbandry, breed development and population movement, something that is not possible using mitochondrial DNA alone. Although this project is now complete, Michael Campana will be carrying on this research as part of his PhD.

Finally, the project's student body will be increasing with the arrival of Vera Warmuth this October. Vera was successful in gaining a fiercely competitive BBSRC Comparative and Evolutionary Genomics PhD Studentship. This studentship program is a collaborative venture organized by the Department of Zoology, University of Cambridge and encompasses a number of Cambridge departments, including the McDonald Institute. The lab is very happy to be a part of this joint venture and are looking forward to working closely with the Zoology Department and the other teams represented by this studentship program.

Genetic Analysis of Cereals to Trace Agricultural Spread

DIANE LISTER

Dr Diane Lister has been working on the 'The Domestication of Europe' project for the past three years. This NERC-funded consortium grant, which is now drawing to a close, has investigated the spread of cereal cultivation from its origins in southwest Asia into and through Europe during the Neolithic by the genetic analysis of landraces of barley and emmer wheat obtained from seed banks and historic collections. The project's partners have been the Universities of Sheffield and Manchester, and the National Institute of Agricultural Botany, Cambridge. Here in the McDonald Institute the research has shown the usefulness of 'stale' or 'historic' DNA from non-viable grain up to 170 years old; these historic materials represent traditional cultivars prior to the industrialization of agriculture and international breeding programmes. DNA preservation is excellent, enabling a variety of genetic markers to be studied. Interesting phylogeographic patterns which may reflect initial agricultural dispersal through Europe have been shown in modern landraces of both barley and tetraploid wheats, and analyses of historic material has shown that these patterns have time depth. A study of a photoperiod response gene in historic and modern European barley accessions across Europe has helped elucidate the role of environmental barriers in the transition to a farming society from a Mediterranean to a temperate climate.

Hugo Oliveira from Portugal joined the Glyn Daniel laboratory in 2006 as a MPhil student and will be continuing for a PhD. His project, which complements the 'Domestication of Europe' project, is looking at various genetic markers in tetraploid wheat landraces (durum, river and emmer) in the Iberian peninsula and North Africa. His research aims to identify other potential routes of agricultural spread into Europe, especially from North Africa. Hugo is mainly using modern landrace accessions, but will also incorporate some historic tetraploid wheat accessions to give time depth to patterns seen in modern landraces.

An Isaac Newton Trust grant entitled 'The potential for genetic analysis of historic barley landraces to trace the spread of cereal cultivation across Asia' starting in October will see Diane Lister extending the remit of the 'Domestication of Europe project' to Eurasia as a whole. She will be sourcing historic Asian barley accessions from the Vavilov Institute in Russia, and various herbarium collections in Australia and the UK, with the eventual aim of establishing contacts and collaborations in East Asia and the CIS. The Asian barley project will tie in closely with the 'East-West Millet project' led by Martin Jones and Harriet Hunt.

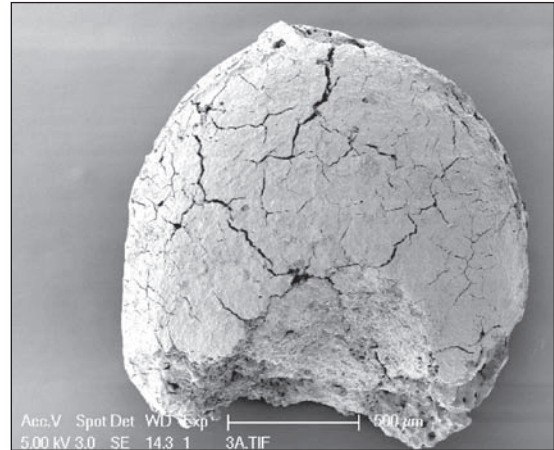


Dr Mim Bower in the Asturias region of northern Spain. Asturias is one of the few places in Europe where landraces of emmer wheat are still grown. Fields are cultivated with a mix of emmer and spelt wheat, in varying proportions, and are sown and harvested by hand according to traditional practices. The flour is used to make a special bread for festivals.

The East–West Millet Project

HARRIET HUNT

The ‘East–West Millet project’ has continued for a third year, led by Professor Martin Jones (George Pitt-Rivers Lab) and Dr Harriet Hunt (Wellcome Research Training Fellowship funding). This cross-disciplinary project is bringing together data from genetics and archaeobotany to explore the origins of domesticated broomcorn millet, a plant native to northern Eurasia. Our study of genetic markers, with the continuing collaboration with Professor Chris Howe (Department of Biochemistry), is demonstrating how plant molecular evolutionary processes shape DNA sequence diversity in crops such as millet. The project is currently developing projects to test how the interpretation of archaeogenetic data in domestication studies is affected by these underlying evolutionary mechanisms. We are also continuing our collaboration with Dr Christian Tobias (USDA Pacific Research Station, Albany, California) to develop a set of microsatellite markers for broomcorn millet.



Charred broomcorn millet seed from the Early Neolithic period in eastern Ukraine.

New fieldwork projects by PhD students Xinyi Liu and Giedre Motuzaitė-Matuzevičiūtė (George Pitt-Rivers Laboratory) in northeastern China and eastern Ukraine are strengthening the chronology for early Neolithic millet-farming sites. In addition to the archaeobotanical work at these sites, Xinyi Liu and Dr Tamsin O’Connell (Isotope Laboratory) are assessing evidence for millet consumption in Neolithic China through isotopic analysis of human and animal bones. Fieldwork in China has also enabled collection of landraces for genetic analysis.



Our ongoing collaboration with the Vavilov Institute, St Petersburg, has made further samples available. The samples include both domesticated millet and a number of its weedy and wild relatives that may have played a role in its evolution.

STAFF

Postdoctoral researchers:

Mim Bower, Harriet Hunt and Diane Lister

MPhil/PhD Students:

Hugo Oliveira, Michael Campana and Vera Warmuth

Research technician:

HBLB Thoroughbreds Project: Mark Whitten

*A possible ancestor of cultivated broomcorn millet – *Panicum miliaceum* subsp. *ruderales* – growing as a weed in Inner Mongolia, China.*

George Pitt-Rivers Laboratory for Bioarchaeology

The George Pitt-Rivers Laboratory continues its research into the exploitation of plant resources from the Palaeolithic through to the historic periods in diverse regions of the world. Over the last academic year, a number of projects have reached a successful conclusion, including Ms Rachel Ballantyne's research on Roman settlement sites from the Cambridgeshire fens. Research has continued in Britain (Ms Anne De Vareilles), western and central Europe (Ms Brigitta Kulcsarne-Berzsenyi, Dr David Beresford-Jones), South America (Dr David Beresford-Jones), west Asia (Ms Giedre Motuzaitė-Matuzeviciute), south Asia (Ms Carla Lancelotti) and east Asia (Dr Liliana Janik, Professor Martin Jones, Mr Xinyi Liu).

The lab's archaeobotanists continue to work closely with the palaeoisotopic programme under Dr Tamsin O'Connell, and a series of studies on the archaeogenetics of domesticates. A number of the Institute's projects now span many scientific groups, and this is particularly the case with bioarchaeology. 'The Moravian Gravettian project' exploring food sharing and ecology of Upper Palaeolithic communities in Europe closely integrates the work of the bioarchaeology, geoarchaeology and isotope labs, and the 'Domestication of Europe' and 'The East-West Millet' projects integrate the work of the bioarchaeology and archaeogenetics laboratories.



A traditional fireplace ready to be sampled – Nagwada, Gujarat, India.

PUBLICATIONS

Martin Jones

2007 *Feasts: Why Humans Share Food.*
Oxford: Oxford University Press.

Liliana Janik

2007 Looking at Mythological Realities of Siberian Rock Art through the Relationship Between Animism and Shamanism. *Ethnohistory and Archaeology of Northern Eurasia: Theory, Methods and Practice*, Irkutsk, Publishing House of Irkutsk State Technical University. (conference paper)

Alison Blyth

2007 (with A. Asrat, A. Baker, P. Gulliver, M. Leng & D. Genty). A new approach to detecting vegetation and land-use change: high resolution lipid biomarker records in stalagmites. *Quaternary Research*.
2006 (P. Farrimond & M. Jones). An optimised method for the extraction and analysis of lipid biomarkers from stalagmites. *Organic Geochemistry* 37, 882–90.

Xinyi Liu

2007 The Origins and Early Spread of a Minor Cereal: Isotopic and Archaeobotanical Studies of *Panicum milliaceum*. *Ethnohistory and Archaeology of Northern Eurasia: Theory, Methods and Practice*. Irkutsk, Publishing House of Irkutsk State Technical University. (conference paper)
2006 (with C.S. Wang). Early ceramics in China. *Newspaper of Cultural Relics*, 7th Dec 2006 [in Chinese].



Carla Lancelotti standing under a Neem tree (Azadirachta indica) – Nagwada, Gujarat, India.



Anne de Vareilles of the Cambridge Archaeological Unit sorting waterlogged material from a Bronze Age Cambridgeshire fen deposit.

This year, the lab's fieldwork activities have had a strong focus on Asia and the 'East-West Millet project'. Giedre Motuzaitė-Matuzėvičiūtė has been conducting her own excavations in the eastern Ukraine, and has recovered flotation samples for the first time in this region, including wheat, barley and millet. Further east, Sandy Pullen and Lenka Lisa have initiated flotation on Neolithic sites around Lake Baikal, which may represent a location beyond the northern bounds of a millet corridor. In China, each of the early Neolithic millet sites was visited by Professor Martin Jones, Mr Xinyi Liu, Dr Dustin White and Ms Giedre Motuzaitė-Matuzėvičiūtė, who also collected contemporary germplasm samples for Dr Harriet Hunt's (Glyn Daniels Laboratory) genetic work.

Elsewhere, Ms Carla Lancelotti returned from south Asia with some important Harappan plant assemblages, and Ms Rachel Ballantyne and Dr Evi Margaritis initiated flotation in the new excavations at the Port of Rome. Dr Liliana Janik has been exploring the cultural categorization of the natural environment in Jomon Japan; in particular she has been exploring figural representation of different types of fungi (see p. 43).

STAFF

Laboratory director: Professor Martin K. Jones

Laboratory manager: Dr Liliana Janik

Post-doctoral researchers:

Dr David Beresford-Jones, Dr Alison Blyth

PhD students:

Rachel Ballantyne, Brigitta Berzsenyi, Xinyi Liu, Carla Lancelotti, Emma Lightfoot,

Giedre Motuzaitė-Matuzėvičiūtė

Affiliated researchers: Dr Alan Clapham, Anne de Vareilles

Isotope Laboratory

In its third year, the isotope laboratory has rapidly expanded, with new additions in the form of post-docs and students. Archaeological projects are as diverse as ever, spanning the full chronological range, including studies of diet and climate in the Palaeolithic, resource gathering in the Mesolithic, ethnicity and migration in post-Roman Europe and in the trans-Atlantic slave trade amongst others.

Dr Rhiannon Stevens joined the group from the University of Nottingham, to work on palaeoclimate and animal ecology, funded by two linked grants from the Isaac Newton Trust and NERC. This work focuses on exploring how environmental and climatic signals are recorded in isotopic values of animal tissues, with the aim of using archaeological animal remains as palaeoclimatic indicators. Initial work is developing methodologies on modern populations of red deer, in collaboration with Tim Clutton-Brock's Large Animal Research Group in Zoology.

In an EU-funded project jointly with the Università di Roma 'Tor Vergata' and the Museo Pigorini in Rome, and the Department of Classics in Cambridge, laboratory members have been analysing the population of the late Roman Velia cemetery, in central Italy. Unique because of the large number of infants and children buried (almost half the 400 inhumations), the study has enabled us to assess the duration of breast-feeding and weaning in the population.

Dr Sue Hakenbeck is also working in the lab as part of her JRF at Newnham College. After her PhD research studying ethnicity in Barbarian period Europe through material culture, she is now addressing these questions using isotopic analysis of human skeletal remains. Emma Lightfoot began her AHRC-funded PhD working on post-Roman period in the Balkans, specifically Croatia. Emma's work aims to elucidate subsistence changes that occur as a result of possible population migrations.

On the methodological side, Dr O'Connell and co-authors have published a paper reporting the turnover rate of human bone collagen in the *American Journal of Physical Anthropology*. The work is of importance to archaeologists, since it enables to us to consider what time-slice of an individual's diet we are

PUBLICATIONS

Tamsin O'Connell

- 2007 (with R.E.M. Hedges, J.G. Clement & C.D.L. Thomas). Collagen turnover in the adult femoral mid-shaft: modelled from anthropogenic radiocarbon tracer measurements. *American Journal of Physical Anthropology* 133, 808–16.
- 2007 (with K.L. Privat & R.E.M. Hedges). The distinction between freshwater- and terrestrial-based diets: methodological concerns and archaeological applications of sulphur stable isotope analysis. *Journal of Archaeological Science* 34, 1197–204.

Rhiannon Stevens

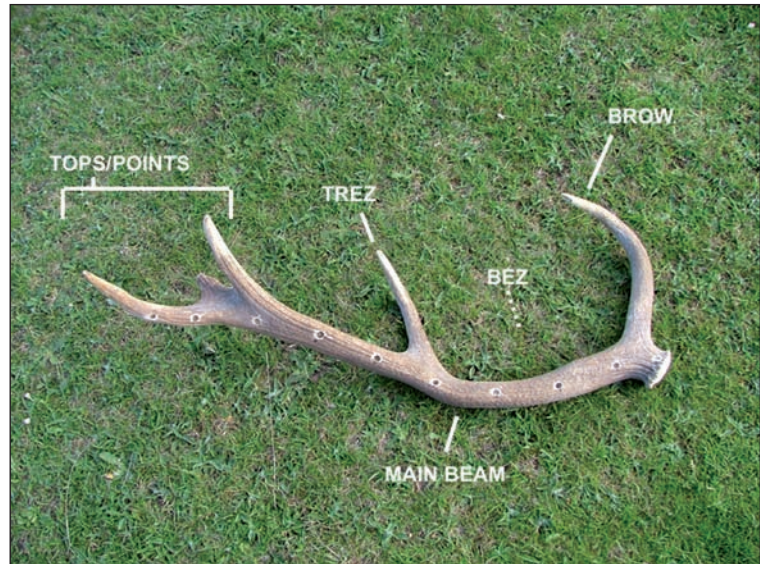
- 2006 (with R.E.M. Hedges & J.A. Pearson). Carbon and nitrogen stable isotope compositions of animal and human bone from Ascott-under-Wychwood long barrow, in *Building Memories: the Neolithic Cotswold Long Barrow at Ascott-Under-Wychwood, Oxfordshire*, eds. D. Benson, A.W.R. Whittle, A. Barclay & I. Dennis. Oxford: Oxbow.



Tamsin O'Connell examining bone fragments in the Isotope Laboratory.



Rhiannon Stevens preparing antler samples for analysis.



Modern red deer antler sampled for climatological studies.

seeing when analysing archaeological bone samples. But in an example of the cross-disciplinary nature of isotope studies, the work is also of interest to physiologists studying bone-formation processes as they seek to understand conditions such as osteoporosis.

The lab continues to have a steady stream of undergraduates and MPhil students working on small projects as part of their degrees. In collaborations with the Cambridge Archaeological Unit, the Royal Belgian Institute of Natural Sciences, the Archaeology of Cidade Velha, Cape Verde project and Oxford University, projects have included analysis of a local Roman cemetery from Babraham, possible slave burials from Cape Verde and Barbados, late Magdalenian sites in Belgium, Aurignacian and Gravettian sites in Dordogne, France, and shells from the Mesolithic sites on Oronsay.

The lab also had a strong presence at the UK Archaeological Sciences conference, co-hosted by the McDonald Institute and the Department of Archaeology, with eight posters of its work on display (see pp. 11–12). Lab members also attended conferences in archaeological and isotopic conferences in Stockholm, Newcastle, Cardiff, London and Croatia.

STAFF

Laboratory director: Dr Tamsin O'Connell
Post-doctoral researchers: Dr Rhiannon Stevens, Dr Sue Hakenbeck
MPhil/PhD students: Lindsey Friedman, Emma Lightfoot, Xinyi Liu, Clay Magill, Alex Pryor



Tamsin O'Connell giving the welcome address at the UK Archaeological Sciences conference.

Grants and Awards

The Institute supports field projects and other research initiatives through its annual grants from the D M McDonald Grants and Awards Fund. The Advisory Committee meets in February or March every year to consider applications to the fund from Cambridge-based researchers. In 2007, grants totalling £98,320 were awarded to 25 projects, ranging widely in time and space — from the art, beliefs and rituals of Jomon and Yayoi Japan to seasonality from oxygen isotope analysis of fauna. Completed applications for grants for 2008 must reach the Deputy Director by the end of the second week of January 2008.



Map showing the location of projects supported by the D M McDonald Grants and Awards Fund.

Civita di Grotte di Castro

GABRIELE CIFANI

The Etruscan city of Civita di Grotte di Castro is located on a 20 ha tuff plateau inside the volcanic crater of Bolsena Lake, about 80 miles north of Rome and close to the territorial border of three important Etruscan territorial states: Tarquinii, Vulci and Volsinii. It was first described in 1857 and further surveys, most of them unpublished, were carried out in the rich orientaling and archaic necropolises surrounding the settlement. In spite of this interest, no excavations have ever been conducted of the city.



The site of Civita di Grotte di Castro.

Within the framework of the Marie Curie Fellowship, the Department of Archaeology (under the supervision of Dr Simon Stoddart and Dr Gabriele Cifani) carried out a preliminary survey in September 2006 that provided very interesting results regarding the organization of the settlement, including the presence of a grid of underground drainage-ways, cisterns and what was probably the area of an archaic votive deposit.

The 2007 field season (19–31 August) was undertaken with the purpose of improving the quality of data about historical changes in the settlement. A detailed topographic map of the plateau was created by Stephen Kay (British School at Rome) and Tom Birch (BA, Cambridge) by means of a total station. GPR (Ground-Penetrating Radar) survey was carried out by Professor Elena Pettinelli and Pier Matteo Barone (Department of Physics, University of 'Roma Tre') in some key areas generating interesting results about the presence of walls and underground structures in the area of the ancient city. Two roman cisterns were also excavated (see photograph below), under the supervision of Letizia Ceccarelli (PhD candidate, Cambridge), who was also responsible for archaeological materials and GIS.



A roman cistern at Civita di Grotte di Castro.

In addition, further surveys were carried out on the plateau with the exploration of some underground drainageways and the location of further areas of scattered material. The new data available highlight the transformation of the Etruscan city into a Roman rural settlement between the third and first century BC together with geomorphological changes which occurred in the same area between the Classical period and the Middle Ages.

ACKNOWLEDGEMENTS

Marie Curie intra-European Fellowship n. 514523; Soprintendenza Archeologica per l'Etruria Meridionale; Comune di Grotte di Castro; Gruppo Archeologico di Grotte di Castro.

The Role of the Natural Environment in Art, Beliefs and Rituals in Jomon and Yayoi Japan

LILIANA JANIK

The Jomon period of Japanese prehistory (c. 14,000–500 BC) is well known for its ceramic figurines. The majority of these artefacts are anthropomorphic in form, but there is an important subset which represents plants and animals. These plant and animal figurines hold the potential to help us understand the role of the natural environment in the belief systems of prehistoric Japan, and thus a preliminary survey was undertaken of artefacts in Aomori, Niigata and Yamanashi Prefectures in the first two weeks of August 2007.

The figurines are interpreted by Japanese archaeologists as representing animals, including wild boar, monkeys, dogs, plants and fungi. The latter are especially interesting as they can be related to a specific season. Potential was established for assessing the representation of specific types of fungi and also stages within their life-cycle. These three-dimensional objects are just one aspect of representational art in the Jomon period. Jomon art includes increasing numbers of depictions on pottery vessels of anthropomorphic and zoomorphic subjects, including an apparent boar-hunting scene complete with surrounding trees. Materials from the site of Chikano in Aomori Prefecture were particularly promising, including an unusual stone ‘stamp’ bearing incised human figures, and a number of animal and fungi figures.

The project will now proceed to develop a data base of known zoomorphic and plant images from the Jomon period, which will be supplemented with representations from the succeeding rice-growing Yayoi period (c. 500 BC–AD 300) in particular images on bronze bells. Discussions have been initiated towards securing permissions for the detailed photogrammetric and laser-scanning recording for the next phases of the study.

Materials were studied in the following institutions: Niigata Prefectural Museum of History, Nagaoka Municipal Museum of Science, Yamanashi Prefectural Archaeology Museum, Sannai Maruyama Site Museum and the Aomori Prefectural Archaeology Research Centre.



Jomon mushroom figurine from the Aomori Prefectural Archaeological Research Centre.



Deer representation on Jomon pottery from the Aomori Prefectural Archaeological Research Centre.

The Laacher See Project

FELIX RIEDE

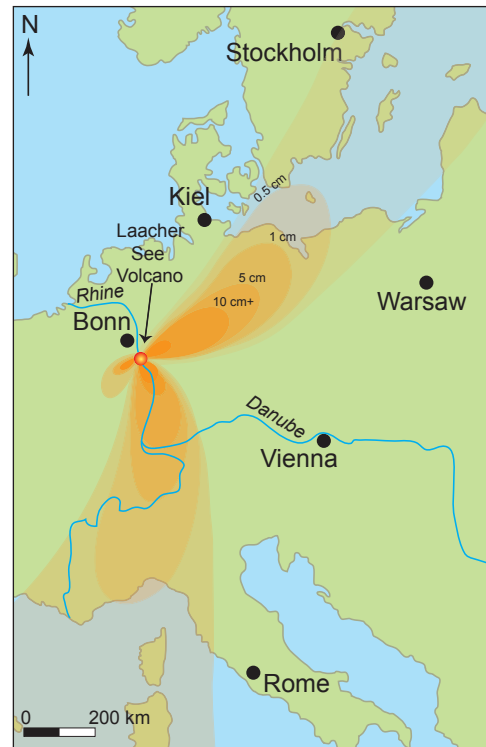
12,920 years ago the Laacher See volcano — located in what is today one of Germany's premier wine-growing areas — erupted catastrophically. This eruption covered large parts of northern Europe in ash fall-out (see map). Well-known to volcanologists, it has been largely ignored by archaeologists. Up to this date, this project has been able to demonstrate, using calibrated radiocarbon dates, geographic, economic and lithic data, that this eruption had significant effects on contemporaneous Late Glacial hunter-gatherer populations. This work has resulted in the 'Laacher See Hypothesis', which proposes that this event was one of the most significant culture-historical caesurae of the Late Glacial period.

Over the last few months, and with the generous financial aid of the D M McDonald Grants and Awards Fund, and the help of many colleagues in the Institute and other departments around Cambridge, it has been possible to investigate in much greater detail the specific ways in which the Laacher See eruption and its fall-out may have affected Palaeolithic foragers. In an effort to substantiate the chronology, a series of samples have been taken for ^{14}C -dating from key sites on the north European plain (results expected in c. five months). The lithic data base has been supplemented by little-known material from Poland and Germany.

Actual Laacher See ash from an archaeological context (Bettenroder Berg IX) has been obtained and this is used in a variety of analyses: it is tested for hardness and compared with that of the teeth of key prey species of the time as well as humans, with remarkable results. The ash appears to be twice as hard as even the hardest teeth and so may have contributed significantly to the desertion of affected areas by making plant food inedible for animals and humans (a post-eruption effect known from historic eruptions). In the next few weeks and months, these ash samples will be investigated for their toxic hazard potential. Additional samples along the fall-out transect will be collected through soil sampling and test-pitting at the site of Rothenkirchen.



The site of Rothenkirchen, previously excavated in the early 1980s is one of the few sites in which Laacher See ash is known to overlay relevant archaeological layers.



Ash fall-out from the Laacher See eruption. The current focus of research is the main plume, which travelled in a northeasterly direction.

The project is now in full swing and is yielding a great number of exciting results. Clearly, more attention needs to be paid to the Laacher See eruption and some section of Late Glacial culture-history will need to be re-written in light of these results.

The Ecological Profile of Marienburg Castle in Transylvania

ALEKS PLUSKOWSKI

In June 2007, excavations took place at the ruined castle near the village of Feldioara, in the southeastern part of Transylvania, 17 km north of the town of Brasov at the foot of the Carpathian Mountains. The aim of the excavations was to locate contexts suitable for taking environmental samples — faunal and botanical — in order to determine whether the construction of the castle (begun in the early thirteenth century) had a discernable impact on the local environment.



Marienburg Castle near the village of Feldioara, Transylvania.

Five trenches were opened: two within the castle, one outside the northern wall and a further two at the base of the northern side of the castle mound. The trenches revealed a complex sequence of demolition and re-building significantly altering the taphonomy of every context, to the point that accurate dating of pre- and post-castle construction layers was impossible. Ceramics, metalwork and animal bone were collected; the latter immediately identified and recorded by Aleks Pluskowski and Krish Seetah.

There is a plan to arrange for some pollen cores to be taken from the nearby riverbed within the next few months; it was not possible to have this done in June. After these have been analysed, the results will be synthesized into a final report by Aleks Pluskowski, Adrian Ionita and Krish Seetah. These results will be situated within

ongoing work in the village of Feldioara: a settlement established during the Saxon colonization of Transylvania. This project will ultimately inform the development of environmental sampling strategies for castle sites in the Baltic region.



Part of the thirteenth-century wall uncovered during the excavations.

Death and the City: 2007 Excavations at Tell Brak, Syria

AUGUSTA McMAHON

Excavations at Tell Brak in 2007 focused on a key transitional era in northern Mesopotamia: incipient social complexity in the fifth–fourth millennium BC (Late Chalcolithic Period). This is part of a long-term project exploring the creation and maturation of past urban landscapes.

Tell Majnuna

Excavations here are allowing the project to re-examine the traditionally sanitized prehistory of conflict, at a moment when Brak surges in scale and population density. Tell Majnuna is a small mound on the edge of Brak's outer town; excavations revealed two unique mass graves of c. 3800 BC and a separate, similarly unique, cemetery of c. 3700 BC. One grave is at least 17 m wide; its minimum number of individuals thus far stands at 33–45, but it ultimately may involve several hundred. Within the grave, the human bone layer was covered by a layer of animal bones — cattle, sheep and goats — and ceramics, especially serving/eating vessels, evidence of a post-burial feast. The second mass grave comprised a comparable layer of human and animal bones; the minimum number of individuals recovered thus far from this grave is 28, but this number also should ultimately prove to be in the hundreds.

Preliminary analyses indicate that the bones from both graves belong to young adults, 25–35 years old. There are clusters of elements (groups of skulls, armloads of long bones) and partial articulations within a mostly-disarticulated assemblage. The dominance of young adults is not a death population expected from natural causes or disease, and warfare is the most likely explanation. There is some carnivore and rodent damage; this aspect, plus the limited range of elements — long bones and skulls, while hands and feet are absent — suggest that the individuals had lain exposed before haphazard collection and burial. There remains a question whether this was conflict between local groups or between local and foreign groups.



Group of four skulls from one of the mass burials at the edge of Tell Brak's Outer Town.

The separate cemetery held 13 articulated skeletons, mostly adults 20–45 years old. Their stratigraphy and placement imply that the burials were contemporary. As in the mass graves, the ages represented are not a 'normal' death population, and their contemporaneity indicates these individuals may have met death through a second episode of warfare. The horizontal extent of the cemetery has not yet been reached, and the number of dead here should also increase with further excavation.

Area TW

This excavation lies near an access route into the main settlement of Brak and offers the opportunity to explore an area adjacent to a massive public building (previously excavated) of the late fifth millennium BC. At the east side of a street, a sequence of industrial buildings of increasing elaboration and scale has been exposed. Imported and local raw materials (including bitumen, jasper, obsidian and flint) and clay sealings from jars and baskets testify to the network of economic exchanges involved, while ovens, grinding stones and both basic and luxury items (tools, spindle whorls, ceramic vessels, plus an obsidian ‘chalice’) indicate the wide range of production activities.



Late Chalcolithic industrial facility in Area TW.

Economic efficiency and institutional control of production are acknowledged elements in complexity and urbanism, but often access to such aspects is indirect (mass-produced pottery but without the kilns). This excavation, with its combination of materials, production loci and physical link to a public building, thus allows a clearer reconstruction of this economic dynamic. The late fifth-millennium BC date is also allowing the project to push the origins of urbanism and economic complexity earlier than has been previously acknowledged.

ACKNOWLEDGEMENTS

The 2007 excavations were made possible thanks to the financial support of the British School of Archaeology in Iraq; the McDonald Institute for Archaeological Research; the Society of Antiquaries of London; and Newnham College.

The Trang An Project, Vietnam

RYAN RABETT

Trang An is an isolated area of limestone karst on a coastal plain in the north Vietnamese province of Ninh Bình. The right to develop this area (c. 2400 ha) as an ecologically sensitive tourist resort was recently awarded to the local Xuan Truong Corporation by the Vietnamese Government. Although today the land is completely rural and largely uninhabited, from the tenth century onwards, over a span of three dynasties, Trang An lay under the commercial and administrative influence of nearby city of Hoa Lu, Vietnam’s ancient capital. The landscape of Trang An is dominated by precipitous and thickly forested karstic towers separated by low-relief dolines; in most cases the product of large-scale palaeo-cave collapse in the remote past.



The view from Hang Boi.



Excavations under way in the cave mouth at Hang Boi.

The primary focus of work so far has been excavation at one of many upland cave sites, Hang Boi (or the Fortune-Teller's cave), and environmental coring. Further preliminary survey of two low-lying historical locales c. 1 km from the cave was also carried out.

The excavations in the cave mouth at Hang Boi revealed a large, well-preserved midden. Although dominated by landsnails, the midden also contained a smaller associated assemblage of other material, notably other invertebrate (freshwater crab) and vertebrate fauna, lithics and charred plant remains; evidence suggesting a largely anthropogenic origin. Radiocarbon dates for this phase of occupation are pending, but indications are that the upper two metres of main midden deposit (the maximum depth attained during this season) are of Holocene age (probably 9000–6000 BP). However, vestiges of additional shell-midden deposits were also found sealed within or beneath demonstrably older rafts of flowstone, suggesting that an earlier phase of human activity is probably also preserved here.

Exploration of a large chamber 18 m beneath the cave mouth, at the bottom of a sink-hole, revealed further archaeology. While much of the floor surface of this chamber is strewn with debris from multiple episodes of roof-collapse, small areas adjacent to the cave walls appear to have survived *in situ*. The presence of pottery fragments attributed to the local Da But culture, in one particularly well-preserved area further supports the likelihood of mid-Holocene activity at the cave.

Material collected during the first season is under analysis at the McDonald Institute, the National University of Singapore, Queen's University, Belfast, and the University of Guam.

The 2007 field-team: Ryan Rabett, Vũ Thé Long (co-directing), Graeme Barker, Chris Hunt, Philip Piper, Elizabeth Raddatz, Timothy Reynolds, Nguyễn Văn Sơn, Chris Stimpson, Katherine Szabó, Nguyễn Cao Tân and Joanna Wilson.

The McDonald Institute became involved with this project in 2006 when it received an invitation from the Corporation and the Provincial Government to investigate the archaeological potential of the new park. While the history of Hoa Lu is well known, the settlement record within the park boundaries is less well understood. In addition, given the large number of prehistoric sites found in northern Vietnam since the early twentieth century, an earlier presence was also suspected though not yet verified. A reconnaissance visit by Graeme Barker in December 2006 was followed this year by a field season in May conducted by a joint British/Vietnamese team, funded by a D M McDonald grant and the Xuan Truong Corporation.

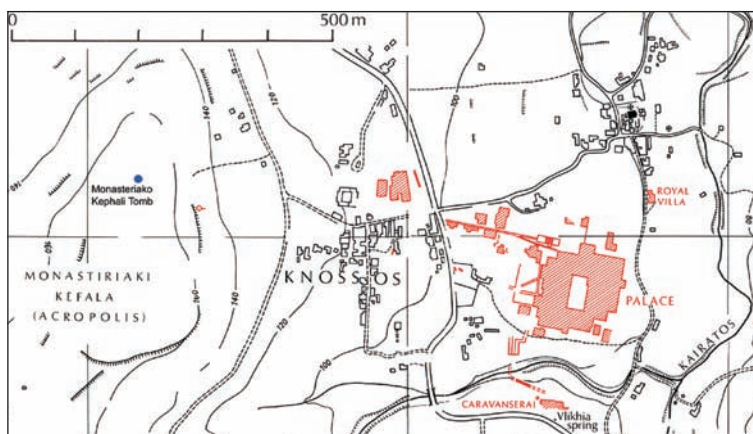


The 2007 field-team.

Monasteriako Kephali Project

LAURA PRESTON

In April and September 2007, Dr Laura Preston (Lecturer in Aegean prehistoric archaeology, Faculty of Classics) continued work at Knossos, Crete, on the study of Bronze Age mortuary material from the 'Monasteriako Kephali' hill. The burials were excavated in the 1930s under the aegis of the British School at Athens, but have never been fully studied or published until the present.



*Location of the Monasteriako Kephali site. (After M.S.F. Hood & D. Smyth 1981, *Archaeological Survey of the Knossos Area*.)*

The assemblages comprise ceramics, and artefacts of stone, plaster, faience, bronze, rock crystal and shell, as well as human and faunal remains. Research in 2007 focused on the earliest phase of the tomb's use, *c.* 2000–1850 BC. This is the only site at Knossos to have produced burial remains of such an early phase of the Bronze Age, and so provides a unique window onto the funerary practices of this era. Equally important is that this period saw the emergence of the first state-level society at Knossos, the culmination of a process of urban growth and increasing political complexity from the later third millennium. Knossos has been described as the first city in Europe, yet its urbanization and associated political transformations in the state-formation period are still not well understood. The Monasteriako Kephali tomb provides the first mortuary complement to the hitherto settlement-focused evidence that exists for this period, and allows us to begin to explore important questions relevant to research into state-formation processes, including the demographics and geographical origins of burial groups, as well as longer-term ideological developments relating to the treatment of the dead.

The assemblage from the earliest period of tomb use comprises *c.* 200 ceramic vessels, which consist of a very limited repertoire of shapes. They are almost entirely associated with the pouring and drinking of liquids, activities which presumably formed part of the funerary rituals. The ceramics are mostly handmade, as the introduction of the potter's wheel to Crete took place during the course of this period.

A minimum of 11 individuals were discovered which had received primary interment on the tomb floor, followed by subsequent secondary manipulation, in which skulls in particular were piled together. In addition, bones from a donkey or horse were recovered, reportedly from the earliest burial level. This is a potentially



*Side-spouted jug and one-handed cup from the tomb (*c.* 2000–1900 BC).*

important find because, until now, the earliest definite evidence for equids on Crete has been in the late second millennium. An understanding of the timing of the introduction of equids to the island has important implications for the study of the transportation of goods in overland trade, within the island in the earlier phases of the Bronze Age.

Other Projects

Materializing the Transcendent: the 'Roots of Spirituality' Project

IAIN MORLEY

The relationship between material culture and religious practice and belief has formed the underlying rationale for the 'Roots of Spirituality' project at the McDonald Institute for Archaeological Research, Cambridge, run by Professor Colin Renfrew and Dr Iain Morley, and funded by the John Templeton Foundation.

The aim of the project has been to investigate certain aspects of human behaviour manifest in the archaeological record which give indications of the early occurrence and development of aspects of religious practices and belief. The diversity of religious practices and beliefs means that there are numerous aspects which may manifest themselves archaeologically, but this diversity also creates the problem of defining and recognizing such evidence.

For this reason the project has chosen to focus on the early occurrence of certain behaviours which might be considered to be component parts of what we typically identify as religious practice and belief, and to ask how these behaviours come to play a significant part in such systems. Two main themes have been addressed by the project so far, each of which culminated in a symposium involving contributions from 25 or so invited international academics from the fields of archaeology, anthropology, zoology and theology. The first, 'Image and Imagination: Material Beginnings — the Global Prehistory of Figurative Representation' was convened in September 2005, and focused on the relationship between the emergence of the use of figurative representation and the development of spiritual belief systems. The second, 'Measuring the World and Beyond — the Archaeology of Early Quantification and Cosmology', was convened in September 2006, and was concerned with the relationship between the development of measuring systems and of cosmological understandings of the world. Much of the relationship with ritual and religion emerges with consideration of transitions from terrestrial measure to concepts of time, cycles, and the attendant cosmological considerations of the celestial and supernatural.

The written contributions to each of the symposia — totalling 45 papers — have been collated to form monographs which will be published in 2007 and 2008. *Image and Imagination* will be published in the McDonald Institute Monographs Series in November 2007 (see p. 21), and *Measuring the World and Beyond* will be published in 2008. A third volume, entitled *Becoming Human: Innovation in Material and Spiritual Cultures* will be published in 2008, by Cambridge University Press. This focuses specifically on the Palaeolithic archaeological record and the relationship between the emergence of symbolic behaviours and 'spiritual' understandings of the world amongst early humans. This, like the others, is edited by Renfrew & Morley and published under the banner of the 'Roots of Spirituality' project.

ACKNOWLEDGEMENTS

Colin Renfrew and Iain Morley gratefully acknowledge the financial support of the John Templeton Foundation, the British Academy, the McDonald Institute and, in the formative stages of the project, the advice and contributions of Chris Scarre (McDonald Institute, now Durham), Richard Lesure (UCLA), Lynn Meskell (Stanford), Koji Mizoguchi (Kyushu), and Paul Wason (John Templeton Foundation).

PUBLICATIONS

Iain Morley

- 2007 Time, cycles and ritual behaviour, in *Cult in Context: Reconsidering Ritual in Archaeology*, eds. D.A. Barrowclough & C. Malone. Oxford: Oxbow Books, 205–9.
- 2007 Early hunter–gatherers and farmers, in *Archaeologica*, ed. A. Cremin. London: Frances Lincoln, 76–83.
- 2006 Mousterian musicianship? The case of the Middle Palaeolithic Divje babe I bone. *Oxford Journal of Archaeology* 25(4), 317–33.

The Archaeology of Ritual Transmission

CAMILLA BRIAULT

The aim of this project, by Camilla Briault (Junior Research Fellow in Cognitive Archaeology), is to develop a model for understanding long-term continuity and variation in prehistoric ritual practices. Although ritual transmission is currently a major focus of research in social anthropology, the insights gained have not previously been applied to archaeological data sets. This project uses data from the Bronze and Early Iron Ages of the southern Aegean to track diachronic change in ritual practices over a period of two millennia. Through investigating patterning in the use and configuration of ritual spaces and in 'kits' of ritual objects, it is possible to identify the mechanisms through which ritual practice was transmitted. By mapping the patterns of ritual change onto known episodes of social and political upheaval in the Aegean, this research has highlighted that periods of political instability, such as state formation and collapse, can have a profound impact on ritual practices and their transmission. The next stage of the project is therefore to investigate the role of ritual practices in the emergence and decline of early complex polities throughout the eastern Mediterranean.

PUBLICATIONS

Camilla Briault

- 2007 Making mountains out of molehills in the Bronze Age Aegean: visibility, ritual kits, and the idea of a peak sanctuary. *World Archaeology* 39.1, 122–41.
- 2007 High fidelity or chinese whispers? Cult symbols and ritual transmission in the Bronze Age Aegean. *Journal of Mediterranean Archaeology* 20.2, 239–65.
- 2007 The ultimate redundancy package: routine, structure, and the archaeology of ritual transmission, in *Cult in Context: Reconsidering Ritual in Archaeology*, eds. D.A. Barrowclough & C. Malone. Oxford: Oxbow, 291–4.

From Chariotry to Equestrian Pastoral Nomadism

MARSHA LEVINE, MIM BOWER & GRAEME BARKER

The horse was crucial to life on the central Eurasian steppe during the second–first millennia BC. Horse remains occur in large numbers in settlement and burial contexts throughout this region, but few systematic analyses have been carried out. The role of the horse in human society during this period: whether it was used for traction, riding or food, is still unclear. This Leverhulme-funded project, with Professor Graeme Barker (Principal Investigator), Dr Marsha Levine as Senior Research Associate (Palaeopathology) and Dr Mim Bower, Research Associate (Archaeogenetics), aims to carry out detailed archaeozoological and archaeogenetic analyses of central Eurasian horse remains, within their archaeological contexts, in order to throw light on the role of the horse in central Asian prehistory, from the Urals to China. To achieve this goal, project members combine a series of analytical methods including morphometrics, palaeopathology, population structure, taphonomy, contextual analysis, mitochondrial DNA analysis of ancient DNA and living horses (see also p. 32).



Horses on the Eurasian steppe.

In May–July 2007, Dr Levine and other project members undertook fieldwork in China which included: a collaboration with Dr Yuan Jing in Beijing (Institute of Archaeology) and Anyang working on Late Shang dynasty horse remains from Yinxu; visits with Professor Li Shuicheng to Lanzhou (to examine skeletons from Xishanpin), and to Urumqi, where they were joined by a saddler to study a 'mummified' saddle from a site called Subeixi as part of a saddle-pressure study with Dr Mark Holmes (School of Veterinary Medicine).

McDonald Institute 2006–2007

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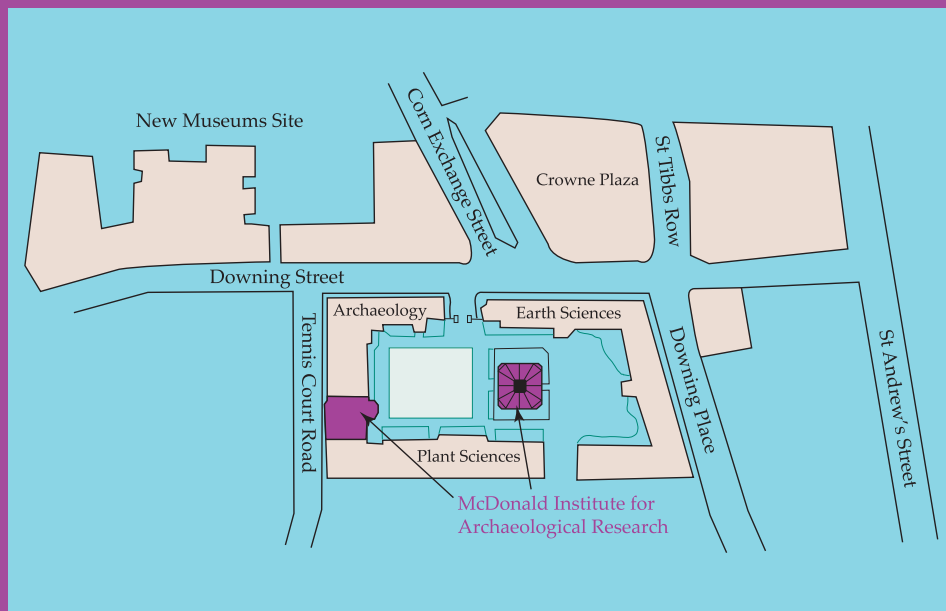
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McDonald Institute for Archaeological Research, University of Cambridge
 Downing Street, Cambridge, CB2 3ER, UK
 +44 (0)(1223) 333538; +44 (0)(1223) 333536 (FAX)
www.mcdonald.cam.ac.uk

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