

Institution: UNIVERSITY COLLEGE LONDON

Unit of Assessment: 17A ARCHAEOLOGY

a. Overview

UCL Archaeology is a long-established international leader in the discipline, unique in the scale and diversity of its research and the global scope of its expertise and collaborative links. Our research involves fieldwork, laboratory analysis, scholarly synthesis, and heritage studies, approached from a wide range of theoretical and methodological perspectives. We opened a new archaeological research and graduate training campus in Qatar in 2012, while since 2008 our Centre for Applied Archaeology (CAA) has expanded its geographical scope and staffing levels and near-doubled its annual turnover in contract income. We have more than 60 research active staff, projects on six continents and Oceania, and since the last RAE have won European, RCUK and charity research grants with a total value of £14.5M, of which £8M will cover work in the post-REF period. In London, permanent staffing levels have remained roughly the same as at the last 2008 census point, while annual grant income has doubled, numbers of post-docs have doubled, and 110 PhDs have been awarded. Since 2008, current Category A staff have published 80 books and over 800 journal articles and book chapters. Our research activities and achievements are grouped by eight research themes, which are also drivers for our future strategy.

b. Research strategy

Strategic aims. Since 2008 the Institute's core strategic research aims have remained largely those articulated for the last RAE: to be internationally pre-eminent in the study, and comparative analysis, of world archaeology; to be at the forefront of international research in archaeological sciences; and to develop theory, method and practice in the study and management of cultural heritage in its social, political and economic contexts. During the REF period we have further developed the main elements of a thematic approach to the study of the human past, which continues to shape our broadest intellectual aspirations. We have also articulated a stronger mission to engage effectively with a wide range of user groups in disseminating the significance of our research beyond academia, for which our target is again to provide international leadership.

Central to realising these strategic aims has been sheer scale of numbers. As the largest entry to the Archaeology UoA we are able to maintain an exceptional diversity of approaches, and to support sustainable collaborations with a massive network of external partners in the UK and overseas. Our published output reflects this scale: since 2008, current Category A staff have published (excluding 'grey literature') 80 authored or edited books including journal special issues, 498 journal articles, and 313 book chapters/Proceedings papers. Managing this diversity in an agile way requires an umbrella of three Sections (for line management) and eight Research Themes (for intellectual coherence); within that, we support research through a flexible reporting structure of individual projects, internal research networks, and cross-disciplinary Centres. Equally important for sustainably realizing our aims are staff appointments with a wide range of geographical and technical expertise; extensive international interaction through research, conferences and workshops, joint training programmes, international staff and student recruitment, and the hosting of visitors from around the world; a clear understanding of core audiences and partners in knowledge exchange and public engagement; continued investment in laboratory facilities; and a strong programme of PhD and early career development.

Research management. In our RAE2008 submission we said that we would re-examine the role of our research groups in supporting staff research and student PhD work. In 2010-12 the Institute undertook a re-evaluation of its structures and networks of research, with the aim of aligning its research directions and energies more purposefully within the context of issues of global concern, including the more recent university-wide cross-disciplinary strategic initiatives (UCL's 'Grand Challenges' and 'Research Frontiers'). The old research groups were disbanded, eight unifying Research Themes were identified, and three line-management Sections — Archaeological Sciences, Heritage Studies and World Archaeology - were set up. The joint Section Heads (two senior staff in each case) are elected for three-year terms and are responsible for research appraisals of Section members. They also coordinate recommendations for new or replacement staff and for research equipment, after consultation with Section members. The Director, Section Heads, the Graduate Tutor, a postdoctoral representative, and representatives of major Centres are members of the Institute's Standing Committee of Research Committee, which meets termly. It discusses research policy and initiatives, monitors the activities of research networks, receives



staff sabbatical reports, identifies training needs and organises research training workshops. Research Committee open meetings are held termly, open to all staff and research students, to provide a discussion forum for any research-related matters. The Graduate Research Student Sub-Committee (GRSSC) monitors MPhil/PhD student progress. Section Heads also form the Institute's Senior Management Group, with the Director and the Chairs of Research and Teaching Committees. This meets fortnightly and is the Institute's executive committee for all aspects of its activities. The membership of the committee ensures that research priorities are at the core of Institute decision-making.

A systematic review of c. 160 staff projects saw these clustered into the eight unifying Research Themes that now provide an overarching intellectual framework and serve as our priority developmental areas. Our strategic aim is to be pre-eminent in each of them, with a critical mass of staff, post-docs and PhD students, substantial grant income, excellent infrastructure facilities, sustainable and productive collaborative partnerships, and a strong publication programme addressing broader comparative issues as well as detailed primary research findings. Within this framework are many smaller groups that meet regularly, each united by some common geographical, thematic, or methodological interest, to share experience and ideas among staff and research students. We now summarise our major achievements during the REF period under each of the eight Themes, and our future plans in relation to our strategic aims.

Human Evolution. As planned in 2008, we have expanded human evolution research through new fieldwork in Africa (Olduvai, de la Torre); and established a dedicated Lithics lab. We have also driven field and lab work on the early peopling of Middle Pleistocene Britain (Parfitt, Pope; Hillson), and published a major fieldwork monograph on hunter-gatherer archaeology in Jordan (Garrard). We have worked on the evolution of language and tool use (Steele, de la Torre); the origins of the Acheulian (de la Torre, an ERC Starting Investigator awardee); the 'human revolution' (Shennan); and human settlement patterns and dispersals during the last glacial in the Near East and the Americas (Garrard, Steele). In the future we will sustain our fieldwork projects, develop our lab and experimental work on early technology, and lead on UCL's cross-disciplinary Origins of Humanity initiative.

Early Food Production. We continue to give global leadership in archaeobotany and zooarchaeology with a focus in our lab work on domestication and early agriculture, and in large-scale database analyses of Neolithic human demography (evidenced by the award of two ERC Advanced and one Starting Investigator awards: Fuller, Shennan, Vander Linden). We are working on European Neolithic crop and livestock complexes (Shennan, Vander Linden) and on Asian rice domestication in comparative perspective (Fuller), in both cases with geneticists as collaborators. We work on the transition from hunting to herding (Garrard, Martin in Western Asia and Arabia), on early Neolithic technology and social structure (Sommer in Central Europe, Wright in Western Asia), and on demographic instabilities in early farming societies (Shennan). In the future we will progress major grant-funded projects in all these areas, sustain fieldwork in Romania and Iraq, and pursue further integration of stable isotopic and aDNA analyses.

Landscape, Environment and Climate. The Institute has dedicated geoarchaeological and GIS laboratory facilities and a wide range of projects investigating long-term land use, environment adaptation and the impact of climate change on past human societies. We have worked on the evolution of cultivation and anthropogenic soils (Arroyo-Kalin in Amazonia, Macphail in Europe, Zhuang in China); on impacts of natural coastal change (Macphail); on hydrology and salinization, and societal resilience (Altaweel); on social institutions for water management (Shaw in India); and on long-term human landscape use in fragile environments (Bevan in the Aegean). In the future we will maintain these foci, develop our understanding of risk perception and resilience, and advance our work on the origins of anthropogenic climate change.

Artefact Production & Exchange. The Wolfson Archaeological Science laboratories are outstanding and support world-leading research in materials analysis, with a large PhD cohort (including partnership in an EU Marie-Curie Training Network); our new labs in Qatar extend this capability very significantly. We have maintained the vitality of our research in archaeometallurgy (Georgakopolou in Europe, Humphris in Africa, Martinon-Torres in China and the Americas, Rehren in Europe, Iran, Egypt and the Americas) and in early glass (Freestone in Britain and the Mediterranean, Rehren in Egypt and the Mediterranean), with a focus on the origins of



technological innovations. We have also worked on early textiles (**Gleba**, an ERC Starting Investigator awardee), on provenancing wooden artifacts (**Bridge**), on ceramic production and use (**Cole** in Asia, **Sillar** in South America), and on the conservation of ceramics, wall paintings and metals (**O'Grady**), and we have studied trade and exchange in specialised economies: early commodity branding (**Wengrow**, **Bevan**), early writing and seal use (**Sparks**), Gulf maritime trade and pearl fishing (**Carter**), Roman coinage (**Lockyear**), and jewellery in Viking-age England (**Kershaw**). In the future we intend to sustain our core facilities and lab expertise and continue to invest in key international collaborations, including China and the Arab and Islamic world.

Cities, States and Empires. The Institute has a long history of research leadership on the comparative study of early civilizations. We have studied the emergence and persistence of early state-level political organization (Reynolds in Britain, Riva and Whitelaw in the Mediterranean, Bussmann, Exell, Jeffreys in Egypt, MacDonald in West Africa), and have developed dynamic models of interaction and integration at larger geographical scales (Broodbank for the Mediterranean). We have also worked on early Empires, including Assyria (Altaweel, Kertai), the Roman Empire (Gardner and Perring in Britain, Lockyear in Romania), the Inca empire (Sillar), and the post-classic Maya (Graham in Belize), while MacDonald has worked on the archaeology of slavery in colonial America. In the future, we will sustain existing geographical strengths, explore comparative themes more explicitly, play a leadership role in UCL's new Dynamics of Civilization initiative, and develop new fieldwork projects (such as our Shahrizor project exploring the environment, history, and archaeology of political systems in Iraq's 'hilly flanks').

Ritual, Religion & Cosmology. Our research in this area has two major foci. One is concerned with integrated studies of the archaeology and history of religions, including Buddhism and Hinduism (Shaw), Christianity and syncretism (Graham, Oliver), and classical Greece (Tanner). Ancient Egypt remains a singular strength (Bussmann, Jeffreys, Miniaci, Quirke, Rosenow, del Vesco). A second focus is on the construction and use of ritual landscapes, including Stonehenge (Parker Pearson), Madagascar (Parker Pearson), Rapa Nui (Hamilton), and India (Shaw). In the future we will maintain our strengths, particularly in ancient Egypt and in fieldwork on ritual/religious landscapes, and build dialogues about the theoretical underpinnings of this wide-ranging set of case studies.

Archaeological Theory & History of Archaeology. Our work on archaeological theory is increasingly nested within our other themes. The CECD explored general Darwinian approaches (Lake, Shennan, Steele), and their relationship to interpretive archaeology (Gardner); we also worked on art history and social theory (Tanner) and on cultural memory and landscape (Basu, Butler, Hamilton, Harrison). As a key player in the development of archaeology as a profession the Institute has unique archival holdings and collections for its history: our work included studies of Petrie's workforce and the wider context of his work (Quirke, Sparks, Thornton), as well as on Central European archaeology (Sommer). In the future we will help shape UCL's new cross-disciplinary agenda on the origins of humanity and the dynamics of civilizations, and expand our archival historical work.

Cultural Heritage. UCL is a European leader in developing critical archaeological perspectives on the interpretation of cultural heritage, with a large PhD group. Our work has focused especially on post-conflict heritage policy (Basu in Sierra Leone, Perring in Lebanon), conflict archaeology (Moshenska), and the politics of heritage in disputed territories and in former colonial societies (Butler in Palestine, Harrison in Australia, Exell and Rico in Qatar), as well as continuing to develop our work on decolonizing conservation (Sully) and on the power of touch (Chatterjee). In the future we will maintain these foci, further develop the London-Qatar axis for collaboration on heritage policy in the Arab and Islamic worlds, and increase our interactions with other cultural heritage interests in UCL.

Future plans. We aim to continue to develop our position as one of the world's leading centres for archaeological research. We plan to progress our intellectual mission in the eight themes of our work; to maintain our key international partnerships in fieldwork and lab-based analysis; to build strategically important cross-disciplinary collaborations within UCL; and to maintain and enhance our procedures for maximizing the achievements of our workforce. This will depend on a mixture of strategic initiatives and responsive projects, including individual research, building on the outstanding abilities and commitment of our staff to remain at the cutting edge of their areas of



research, and on the opportunities that our large size and position within UCL, as well as within both London and the Gulf, make possible. Many of our major projects will continue and while it is impossible to detail everyone's research plans, we aim to achieve the following significant developments in the post-REF period:

- Hosting and publication of a series of strategic conferences, developing comparative and theoretical approaches to our eight thematic research areas;
- Building our fieldwork and laboratory programmes to ensure that we continue to exercise global leadership in projects covering the major archaeological regions, periods and cultural and evolutionary transitions, including maintaining our work at for example Olduvai [human evolution], various sites in China [early food production], and Shahrizor [early states];
- Further developing our work on the archaeology and heritage of Arab countries and of the Islamic world through UCL-Qatar;
- Working with UCL's new Research Frontiers initiative to develop three new crossdisciplinary Research Centres with Institute participation: UCL Cultural Heritage; a UCL Centre for Research on the Dynamics of Civilization; and UCL Human Evolution;
- Increasing collaboration between archaeological and cultural heritage interests within the Institute and between London and Qatar on shared projects, and leadership in new collaborations within the wider Cultural Heritage community at UCL and internationally;
- Supporting, within our own discipline, UCL's initiatives to provide leadership in developing Open Access journal and monograph publications;
- Consolidating recent growth within the CAA and identifying new research opportunities
 provided by its bridging of the professional/commercial and academic sectors, and by its
 wider access to archaeological resources and commercial funding;
- Further developing our intensive mentoring system, to further increase the excellence of our research outputs throughout the Unit;
- Further developing our career planning and destination tracking provision for our PhD and postdoctoral researchers, including new training partnerships under the AHRC DTP (formerly BGP2) scheme.

Our senior management team will monitor the achievement of these goals against milestones and outputs as set out in our overall strategic plan for the next five-year period. In addition, we will maintain and extend our high level of international engagement, by continuing to recruit the best staff and students from around the world; by maintaining our global range of geographical expertise; by organizing and participating in international research projects; by encouraging overseas visitors; and by international conference attendance and the organization of agenda-setting conferences at UCL.

In terms of **structure and infrastructure** we will review and develop the role of the Sections, Themes and cross-disciplinary Centres in supporting staff and postgraduate research. Ensuring that our laboratories continue to support innovative science-based research projects will remain a very high priority, and we have been invited to discuss at faculty level plans to rationalise and upgrade our SEM and XRF facilities. We are continuing to explore synergies with labs in other Departments at UCL to develop our capability in stable isotopes and aDNA, have begun strontium isotope analysis of teeth in conjunction with the co-owned UCL-RHUL Earth Sciences isotope facility, and we will promote collaborative field and lab research involving staff at the Institute and at UCL-Qatar. We will also look for further teaching efficiencies, while our range of taught Masters courses will be kept under review as we continue to shape disciplinary directions.

c. People

The Institute's staffing policy continues to be governed by its ongoing mission to be a centre for research in global archaeology, both in terms of its broad geographical coverage and its thematic interests, including the increasingly important field of Heritage Studies. UCL's strategic decision to set up UCL-Qatar in Doha represents an extension of these ambitions, with a specific focus on the archaeology and heritage of Arab countries and of the Islamic world, and its staffing policy is designed to achieve them. Our uniquely large size makes our strategy sustainable, while the



increased size of our postdoctoral researcher cohort and the increased numbers of awarded PhDs are part of (and proof of) our vitality. We have supported an increased contribution and organizational role for early career researchers, and have taken steps to sustain and enhance the vitality of our PhD programme, both reflecting a strategic decision to invest in capacity-building.

c. People, including:

i. Staffing strategy and staff development

Staff research. A workload scoring system quantifies teaching and administrative duties to ensure that Category A staff have protected research time. New members of academic staff have a designated mentor, and initially low teaching and administrative loads. They attend comprehensive UCL courses for new lecturers and are favoured in the allocation of Institute research and conference funds. Formal appraisals of non-professorial staff take place every other year (and professorial appraisals are now annual); they include agreeing research objectives and identifying needs for research leave. In the intervening year Section Heads conduct less formal interviews. The Institute encourages staff with well-defined research plans to apply for sabbatical leave on a 1 in 7 (term or year) basis. In addition to the qualification period, research active academics returning from maternity, adoption, extended carer's, or long term sickness leave are entitled to one term of sabbatical leave without teaching commitments. During the REF period 27 staff had sabbaticals of one term or more, and 9 staff obtained external funding that gave them full teaching relief for a year or more (including two ERC Advanced and one Starting Investigator awardees, one AHRC Centre Director, and 5 BA/AHRC/Leverhulme Fellowship awardees). Additionally, two other ERC Starting Investigator awardees have joined the Department on research-only appointments. These periods of exclusive research time benefit staff development as researchers and as research group leaders, and enhance their contribution - as role models - to the quality of work and level of ambition of researchers in the Unit as a whole.

Staff are strongly encouraged to develop their research by making relevant grant applications; details of schemes and deadlines are regularly circulated to all academic staff. UCL deploys a team of research facilitators to support its academics in applications for funding and relationships with funders more generally. Most work is one-on-one, but workshops on grant application are held regularly and examples of successful applications are available on the intranet. The Chair of Research Committee and the relevant Section Head critically review all grant applications to improve applications before submission. Training in costing projects is available and administrative support is provided for preparing financial information. The Institute has internal funding available to staff and graduate students: since 2008 it has supported staff and research student projects 50 and 107 times (respectively), and 128 staff and 139 student conference presentations. This complements research student funding available from UCL Graduate School.

Research ethics issues in staff and students' work are covered by UCL's and the Institute's policies on work with human subjects, on the illicit trade in antiquities, and on responsible and efficient practice in fieldwork and conservation (including the treatment of human remains). Human subjects research must be approved by UCL's Research Ethics Committee, and for more specialized matters, the Institute of Archaeology's Ethics Committee convenes as is required. Staff and students are also protected by, and subject to, UCL's policies on intellectual property rights (including copyright) and on Open Access archiving on UCL Discovery. Our researchers must also comply with UCL's 'Code of Conduct for Research', which stipulates (for example) proper expectations for co-authorship.

Appointments. The Institute in London grew significantly in the years immediately before RAE2008 and has since maintained a roughly steady state in terms of numbers through the appointment of a number of outstanding scholars at both senior and junior level, in keeping with its global mission. New appointments have been driven by our priority for maintaining a sustainable environment for our core research strengths, and by our priority for developing key areas which either need reinforcement, or represent emerging areas where we wish to play a leadership role. We are vigilant in succession planning with respect to our long-term staff demographic profile, and have recently ensured stable succession in the Institute's leadership by appointing the next Director (Hamilton) a year ahead of commencement in post (after extensive consultation). Meanwhile UCL-Qatar has built a strong and well-focused team from scratch, with close support by senior managers in UCL including the Institute Director. 7 out of 16 new long-term appointments made since 2008 in London and Qatar have been women, increasing their proportional representation



among long-term Category A staff consistent with UCL's Equal Opportunities objectives. All appointment processes comply with UCL's Equal Opportunities policies.

The major development for the *World Archaeology* Section has been the appointment of **Parker Pearson** to a new Chair in British Later Prehistory, a strategic move to establish the Institute in the forefront of this field and ensure that its global interests do not neglect Britain. Strength in the area of Egyptian archaeology has also been maintained by the replacement of **Tait** (retired) by **Bussmann**, and by the transfer of **Quirke** within UCL from the Petrie Museum to the Institute (**Hassan's** retirement in 2008 had already been anticipated by the earlier appointment of **Wengrow**). In the Near Eastern field **Altaweel**, who also brings new quantitative and computer modelling skills to add to our already outstanding strengths in this area, replaced **Matthews** (moved to Reading); his expertise also help us to replace **Conolly** (moved to Canada). Our strong commitment to China continues, including a new MA in the Archaeology and Heritage of Asia starting in 2013; thus a new 1.0FTE position in Chinese archaeology in the IoA (**Zhuang**) has replaced **Nickel** (0.5 FTE IoA and 0.5FTE SOAS, now moved completely to SOAS) and **Wang** (also 0.5FTE IoA and 0.5FTE SOAS, now moved to USA).

In RAE2008 Heritage Studies at the Institute was singled out by the Panel in its feedback as a significant area of weakness and we have made a concerted move to remedy this by appointing new members of staff in this Section with strong research records. **Basu** (from U. of Sussex, Anthropology), appointed as Reader, with a strong record in critical museology and heritage and development, has replaced **Keene** (retired). **Moshenska**, appointed to a new 1.0 FTE Lecturer position in Public Archaeology to strengthen research in this important field, replaced **Flatman** (0.5FTE with interests in maritime and applied archaeology, moved to EH). **O'Grady** (from U. of Delaware, Art Conservation), with a strong research record in conservation replaces **Pye** (retired). Finally, **Harrison** (from the Open University) was appointed to a new 1.0FTE position in heritage and museum studies and will extend our coverage of historical and contemporary archaeology and our regional scope into Australia.

In the *Archaeological Sciences* Section, **Rehren's** move within UCL to be Director of UCL-Qatar has been matched by the appointment of the equally eminent **Freestone** to the Chair of Technology and Analysis of Archaeological Materials. The geoarchaeology expertise lost by **Rosen's** recent move to the USA is currently being covered by **Arroyo-Kalin**, BA PDF, but our aim is to replace with a permanent position. **Thomas** and **Orton** (retired) were not replaced as existing members of staff largely cover their fields of expertise. **Stout** (moved to USA) was also not replaced but many of his interests overlap with those of **Steele**, and they continue to collaborate.

Finally, *UCL-Qatar* was established in 2011 as a new department of UCL focusing on postgraduate teaching and research in cultural heritage, museum studies, conservation and archaeology. Academically driven by UCL and closely aligned with the Institute's activities, it is jointly sponsored by Qatar Foundation and Qatar Museum Authority and aims to be a leader for archaeology, conservation and heritage studies in the Middle East. **Rehren** moved to Doha as its Director, while maintaining some of his research activities at the Institute. Its current Category A staff (and areas of expertise) include **Carter** (Arab archaeology), **Humphris** (researching in Sudan), **Georgakopoulou** (materials science), **Exell** (museum studies), and **Cole** and **Rico** (heritage studies). As the department grows, research activity particularly in conservation and cultural heritage will be developed to strengthen UCL's position in these traditionally less researchintensive areas.

Post-doctoral researchers. Post-doctoral researchers are supported by mentoring, by UCL's career development courses, by full integration into the sections, including appraisals, and by opportunities for teaching. They also have representation on the main Institute committees. There has been very significant growth in numbers of postdoctoral staff at the Institute, associated with a number of major new grant-funded projects (see Section d, below). On the census date of the 2008 RAE we submitted 3 FTE research fellows and employed a further 11.5 FTE research assistants. On the 2013 REF census date, we are submitting 10 FTE research fellows (Arroyo-Kalin, Del Vesco, Gleba, Humphris, Kershaw, Kertai, Miniaci, Rosenow, Thornton, Van der Linden), and employ a further 23 postdoctoral researchers on individual or project grants. Several staff previously employed on fixed term postdoctoral contracts during the REF period have meanwhile progressed to permanent academic positions, including Ashley (lecturer, U. of Pretoria), Cooper



(curator, British Museum), **Downey** (lecturer, U. of Maryland), **Glatz** (lecturer, U. of Glasgow), **Kandler** (lecturer, City U.), **Moshenska** (see above), **Qin** (lecturer, Peking U.), **Riede** (lecturer, Arhus U.), and **Smaers** (lecturer, Stony Brook U.). We support UCL's current initiatives in postgraduate and postdoctoral researcher training based on Vitae's 'Concordat to Support the Career Development of Researchers' and the Vitae 'Researcher Development Framework'.

Promotion. The Institute strongly supports the aim of members of staff to achieve promotion. This is discussed in staff appraisals and each year the Institute's promotions committee looks at the complete list of academic staff, not simply those who have put themselves forward, identifying not just those with a strong current case but also those who need to do further work to be put forward. The Director then meets with the relevant staff to discuss how they can achieve their goals. Since 2008 there have been 13 promotions to Senior Lecturer, 9 to Reader and 13 to Professor.

ii. Research students

Training and supervision of research students. In the five completed academic years 2008-2013 there was a push to increase completion rates and 110 PhDs were awarded, or an average of 22.2/year, up from an average of 14.6/year during the last RAE period. Meanwhile new registrations remained stable at just under 30 per year, about half with grant funding. MPhil/PhD applicants are normally required to have a Master's degree at a high standard to be admitted and selection is rigorous. Many are recruited, as intended, from the Institute's own taught Master's programme (the largest in the country, with 22 different degrees and ~250 students, about half from overseas, each year). The Graduate Research Student Sub-Committee (GRSSC), chaired by the Graduate Tutor, oversees PhD student matters. Research students have a primary and at least one secondary supervisor, with additional supervisors as appropriate. All research students have their own laboratory space or desk space in dedicated research rooms with computing facilities and Internet access. Structures are in place to ensure as far as possible that full-time students complete within four years (or the part-time equivalent). In addition to regular supervisions, monitoring of student progress is done through UCL's on-line Research Student Log. Students submit six monthly reports (plus an extra one at month 3) for discussion and approval by the supervisory team. Each student has a first-year review, including a written submission and presentation, and second year students apply to upgrade from MPhil to PhD. This requires a 15,000 word paper and a 30 minute presentation, followed by questions. The GRSSC members decide whether the upgrade is successful or more work is needed. In the latter case, detailed feedback is given. A third-year interview, and a fourth-year one if necessary follow the upgrade.

The Institute provides extensive training for MPhil/PhD students, with a strong first year induction course. In addition, UCL's Graduate School runs a Skills Development Programme providing training to support research and to enhance skills and employability, with more than 220 different courses offered; in 2008-2013, there were 1548 individual registrations by Institute Masters and PhD students on those courses. Students experiencing difficulties in academic writing have access to assistance. Students are also encouraged, and in some cases required, to attend Master's courses in the Institute, or others, such as language courses, available within UCL. They are also given the opportunity to gain teaching experience, as TAs on undergraduate courses; the Institute organizes compulsory training for all prospective TAs, taught by members of UCL's Centre for the Advancement of Teaching and Learning.

Activities generated by research students are strongly encouraged and funded where appropriate, and they are encouraged to play active roles in our internal networks and on relevant committees. Recent activities include research student-led conferences on 'Archaeology and Economic Development', on 'Digital Engagement in Archaeology' and on 'Tourism as Colonial Policy', each then published under their editorships. Research students have also led in the organization of seminar series (annually, 'African Peoples and Pasts'; with the British Museum, 'Mediaeval Archaeology'; 'Methodological Innovation in Heritage Research'), as well as other one-off thematic conferences and an annual Graduate Student conference. The research students run an annual refereed open access journal, *Papers from the Institute of Archaeology. PIA* provides authors with experience in publishing articles early in their careers and extra emphasis is therefore placed on peer review feedback and editorial assistance. Students are also encouraged to publish in other Institute open access publications and research blogs.

We actively track career destinations of completed PhDs. As of September 2013, of 102 PhDs



awarded during the REF period with known destinations, 14 were university lecturers (5 in the UK/Europe, 2 in Africa, 4 in China, 2 in the Americas, and 1 in Australia); 33 were in post-doctoral research positions (9 based at the Institute); 13 had appointments in museums and governance (ranging from four working curatorially in the nearby British Museum to a curator of the Terracotta Army in China, and the Director of Antiquities in Somaliland); and 31 were in other archaeology-related employment.

d. Income, infrastructure and facilities

A massive increase in external grant income has been key to our vitality in the REF period, while continued investment in infrastructure and in administrative and technical support ensures that our current levels of activity are sustainable.

<u>d1. Income.</u> Since 2008 we have had major successes with the European Research Council (two Advanced Investigator and three Starting Investigator awards). Overall, during the five completed academic years 2008-13, our staff expended external research grant income worth £8.8M (more than 75% of which came from grants won since 2008, and excluding CAA income), an average of £1.6M/year –doubling our average of £0.82M/year during the RAE2008 census period (which had in turn more than doubled our average of £0.36M/year during the RAE2001 period). In addition, future income from grants already won will guarantee a further £8M into the post-REF period. While the majority of the larger awards have been obtained by the Institute's senior research leaders it is important to emphasise that competitive awards have been obtained by 35 different members of staff, and cover the full range of our research activities. During the REF period the Institute's field unit (CAA) received £7.6M in contract income, an average of £1.4M/year, again near-doubling the average of £0.86M/year earned during the RAE2008 census period – consistent with our plan in our RAE2008 submission to broaden its range of applied archaeology and heritage research, nationally and internationally. In 2012 the Institute successfully applied for eligibility for HEFCE Business QR funding on the basis of the CAA's projects.

We benefit from the diverse funding sources available to our discipline, and during the REF period grants awarded by external funders include £6.4M from the ERC Advanced and Starting Investigators schemes, £2.15M from other European schemes, £1.89M from AHRC, £1.57M from British Academy, £1.3M from NERC, and £1.35M from the Leverhulme Trust. These figures include personal early career fellowships, which are highly competitive awards: during the REF period we have hosted seven funded by the British Academy, three from the Leverhulme Trust, and eight from the Marie Curie Intra-European and other European schemes. Within our eight themes, major project grants are supporting our work on 'Human Evolution' (ERC Starting Investigator Grant, de la Torre, £1.1M, 2012-16); on 'Early Food Production' (ERC Starting Investigator Grant, Vander Linden, £1.1M, 2012-17, two ERC Advanced Investigator Grants, Shennan, £1.6M, 2010-14, Fuller, £1.5M, 2013-18, two NERC project grants, Fuller, £1.2M, 2009-16, and a Leverhulme grant, Martin, £0.25M, 2013-16); on 'Landscape, Environment and Climate' (Leverhulme grant, Graham, £0.21M, 2013-16); on 'Artefact Production and Exchange' (AHRC, Rehren, £0.49M, 2012-15, and an ERC Starting Investigator grant, Gleba, £1.1M. 2013-18); on 'Cities, States and Empires' (Leverhulme, Reynolds, £0.28M, 2009-12, EC FP7, Wengrow, £0.16M, 2013-15); on 'Ritual, Religion & Cosmology' (AHRC, Hamilton, £0.47M, 2011-15); and on 'Cultural Heritage' (AHRC, **Basu**, £0.37M, 2009-12, and **Bevan**, £0.31M, 2013-15). In addition, Qatari sources have funded \$1M for 'Iron Production in Meroe' (Rehren, 2012-2015), \$1M for 'Iron Age metallurgy in Arabia and the Levant' (Rehren, 2013-2016), and ~\$0.8M for 'Origins of Doha' (Carter, 2013-16), all projects run from our Qatar campus.

In the five academic-year period October 2008 to September 2013, there were 38 new PhD studentships funded externally from UK sources (research councils, industry, etc.), and 14 new internally (institutionally) funded ones. In addition, there were 20 new registrations funded by overseas studentships, and 75 new registrations by students who were self-funded. The total number of new registrations averaged 29.4/year (48.9% with grant funding), marginally up from an average of 27.7 new registrations/year in the RAE2008 census period (43.8% with grant funding) despite an increasingly challenging fees regime. In October 2013 the AHRC awarded the London Arts & Humanities Doctoral Training Partnership, a joint venture between King's, the School of Advanced Study (University of London), and UCL, £18M over 5 years from 2014, with the three partners also investing over £12.5 million; we will be part of this studentship/training programme.



<u>d2. Infrastructure and facilities.</u> The Institute has outstanding facilities for an unparalleled range of archaeological research, including libraries, laboratories, equipment, collections and support personnel, and the benefit of these facilities is reflected in staff publications and PhD research. To sustain the vitality of this infrastructure we have invested in new labs in London and Qatar (which also has new office, library, and support staff provision), maintained or upgraded our existing provision, and we have ensured that our staff – including new teams funded by large project grants – have appropriate space provision by efficient (re)organization and allocation of existing office space in the Institute building. The Institute's Facilities Committee continues its five-year strategic programme for the updating of its equipment and laboratories. Major pieces of equipment have resulted from successful bids for UCL Faculty, College and external funding.

Libraries. The Institute of Archaeology library has gained an international reputation as one of the finest archaeological collections in the world. It supports staff and research students with research material on a wide variety of topics covering all aspects of archaeology, conservation, museum studies and cultural heritage worldwide, and provides access to researchers from elsewhere in the UK, Europe and the rest of the world. The current library also contains the Yates library of classical archaeology of Greece and Rome and the prestigious Edwards Egyptology library, housing c. 70,000 books and 800 journals on the open shelves with c 40,000-50,000 items in store. UCL Library subscribes to a wide-range of electronic resources (e-journals, databases), with UCL Discovery providing access to its open access archive and digital collections. UCL is also fortunately situated in Bloomsbury with ready access to the British Library and a wide range of specialist libraries and collections to support its research.

Wolfson Laboratory. To sustain its commitment to be at the forefront of research in archaeological science, the Institute and UCL have continued to invest in laboratory equipment. The Wolfson Archaeological Science Laboratory in London is Europe's foremost university-based archaeological science laboratory, providing major analytical equipment including two electron microprobes, three SEMs (two of them environmental) with EDS, one stationary and two hand-held XRF spectrometers, all dedicated to the analysis of archaeological materials. Other equipment includes an FTIR microscope for analysis of pigments and organic media, optical microscopes for metallography and petrography, sample preparation facilities, and a sedimentology lab. A new aDNA laboratory was established in 2013 for the extraction of ancient DNA with safety cabinet, UV cabinet and PCR Workstation, and rigorous clean room facilities, at a total cost of £120k. A new carbon coater and a cathodoluminescence detector were purchased for the Wolfson SEM lab (£80k); other new materials analysis equipment purchases for the London labs included a research grade metallographic microscope (£34k), the second portable XRF (£43k), an X-ray diffractometer (£46k) and the new FTIR (£25k). The labs are managed by a senior academic member of staff (Freestone), with a research associate in ceramic analysis and 1.5 technicians.

UCL-Qatar laboratories. A sister group of archaeological materials and conservation laboratories in UCL-Qatar are equipped with comprehensive sample preparation facilities, optical microscopes including a research grade metallographic/petrographic microscope, a VP-SEM with EDS, a bench-top XRF and a handheld pXRF for use in the field, a digital X-ray imaging cabinet and a photospectrometer. The labs are overseen by two members of academic staff, and supported by two full-time technicians. The laboratories, fully funded by Qatar, are designed to complement and work in conjunction with the labs at the Institute, through shared use and transfer of samples where possible.

Other Institute laboratories. The Conservation research laboratories offer a range of specialist equipment, including air abrasive units, X-radiography, traditional and digital microscopy, an oxygen gas analyser and Fourier Transform Infrared Spectroscopy. Research in zooarchaeology and human remains is supported by excellent reference collections housed in the Osteological Laboratory. The Palaeoecology Laboratory has been refurbished with additional museum storage cabinets and a number of microscopes and cameras for micro and macro remains. The outstanding archaeobotanical reference collection has been expanded with the addition of crops and a wider range of taxa from East Asia, South and South East Asia and Subsaharan Africa and the phytolith collection has been expanded for East, South and Southeast Asia. A new Lithics Laboratory was established in 2009, to support technological/typological studies, experimental replications and use-wear studies. The laboratory has metrical, photographic and optical instrumentation, and houses Palaeolithic collections from Europe and Africa. The Archaeological



Geographic Information Systems (AGIS) Lab offers specialised facilities unavailable on the general UCL network, to support the significant staff and student research in this field. It was updated in 2012-13 with ten new high-spec. computers and a new GIS server. Specialised imaging facilities including digital video editing are available in the Photography Lab, which also has the full range of conventional photographic facilities. Access is also available to specialised equipment in other parts of UCL; e.g. 3D laser scanning in Geomatic Engineering, laser Raman microscopy in Chemistry, and stable isotopes in the Bloomsbury Environmental Isotope facility.

Fieldwork equipment. The Institute has extensive equipment of its own, including a minibus, digital cameras (including digital video), resistivity and magnetic susceptibility meters, a fluxgate gradiometer, GPS, and surveying software. In addition, it has access to CAA equipment, including 4x4 vehicles, top-of-the-range total stations, Leica differential GPS, and geophysics equipment.

Collections. The Institute has outstanding archaeological collections, the object of substantive archaeological research by staff and students and a basis for applied research in Heritage Studies. Since 2008 continued investment has made them more accessible to both scholars and the public, in physical and digital form. A Keeper of Institute Collections is supervising the cataloguing of the Institute's collections to make them accessible for teaching and research (including online), and a Collections Manager is responsible for their use in teaching. The Petrie Museum of Egyptian Archaeology continues to develop access for teaching and research (including online) to its collection of around 80,000 objects, recognized by the UK government as 'of outstanding importance'. Outside UCL, extensive use is made of the London Archaeological Archive Resource Centre, and access is available to the collections of the many outstanding museums in London.

Support staff The Institute has 16.3 FTE HEFCE-funded administrative and technical staff. Of these, 5.0 FTE administrative staff directly support research. Laboratory facilities are supported by 2.5 FTE technical staff who directly support research. One 0.3FTE member of staff supports publications. 1.5 FTE technical staff support IT, photography, AV and digital imaging. UCL-Qatar has 2.0 FTE lab technicians, 2.0 FTE librarians, and 2.0 FTE IT specialists. Additional technical and administrative support is provided for individual projects where this is enabled by direct cost funding from their grants, and a number of existing HEFCE-funded staff also support outreach.

e. Collaboration and contribution to the discipline or research base

Our networks of collaborations extend around the world, and across disciplines within and beyond UCL. They are of fundamental importance in sustaining our mission to be a world leader in archaeological research. The most recent internal survey found us involved in 16 projects in London; 37 in the rest of Britain and Ireland; 63 in the rest of Europe, North Africa and the Middle East; 9 elsewhere in Africa; 22 in Asia; 16 in the Americas; and 4 in Australasia and Oceania. Our staff, in turn, maintain the vitality of the discipline through their extensive work in journal and monograph series editing, as conference organizers, and as members of professional bodies.

Collaboration: fieldwork. Our fieldwork around the world involves many partnerships with regional or national leaders who are expert in our fieldwork areas, as well as with analytical and policy specialists whose skills complement our own. As examples of this, in Britain Parker Pearson leads the 'Stones of Stonehenge' project, which brings together researchers from Bournemouth, Cambridge, Leicester, Manchester and Southampton universities, and from AEA, Dyfed Archaeological Trust, and the National Museum of Wales to explore the origin of the stones used to build Stonehenge itself. In Mediterranean Europe, Whitelaw leads the 'Knossos Urban Landscape' project, initiated by the British School at Athens as a collaborative project with the Hellenic Archaeological Service to survey intensively the Knossos hinterland. In Africa, Jeffreys continues to lead the Egypt Exploration Society's Memphis Survey project, initiated in 1982 to mark the EES's 100th anniversary, with partners in Cambridge and the AERA; de la Torre co-leads the 'Olduvai Geochronology and Archaeology Project' investigating Acheulian origins with geologists and archaeologist from several US universities; and Basu leads the 'Reanimating Cultural Heritage' project in Sierra Leone, in partnership with Sierra Leone National Museum, the British Museum, Sussex University, and three other museums in the UK. The CAA (led by **Perring**) is active in the Middle East, with excavations in Kazakhstan, Abu Dhabi, Palestine, and Lebanon. in partnership with universities, consultancies and/or national antiquities agencies within those countries. In Iraq, Altaweel leads a multidisciplinary project on land use and environmental change in Shahrizor, with partners from UCL History, UCL-Qatar, and the University of Texas. In Asia,



Fuller's project on 'The impact of evolving rice systems from China to Southeast Asia' involves academic partners from two Chinese, one Indian and one Thai institution, as well as from the ANU and U. of Hawaii. In the Americas, **Graham** works in Belize with collaborators from the Belize Institute of Archaeology and from the universities of Western Ontario and North Carolina. In far Oceania **Hamilton**'s 'Rapa Nui: Landscapes of Construction' project involves partners from the universities of Manchester, Bournemouth, UHI, Chile (Santiago), and Hawaii-Pacific, as well as Rapa Nui's National Parks Authority and its anthropological museum. There are many other examples of similarly productive collaborative fieldwork projects, initiated and led by Institute staff.

Collaboration: areal studies. Our strategic approach to areal partnerships is exemplified by our development of the International Centre for Chinese Heritage and Archaeology (ICCHA), founded in 2003 in association with the School of Archaeology and Museology at Peking University to develop Chinese archaeology at the Institute. Consistent with our plan stated in our RAE2008 submission, we have focused its science-based Chinese projects on metallurgy and early agriculture as well as organisation of meetings. Fuller replaced Rehren as its Director in 2012. A conference on 'Sharing Archaeology' was organized at Peking University in 2008, and another on 'Emergence of Bronze Age Societies: A Global Perspective' was held in 2011 at the Baoji Museum of Bronzes, Shaanxi Province, China. A further conference, with a focus on 'A Comparative Perspective on the Origins of Chinese Civilization' is planned for 2015. Fuller's 'Early Rice Project' has partners from Peking and Shandong universities in China, as well as academic institutions in Japan, India, Spain, and the USA. Martinon-Torres' 'Imperial Logistics: The Making of the Terracotta Army' project has partners at the Museum of Emperor Qin Shihuang's Mausoleum and the Shaanxi Cultural Relics Bureau in China, as well as Rehren in UCL-Qatar.

Collaboration: Cross-disciplinary thematic. Within UCL, we also participate in cross-disciplinary collaborations many of which are formalized in research Centres, of which we now describe two leading examples. The AHRC Centre for the Evolution of Cultural Diversity (2006-2010) was based in the Institute, directed by Steele, and - consistent with our intentions as stated on our RAE2008 submission - focused on evolutionary approaches to cultural diversity. It had 13 Pls. including Shennan, Cochrane, Lake, and Stout in the Institute, and others in UCL Anthropology and Biology, and the universities of Aberdeen, Durham, St Andrews, Edinburgh and British Columbia. Its PIs and researchers produced c. 230 publications on the Centre's research themes during its five-year lifespan, and five of its postdocs are now in permanent lectureships in the UK and overseas. Consistent with our plan in our RAE2008 submission to develop collaborations with UCL Anthropology in cultural heritage and material culture, the UCL Centre for Museums, Heritage and Material Culture Studies was established in 2007 as an expression of shared research interests across the Institute of Archaeology, Department of Anthropology, UCL Museums and Collections, and beyond. The Centre provides a network for the development of research initiatives on a wide range of issues, and Institute staff play leading roles including Basu, Butler, Chatterjee, Harrison, Peters and Quirke. In the REF period it organized fifteen conferences and workshops, including (in 2013) international conferences on 'World Heritage for Tomorrow' in partnership with ICOMOS and the Open University, and on 'The In-Betweenness of Things' in partnership with the British Museum. UCL is currently developing three new cross-disciplinary research initiatives with Institute participation, and which will help consolidate some of the gains already made by these two Centres: UCL Cultural Heritage; a UCL Centre for Research on the Dynamics of Civilization; and UCL Human Evolution. The Institute also collaborates actively in other UCL research centres (e.g. the Centre for Sustainable Heritage, the Centre for Advanced Spatial Analysis). It works closely with other UCL departments and other institutions within London, including the departments of Anthropology, Earth Sciences, Chemistry, Biology, Anatomy & Developmental Biology and the Bartlett School of Architecture within UCL, and the British Museum and the Natural History Museum, as well as MoLA (formerly MoLAS) and the London Archaeological Archive Resource Centre.

Contributions to the discipline or research base. Our staff make a major contribution to supporting their discipline at all levels, through editorial activities, conference organization, service on national and international bodies, and a heavy involvement in peer review and external examining. The numerous invitations to take part in these activities are a reflection of the high regard in which Institute staff are held. The activities are encouraged by the Institute and acknowledged in its workload system. Another indication of the range of our collaborations is our record of long-term



academic visitors, of whom we received 36 during the REF period for visits of one month or more (average stay: 31 weeks; half from Europe and half from other overseas countries), as well as hundreds of visits of shorter duration.

Among our staff are the editors of leading journals such as Archaeological and Anthropological Sciences (Fuller), Azania (MacDonald), J. Archaeological Science (Rehren), J. Material Culture (Basu), Public Archaeology (Schadla-Hall), and the new Journal of Contemporary Archaeology (Harrison), as well as the editors of significant book series in the field, including Critical Heritages (Basu), Critical Cultural Heritage (Butler), Understanding Global Heritage (Harrison), Routledge Studies in Culture and Development (Basu) and Leuven's Studies in Archaeological Science (Freestone). Staff serve as Associate Editors on a further six journals, and on the editorial boards of many (>50) specialist journals and book series. The Institute also works in partnership with Left Coast Press who have published books for us since 2006 and also reprint and distribute all our publications formerly published by UCL Press. Well over eighty titles - research monographs, site reports, archaeological science analyses, and theoretical works - are now available as Institute publications in the two series we sponsor. The CAA has its own peer-reviewed monograph series, launched in 2009 as a joint venture with Surrey County Council. Another particularly significant new initiative has been the foundation of Ubiquity Press, an open-access publisher and UCL enterprise start-up co-founded by Brian Hole (an Institute PhD student), with a portfolio including Present Pasts, a journal produced by members of the Institute's Heritage Studies Section; the Journal of Conservation and Museum Studies, relaunched in 2011 in collaboration with the British Library; the Journal of Open Archaeological Data; and Archaeology International, in collaboration with Institute staff.

Current Category A staff organized 38 whole conferences, and another 27 sessions or workshops at international conferences, during the REF period. Among these, highlights include the four thematic CECD conferences co-organized by **Steele** and available as free-access journal special issues; Institute-sponsored conferences, such as 'Digital Engagement in Archaeology' (organized by PhD student **Bonacchi** in 2011 and now published); conferences organized with key overseas partners, such as 'Emergence of Bronze Age Societies: A Global Perspective' (2010, ICCHA in collaboration with Peking University); and agenda-defining meetings such as 'Cultures of Commodity Branding' (**Bevan** and **Wengrow**, 2008) and 'The Origins and Spread of Stock-Keeping in Southwest Asia and Europe' (**Shennan**, 2010). In addition, staff have given more than 750 conference presentations (many of them plenaries and keynotes), seminars and workshop talks at meetings and in research institutions around the world.

Our staff served during the REF period on the Boards or Committees of a wide range of national and international learned and advisory bodies, including the British Institute for the Study of Iraq (Altaweel); Royal Anthropological Institute (Basu); Seminar for Arabian Studies (Carter); Egypt Exploration Society (Exell, Jeffreys); British School at Athens (Freestone, Whitelaw); Society for Libyan Studies (Fuller, Macdonald); Council for British Research in the Levant (Garrard); Royal Numismatic Society (Lockyear); British Institute in Eastern Africa (MacDonald); Palestine Exploration Fund (Martin); Historical Metallurgy Society (Martinon-Torres); Prehistoric Society (Parker Pearson); Society for Archaeological Sciences (Rehren); British Academy Archaeology Section (Shennan); Anglo-Peruvian Society (Sillar); Anglo-Israel Archaeological Society (Sparks); ICAHM (Williams); Institute of Field Research (Williams); and AHRC Peer Review College (Bevan, Freestone, Martinon-Torres, Reynolds, Steele, Wengrow).

The work of our staff continues to be recognized by national and international awards. Particular articles and books have won awards including *Antiquity*'s Ben Cullen Prize (**Fuller** 2012, **Parker Pearson** 2013), *Cultural Sociology*'s Sage Prize (2011, **Tanner**), and the Society for the History of Alchemy and Chemistry Partington Prize (2011, **Martinon-Torres**), while longer-term recognition included the Geological Society of America's Rip Rapp Award for Archaeological Geology (2009, **Macphail**), the Rivers Memorial Medal of the Royal Anthropological Institute (2010, **Shennan**, who was also made a member of Academia Europaea in 2013), UK Archaeologist of the Year (2010, **Parker-Pearson**), UK Archaeological Research Project of the Year (2010, Stonehenge Riverside Project, **Parker-Pearson**), the J.H. Gray Lectures in the Faculty of Classics, Cambridge University (2012, **Tanner**) and the M.I. Rostovtzeff Lectures at New York University (2011, **Wengrow**). The adoption in 2012 of **Martinon-Torres**' 'Terracotta Army' project as a 'kitemarked' British Academy Research Project was another significant recognition of excellence.