Frontispiece 1. An Enigma machine is positioned ready for a computed tomography (CT) scan. The Second World War cipher device is one of several coincidentally recovered from the south-eastern Baltic Sea over the past year. The machines were discovered by professional divers searching for lost propellers and clearing abandoned fishing nets. At the end of the war many U-boats were scuttled along the German coastline; the Enigma machines were probably thrown overboard at that time. Working in collaboration with the Archaeological State Office Schleswig-Holstein (ALSH), the Fraunhofer Research Institution for Individualized and Cell-Based Medical Engineering IMTE in Lübeck and the industrial CT manufacturer YXLON International GmbH have undertaken high-resolution CT scans to assist with analysis and planning of the machines' conservation. Photograph © ALSH.

Frontispiece 2. Aerial view of the 2019 excavation of a Bronze Age round barrow, near Winterbourne Abbas in Dorset, south-west England. The Catsbarrow site was identified as part of mitigation works by the Dorset Visual Impact Provision project. This initiative involves the removal of 22 electricity pylons from within the Dorset 'Area of Outstanding Natural Beauty' to enhance the visual character of the landscape. Burying the cables underground in 9km of ducting has involved two years of archaeological investigations. Other discoveries include hundreds of Neolithic and Bronze Age pits, burnt mounds, Roman agricultural buildings, field systems, ten other barrows including an earthen long barrow of probable Neolithic date, and an early medieval cemetery site. Photograph © National Grid.

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EDITORIAL

Slash and burn

By the time this editorial is published a decision will have been made about the future of the Department of Archaeology at the University of Sheffield. In late May, the University Executive Board set out its proposal, in effect, to close the department by moving some staff to other academic departments and making the remaining staff redundant. At the time of writing (mid June) the recommendation had still to be considered by the University Senate and a final decision taken by the University Council. The rapid mobilisation of support, including a petition with tens of thousands of signatures and messages from alumni and institutions around the world, should certainly have made clear to the decision-makers the scale of Sheffield's reputation and high regard. We must hope that this and other lobbying have been sufficient to influence the outcome and—whatever that outcome—we stand in solidarity with our Sheffield colleagues.

The sudden announcement of the review of the Sheffield department and the speed of the decision-making timeline were shocking. Such reviews are not unprecedented, however. Earlier this year, colleagues at Chester were put on 'at-risk-of-redundancy' notices, a threat finally withdrawn in mid June. In reality, these events follow on the back of a decade of various institutional reviews, reorganisations, job losses and closures at other UK archaeology departments including, but not limited to, Bangor, Birmingham, Manchester and Winchester. The picture is not only longer-term, but also of a wider scale. The undergraduate applied archaeology programmes at the Institute of Technology Sligo, in Ireland, for example, have recently been cut,[1] and numerous courses in cognate disciplines have been scaled back or closed down at colleges across the USA, from classics at Whitman College to anthropology at Illinois Wesleyan University. In many cases, the financial impact of COVID-19 is cited as a key contributing factor, but there has been a clear longer-term shift of emphasis by governments and universities, moving from the humanities and liberal arts towards STEM subjects. Most critical for archaeology, however, has been the decline in undergraduate student numbers applying to study the subject at university. The problem is particularly acute in the UK where recruitment, already falling, has been hit by a perfect storm, including a demographic dip with fewer 18-year-olds going to university, and Brexit, which has put up substantial new financial, bureaucratic and psychological barriers for many potential students from the EU.

Nor has the situation been helped by government rhetoric around what the Education Secretary has branded "dead-end" degree courses, by which he seems to mean non-STEM

[1] Available at: https://twitter.com/ITS_Archaeology/status/1396860575179853828?s=20 (accessed 22 June 2021).

subjects.[2] This is a rather narrow view of the value of a university education, for while well over 90 per cent of archaeologists working in the UK commercial sector have degrees, not all archaeology students intend or go on to become archaeologists, in the same way that students studying classics, history, philosophy and fine art do not all become classicists, historians, philosophers or artists (some, for example, become politicians, even prime ministers). Regardless of what career path they follow, however, archaeology students are particularly well equipped with a broad array of transferable skills—numeracy, critical thinking, teamworking and so on. They will also hopefully carry their knowledge and passion for archaeology through their lives—whether visiting sites and museums with their families, supporting heritage charities and organisations, advocating for the protection of the historic landscape, or engaging critically with media narratives about the past. Such broad and humanistic ideals of citizenship are anathema to the financial accounting of individual academic institutions, driven as they have been by successive governments to engage in a zero-sum-gain competition for students. Moreover, because of the discipline's small size compared with English or history—which have also experienced declining student numbers—the situation is particularly dangerous, as there is a risk that the subject becomes unsustainable at any individual institution. Of course, governments can also choose when and where to intervene in this higher education 'market' to support or disinvest in particular subject areas. In this context, the government has made clear its intent, by choosing to link an increase in support for STEM subjects with a halving of funding for what it has labelled "high-cost non-strategic" subjects—including art and design, dance, media studies, music and archaeology.

Such reductions in funding will do nothing to help the financial sustainability of archaeology departments or their recruitment of students. The sheer oddity of the decision, however, is revealed by the shortage of trained archaeologists on the jobs market. In contrast to falling student numbers, jobs in the archaeology sector have increased significantly in recent years, with growth of as much as 50 per cent or more over the past decade.[3] A large proportion of that expansion has, consequently, drawn on EU citizens, constituting up to 15 per cent of archaeologists working in the UK by 2019–2020, much higher than the proportion (seven per cent) employed in the wider workforce.[4]

There are currently around 7000 archaeologists employed in the UK (~6300 full-time equivalent posts), with more than two-thirds working in the commercial sector. Despite being of a similar size to industries such as marine fishing and cheese and butter production[5]—both of which merited much government attention in the run up to Brexit—the

[2] Available at: https://www.independent.co.uk/news/education/education-news/gavin-williamson-deadend-courses-nus-b1848461.html (accessed 22 June 2021).

[3] Aitchison, K., P. German & D. Rocks-Macqueen. 2020. Profiling the profession: landward research: section 1.1. https://doi.org/10.6084/m9.figshare.14333387. Available at: https://www.archaeologists.net/sites/default/files/RESPONSE%20-%20CIfA%20FAME%20CBA%20-%20Response%20Data.pdf (accessed 22 June 2021).

[4] Aitchison, K., P. German & D. Rocks-Macqueen. 2020. Profiling the profession: landward research: section 2.3. https://doi.org/10.6084/m9.figshare.14333387. Available at: https://www.archaeologists.net/sites/default/files/RESPONSE%20-%20CIfA%20FAME%20CBA%20-%20Response%20Data.pdf (accessed 22 June 2021).

[5] Aitchison, K., P. German & D. Rocks-Macqueen. 2020. Profiling the profession: landward research: section 1.1. https://doi.org/10.6084/m9.figshare.14333387.

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potential effects of the UK's departure from the EU on the archaeology sector attracted limited ministerial concern. Now the deed is done, the precise impact on the archaeology jobs market remains unclear, not least as COVID-19 has clouded the picture; the anecdotal evidence, however, suggests that many EU citizens have left the UK over the past year, exacerbating the labour shortage.[6] Most telling is the inclusion of archaeologists on the government's official list of skilled jobs with a shortage of workers available in the UK and hence eligible for recruitment from overseas (though still with significant restrictions).[7]

Categorising archaeology as "high-cost non-strategic" in order to cut training funds at the same time as adding archaeologists to the skilled worker shortage list might suggest a lack of joined-up government thinking. The reality may be more sinister. In the UK the bulk of archaeological work is undertaken as part of the wider planning and development process. While large amounts of government funding go into this system through commercial archaeology, environmental and archaeological evaluation and mitigation are frequently portrayed as costly and bureaucratic brakes on the construction industry, and mechanisms have increasingly been found to bypass planning permission. In this context, the government has brought forward proposals for changes to the existing planning laws, which would further relax the need for planning permission in certain designated areas. As the legal requirement for archaeological assessment is enshrined within the permissions process, such deregulation threatens to sideline archaeological evaluation and hence further dilute protection for the wider historic environment. A newly published report by the Housing, Communities and Local Government Committee, which has scrutinised the proposals with the help of expert witnesses, is highly critical of the government's plan and the lack of detail about the potential impact on protected areas and undesignated archaeological sites and landscapes.[8]

All of which brings us a long way from events in Sheffield. They are, however, all linked—from the 'market failures' of student recruitment to the push for deregulation in order to prioritise development at any cost. In the face of this systemic challenge, however, we might look with some hope to the huge public interest in archaeology. For example, in 2012 the discovery of the grave of Richard III and the intense debate over his final resting place exemplified a deep popular fascination with the past and the powerful connections between people and place.[9] The public also vote with their feet and their wallets; pre-COVID, visitor numbers to UK heritage sites increased by some 70 per cent between 2000 and 2019. Collectively, this interest and activity, alongside archaeological development work, means that the heritage sector generates greater 'gross value' for the UK economy than the defence or aerospace

[6] Available at: https://www.theguardian.com/science/2021/may/30/help-our-profession-or-uks-shared-history-will-be-lost-say-archaeologists (accessed 22 June 2021).

[7] Available at: https://www.gov.uk/government/publications/skilled-worker-visa-shortage-occupations/skilled-worker-visa-shortage-occupations (accessed 22 June 2021).

[8] Housing, Communities and Local Government Committee. 2021. The future of the planning system in England. First Report of Session 2021–22. Report, together with formal minutes relating to the report. London: House of Commons. Available at: https://committees.parliament.uk/publications/6180/documents/68915/default/ (accessed 22 June 2021).

[9] Buckley, R., M. Morris, J. Appleby, T. King, D. O'Sullivan & L. Foxhall. 2015. 'The king in the car park': new light on the death and burial of Richard III in the Grey Friars church, Leicester, in 1485. *Antiquity* 87: 519–38. https://doi.org/10.1017/S0003598X00049103

sectors, and more than the arts and culture too.[10] All of which is to say that as a subject area we have the basis on which to build a powerful argument—both economic and emotional—for the value of archaeology. Whether in the academic or the commercial sector, museums or local government, we will need to work collectively to mobilise support with the public, policy-makers and politicians alike in order to galvanise archaeology for the economically challenging decade ahead.

Communicating relevance

☙ Debates around the relative merits of the humanities *vs* the sciences and the balance of economic growth *vs* the protection of the historic environment are not inherently new. We may, however, need to approach them in new ways, thinking of archaeology, for example, in terms of 'value' or as a 'public good', or emphasising its contribution to societal wellbeing. In this issue, we feature a debate section exploring some of these issues in relation to perceptions of the relevance of archaeology.

Michael E. Smith opens proceedings by observing an increasing number of articles proclaiming the relevance of archaeology for important contemporary global challenges. These publications, he observes, are mainly directed at archaeologists rather than those specialists working in other disciplines or the policy-makers who filter such research for governments and politicians to act upon. Smith argues that archaeologists do not understand how relevance is constructed between fields of expertise and that ultimately it is only specialists working in other domains who can truly evaluate the wider relevance of archaeological data and interpretations. Hence, if the discipline is to establish its importance for confronting a range of societal and environmental challenges, we must communicate better with researchers working in other subject areas and, importantly, with policy-makers. This involves transdisciplinary research and the 'translation' of the results to make them accessible; both of these processes are long and complex. A third strand, Smith argues, is the need to develop a 'common language' in the form of a more rigorous scientific epistemology.

We have invited four respondents to comment on Smith's debate piece. All are agreed on the wider relevance of the discipline and the need to communicate this relevance more effectively. There is some disagreement, however, about how we might achieve this. Shadreck Chirikure argues that the definition of relevance will vary by context and local priorities; from the perspective of Africa, for example, there is a pressing need for archaeologists to turn their attention to practical challenges such as sustainable food production. Scientific rigour will count for naught, Chirikure argues, if we are not focused on relevant issues in the first place. Meanwhile, Paul Lane picks up on the importance of the need to translate research in order to make it accessible to policy-makers. Key to this 'knowledge brokerage', he argues, is not so much quantification as guidance about the uncertainties—the known unknowns—of the evidence base. In her response, Karina Croucher emphasises that qualitative approaches need not be lacking in rigour and can provide more nuanced insights than quantitative approaches alone. In a similar vein, Kathleen Morrison rejects the proposed definition of archaeology as a 'science' as too narrow and, ultimately, unimportant to policy-makers;

[10] Historic England. 2020. *Heritage counts: heritage and the economy*. London: Historic England.

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instead, she argues, we need the "full range of our inferential toolkit, including humanist/post-humanist insights. […] our social and cultural insights are at least as important as the numbers we can generate".[11]

The contributors to this debate section are involved in very different types of research, from mapping global land cover to facilitated workshops on death and bereavement. Such projects are perhaps far from what the general public—let alone our political leaders—imagine archaeology to be. This misperception is perhaps explicable, for the discipline has changed fundamentally over the past generations. Our collective challenge is to communicate these advances in the scope, ambition and impact of the subject as widely as possible.

The *Dark Emu* debate

"The use of the word 'agriculture' in relation to Australian Aboriginal people is not something many Australians would have heard".[12] This, however, is the central claim of the writer Bruce Pascoe in his bestseller *Dark Emu*, which was first published in 2014. In recent weeks, however, Pascoe and his book have been making headline news in Australia. *Dark Emu* set out to reveal "a much more complicated Aboriginal economy than the primitive hunter-gatherer lifestyles we had been told was the simple lot of Australia's First People". Pascoe's labelling of hunter-gatherer lifestyles as 'primitive' is contentious, however, and his wider interpretation of the Aboriginal past controversial. Drawing on colonial-era records, and a range of other sources including archaeology, Pascoe argued that pre-contact Aboriginal populations developed food-production strategies, including agriculture and aquaculture, and associated practices such as food storage and permanently occupied villages. The idea of pre-contact, Aboriginal food production, however, was far from new. For decades, it has been discussed in a range of scholarly and more popular texts,[13] and while *Dark Emu* draws extensively on the work of archaeologist Rupert Gerritsen,[14] numerous others have addressed the topic. In a 2009 *Antiquity* article, for example, Denham *et al.* explored a 'hierarchy of hypotheses' around the presence of banana, yam and taro in Northern Australia: were these food plants introduced during the colonial period, or 2000 years ago—or even 8000 years ago?[15] More recent research has used genetic analysis to explain the distribution of edible plant species, such as black bean (*Castanospermum australe*), as the result of human translocation.[16]

[11] Morrison, K. 2021. Routes to relevance in archaeology. *Antiquity* 95: 1070–72. https://doi.org/10.15184/aqy.2021.74

[12] Pascoe, B. 2018. *Dark Emu: Aboriginal Australia and the birth of agriculture.* Melbourne: Scribe.

[13] e.g. Blainey, G. 1975. *Triumph of the nomads: a history of ancient Australia*. South Melbourne: Macmillan. https://doi.org/10.1007/978-1-349-02423-0

White, J.P. & J.F. O'Connell 1982. *A prehistory of Australia, New Guinea and Sahul*. Sydney: Academic Press.

Flood, J. 1983. *Archaeology of the dreamtime*. Sydney: Collins.

[14] Gerritsen, R. 2008. *Australia and the origins of agriculture* (British Archaeological Reports International Series 1874). Oxford: British Archaeological Reports.

[15] e.g. Denham, T., M. Donohue & S. Booth. 2009. Horticultural experimentation in Northern Australia reconsidered. *Antiquity* 83: 634–48. https://doi.org/10.1017/S0003598X00098884

[16] Rossetto, M. *et al.* 2017. From Songlines to genomes: prehistoric assisted migration of a rainforest tree by Australian Aboriginal people. *PLoS ONE* 12(11): e0186663. https://doi.org/10.1371/journal.pone.0186663

Dark Emu, however, has achieved a far greater impact than any of these archaeological studies, with both popular reach and political influence; it is even taught in Australian schools. Archaeologists concerned with 'relevance' can only look on in awe, and we might well consider why we have been unable to reach these public audiences directly ourselves. Despite or because of its success, *Dark Emu* has also prompted a long-running and increasingly heated debate. On publication, right-wing commentators were quick to dismiss Pascoe's 'revisionism' and to launch ad hominem attacks. Scholarly engagement with *Dark Emu* has been slower to emerge, but is now gathering pace,[17] and a monograph published in June has reignited the controversy. *Farmers or hunter-gatherers? The* Dark Emu *debate*, by anthropologist Peter Sutton and archaeologist Keryn Walshe, presents the first book-length academic analysis of Pascoe's thesis.[18] In it, the authors argue that *Dark Emu* has resurrected a Eurocentric notion of progress portraying Aboriginal hunter-gatherers as less advanced than farmers. Assessing Pascoe's evidence base, Sutton and Walshe identify issues such as his selective use of colonial-era accounts and the lack of linguistic support.

Here is not the place for a detailed review of the data and their interpretation. It seems clear, however, that some—though certainly not all—of the debate stems from semantics and scale. The dichotomy of hunter-gatherers *vs* farmers is long out of date and a broad range of subsistence strategies and practices exist between these two ends of the spectrum. In a similar vein, it is important to acknowledge the extraordinary diversity and vastness of the Australian continent, encompassing deserts, rainforests, mountains and plains. A priori, these factors argue against any singular vision of Aboriginal subsistence. Moreover, Pascoe's equation of social complexity with permanent dwellings and farming should not be allowed to undermine recognition of the sophistication of Aboriginal and Torres Strait Islander peoples who, for example, demonstrate highly articulated kinship systems.[19] Undoubtedly, however, another factor feeding into the debate is politics and the publication of Sutton and Walshe's book has been leapt on with relish by conservative commentators as evidence that their suspicions about Pascoe were correct all along. Scholarly debate is the lifeblood of academia and critical and sustained scrutiny of *Dark Emu* should be welcomed. Simultaneously, there is a growing awareness of how scholarly research can be misappropriated by both conventional and social media. In Europe and North America, for example, there is concern around the ways in which ancient DNA analysis is misrepresented in support of racist or nationalist agendas[20] and calls for greater consideration of how our research might be used in ways other than those intended.[21]

[17] e.g. Griffiths, B. & L. Russell. 2018. What we were told: responses to 65,000 years of Aboriginal history. *Aboriginal History* 42: 31–53. https://doi.org/10.22459/AH.42.2018.02
Keen, I. 2021. Foragers or farmers: *Dark Emu* and the controversy over Aboriginal agriculture. *Anthropological Forum* 31: 106–28. https://doi.org/10.1080/00664677.2020.1861538

[18] Sutton, P. & K. Walshe. 2021. *Farmers or hunter-gatherers? The* Dark Emu *debate.* Melbourne: Melbourne University Press.

[19] e.g. Smith, C. 2020. *Country, kin and culture: survival of an Australian Aboriginal community.* Adelaide: Wakefield.

[20] e.g. Brophy, K. 2018. The Brexit hypothesis and prehistory. *Antiquity* 92: 1650–58. https://doi.org/10.15184/aqy.2018.160

[21] e.g. Lee, N. 2020. Here we go again: the need to contest and refute biological determinism in archaeology. *Archaeological Dialogues* 27: 20–22. https://doi.org/10.1017/S1380203820000045

Figure 1. Archaeologists and members of the Mithaka Corporation in 2019 excavating at the Ten Mile B sandstone quarry site at Durrie Station, south-west Queensland. Sandstone slabs were extracted from the quarries for the production of grinding stones, some of which were then traded through long-distance exchange networks. Photograph by Doug Williams.

For his part, Pascoe remains sanguine:

> *I welcome the discussion and difference of opinion as it should further this important examination of our history.* Dark Emu *has helped to shine a light on Aboriginal and Torres Strait Islander ingenuity, the stewardship of Aboriginal lands and First Nations' agricultural practices in Australia.*[22]

Australia in *Antiquity*

A number of the issues raised by the *Dark Emu* debate are addressed in a research article featured in this August issue of *Antiquity*. Michael Westaway and colleagues, including members of the local Mithaka Aboriginal Corporation, present the initial results of an archaeological project in the Channel Country of Central Australia (Figure 1). The collaborative initiative springs from early European accounts of the region that describe villages and food storage, as well as ethnohistorical evidence for a long-distance ceremonial and trade network centred on the exchange of grindstones, pigments and the narcotic *pituri*, derived from

[22] Available at: https://www.smh.com.au/national/debunking-dark-emu-did-the-publishing-phenomenon-get-it-wrong-20210507-p57pyl.html (accessed 22 June 2021).

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groves in the Mithaka Country. Investigations of potential dwelling structures—one of the focal points of the dispute between Pascoe and his critics—have so far produced no direct evidence of occupation. Conversely, the project has identified an extensive landscape of quarries used for the extraction of grindstones, and associated evidence for extensive ritual structures. The ongoing project will continue its work to document these quarries in full and to locate them within the wider subsistence and ceremonial landscapes of which they formed part. The project will also develop further research to investigate questions around sedentism and food production.

The fieldwork by Westaway and his colleagues in Channel Country is timely, not only in relation to the *Dark Emu* debate, but also because the Queensland State Government is currently considering a number of applications for hydraulic fracturing—or fracking—for gas in the region. The Channel Country is of great environmental importance as one of the last remaining untamed major desert river systems in the world. It is also home to more than a dozen traditional owner groups, including the Mithaka. Consequently, a wide alliance has raised concerns about the impact of fracking on this unique cultural and ecological landscape, in particular around fears about the contamination of water and disruption to its flow.[23] As ever, the realities are complicated by the huge amounts of money potentially at stake. Just as some local inhabitants have welcomed the financial benefits brought by mining companies to other parts of Australia (and elsewhere around the world), some in the Channel Country see the hope of a significant economic boost from the presence of the petrochemical companies.[24] A further complication is that, at the same time that the Queensland government is considering applications for leases to frack, the Australian federal government has recently added the Mithaka Cultural Landscape, in the heart of the Channel Country, to its Finalised Priority Assessment List for evaluation and potential inclusion on the National Heritage List. The nomination cites the region's "outstanding heritage value to the nation as […] a significant example relating to Australia's most complicated and extensive Indigenous trade and exchange system dating back at least 2600 years".[25]

Recently, Australian archaeology has had a relatively light footprint in the pages of *Antiquity*, but, as the debates around *Dark Emu* and on how to balance the development and protection of sensitive landscapes suggest, there is no shortage of archaeological research going on in Australia, nor a lack of public and political engagement with the continent's past. Our Australian colleagues are warmly encouraged to consider submitting more of their research to *Antiquity* in the hopes of bringing a global audience to issues of undoubted shared interest.

Robert Witcher
Durham, 1 August 2021

[23] Available at: https://www.abc.net.au/news/2021-02-06/channel-country-fracking-plans-origin-energy/13057536 (accessed 22 June 2021).
[24] Available at: https://www.theguardian.com/australia-news/2021/may/20/the-living-heart-of-australia-fracking-plans-threaten-fragile-channel-country (accessed 22 June 2021).
[25] Available at: https://www.environment.gov.au/system/files/pages/8ac00639-6069-454e-a191-e6b8a3eed9a2/files/fpal-nhl-2020-21.pdf (accessed 22 June 2021).

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