

The Archaeologist

Issue 112
Winter 2021



In this issue:

Outreach in the time
of COVID-19
p7

Digital innovation
in archaeology
p10

Equality and diversity
in archaeology
p24

Jobs in British
archaeology 2018–20
p29

RM Frobisher

The leading UK innovator of near surface geophysical and remote sensing technologies



Resistance Meter

TAR-3 with 5 + 2 multiplexing
Complete system £4,536

www.rmrobisher.co.uk

RM Frobisher (1986) Ltd. BB1C, Snyderdale Road, Cudworth, BARNSELY, S72 8RP

RM Pro Cart with four sensors
Complete system £24,984



Magnetic Gradiometer

Prices correct January 2021

N° 09467149

Create the digital
publication that's
right for your project

Arrange a free, personal,
no-obligation publication
consultation today

Contact

Judith Winters (Editor)
editor@intarch.ac.uk



@IntarchEditor



Internet Archaeology

internet
archaeology

Publication done differently
<https://intarch.ac.uk>

CIfA Chartered
Institute for
Archaeologists

The CIfA Yearbook is
being re-cast and
re-named for 2021.

The all-new annual **CIfA Client Guide** will still be an informative working guide to professional archaeology but the content and distribution will be tailored to become a more useful resource for anyone who needs to meet the requirements of legislation or policy that relate to archaeology, helping CIfA accredited professionals, Registered Organisations and other key suppliers to the industry flourish in the years ahead.

If your business is in archaeology, make it your business to be in the **CIfA Client Guide**.

Contact Cathedral Communications

01747 871717

cifa@cathcomm.co.uk

Contents

Notes for contributors

Themes and deadlines

TA113: *Archaeologists create and deliver public benefit in many ways. For TA113 we are looking for articles which showcase the different and innovative means of delivery on a range of sizes of projects, and to a diverse audience.*

Deadline: 1 April 2021

Contributions to *The Archaeologist* are encouraged.

Please get in touch if you would like to discuss ideas for articles, opinion pieces or interviews.

We now invite submission of 100–150-word abstracts for articles on the theme of forthcoming issues. Abstracts must be accompanied by at least three hi-resolution images (at least 300dpi) in jpeg or tiff format, along with the appropriate photo captions and credits for each image listed within the text document. The editorial team will get in touch regarding selection and final submissions.

We request that all authors pay close attention to ClfA house style guidance, which can be found on the website: www.archaeologists.net/publications/notesforauthors

TA is made digitally available through the ClfA website and if this raises copyright issues for any authors, artists or photographers, please notify the editor. Copyright of content and illustrations remain with the author, and that of final design with ClfA. Authors are responsible for obtaining reproduction rights and for providing the editor with appropriate image captions and credits. Opinions expressed in *The Archaeologist* are those of the authors and not necessarily those of ClfA.

Commissioning editor Alex Llewellyn
alex.llewellyn@archaeologists.net

Copy editor Tess Millar

Members' news: please send to Lianne Birney,
lianne.birney@archaeologists.net

Registered Organisations: please send to Kerry Wiggins, kerry.wiggins@archaeologists.net

ClfA, Power Steele Building, Wessex Hall,
Whiteknights Road, Earley, Reading RG6 6DE
Telephone 0118 966 2841

Design and layout by Sue Cawood

Printed by Fuller Davies

ISSN: 1368-9169

- 2 Editorial
- 3 Seeing is believing: a call for public engagement in our everyday work *Clemency Cooper and Nina O'Hare*
- 7 Outreach in the time of COVID-19: Archaeology South-East digs deeper *Emily Johnson*
- 10 Digital innovation in archaeology *Craig Huddart*
- 12 Everything happens somewhere – even archaeology *Peter McKeague*
- 15 Expedite and upscale: large area archaeological survey in the age of big data and machine learning *Dave Cowley, George Geddes, Łukasz Banaszek, Kirsty Millican and Iris Kramer*
- 18 Geochemical sampling as a method for archaeological evaluation and prospection *Jay Carver, Roger Doonan and Clive Waddington*
- 20 Archaeology stinks! Can we find ancient smells in the field? *Rose Malik*
- 22 First works council in German commercial archaeology *Regine Müller*
- 23 Spotlight on standards: launching the Toolkit for Specialist Reporting to address quality issues *Jen Parker Wooding, Louise Rayner and Duncan Brown*
- 24 Equality and diversity in archaeology: update from ClfA's Equality and Diversity Steering Group
- 25 Visual impairment and archaeological engagement *James King, Dr Benjamin Jennings and Dr Solange Bohling*
- 28 Archaeology and M.E.: chronic illness in the workplace *Sarahjayne Clements*
- 29 Jobs in British archaeology 2018–20 *Poppy German and Doug Rocks-Macqueen*
- 31 Professional conduct statement
- 32 Member news
- 34 Member lists
- 35 Obituaries
- 36 Noticeboard

Cover photo: ASE's Michael Shapland during the investigations into the Brighton Dome complex.

Credit: Archaeology South-East



EDITORIAL



p7



p10



p12



p25

Innovation is commonplace in archaeology, a discipline supported by a rich and diverse historic environment sector that benefits from a wide variety of specialisms and collaborations spanning academic, community-led, and developer-funded archaeological research. With continual advancements in technologies and techniques, along with modifications and adaptations in approach to archaeological research, the sector consistently pushes the boundaries, reaches further, and makes new and exciting discoveries and insights into our past. Innovation helps us to acquire *more* knowledge, extract *more* information, and continually enhances our ability to deliver greater and more effective public benefit. Innovation also drives the sector forward to evolve and improve its working practices, learning lessons, making improvements, and gaining knowledge from other sectors. This has led to safe working conditions, increased efficiency, enhanced communication, and a greater awareness of environmental impacts – all aspects well demonstrated by the sector's collective response to the COVID-19 pandemic.

However, it is not always easy or straightforward to implement innovation, especially in commercial archaeology. A recent Historic England-funded project undertaken by ClfA in collaboration with ALGEO highlighted some of the issues and potential barriers being faced by archaeologists trying to embrace innovation – especially on developer-led projects. This included cost, time, and a lack of knowledge about what innovative approaches were available and applicable to certain project types; factors that are compounded on fast-paced projects with tight budgets and even tighter deadlines. These issues were further discussed at the recent ClfA Innovation festival held in January – a fantastic showcase of what our multi-faceted sector can achieve but also a reminder that there are still some hurdles to clear to maximise the potential that innovation has to offer.

This issue of *The Archaeologist* showcases innovation in a variety of settings and project

types from across the UK and further afield to Germany. It is a celebration of innovations that are scientific, digital, technological and managerial, spanning research, commercial archaeology, and community engagement. Emily Johnson from Archaeology South-East outlines a newly developed organisation podcast series created as an alternative way of connecting with people and disseminating information. Craig Huddart from Wardell Armstrong LLP provides a discussion piece on digital innovations in archaeology, with a focus on the pros and cons of digital recording in the field. Rose Malik introduces her doctoral research at Durham University, which focuses on ancient odour molecules using a ground-breaking technique that has the potential to literally bring the past to life via our sense of smell. Peter McKeague, part of the Data Management team at Historic Environment Scotland, outlines the archaeological potential of utilising geospatial data to aid decision making and research in archaeology, whilst Dave Cowley, George Geddes, Łukasz Banaszek, Iris Kramer and Kirsty Millican, also from Historic Environment Scotland (the Survey & Recording team), present an overview of large-area archaeological survey in the age of big data and machine learning. The latter explores the application of automation, AI and machine learning in the detection of archaeological sites and features. Jay Carver, Roger Doonan and Clive Waddington, working for Fusion JV and Archaeological Research Services on behalf of HS2, present the results of a novel solution employed in response to challenging site conditions during an archaeological evaluation, involving the use of geochemical survey. And finally, Regine Müller, from SPAU GmbH in Germany, outlines innovation in relation to organisational structure and management by introducing the first works council to be established in German commercial archaeology. After reading these papers there can be little doubt that archaeology is innovative, which raises the question: what will we discover next?

Jen Parker Wooding



Seeing is believing

a call for public engagement in our everyday work

In the recent groundswell of discussion around public benefit and how professional archaeologists can effectively deliver it, there has been a noticeable focus on large-scale, often high-profile infrastructure or city centre projects and grant-funded works. These are unquestionably valuable case studies, but there is a concerning absence of the evaluations and smaller excavations that form a significant proportion of commercial archaeology projects.

Clemency Cooper, Oxford Archaeology and
Nina O'Hare PCIfA (8520), Worcestershire
Archive & Archaeology Service

*Local primary school visiting
a multi-period excavation on
the edge of their village.*

Credit: WAAS

ClfA SIG for Voluntary and Community Archaeology

Does this mean that there is negligible public benefit to be achieved from small and medium-sized projects? No – that is very much not the case, as we argue below, but our discussions and case studies require broadening to avoid this perception unconsciously developing. Case studies matter, as it's harder to draw lessons when there are significant differences between them and your own work. If archaeology is to increase the level of public benefits it generates, a wider range of case studies and open discussion of the barriers faced by smaller developer-funded projects are required.



*Two of the Warboys Archaeology Group volunteers involved in the evaluation of the site.
Credit: Oxford Archaeology East*

The largest single share of the commercial market in archaeology is housing (generating 36 per cent of the sector's income in 2017–18), ranging in size from watching briefs on property extensions through to new towns with tens of thousands of residents. Many developers have a strategic focus on being socially responsible as well as commercially driven, choosing to prioritise sustainability, sense of place and community. Place-making, strengthening community links and wellbeing opportunities are just some of the public benefits archaeology can deliver, alongside potential publicity boosts and improved community relations for the client. Yet how many housing developers draw on archaeology to achieve these aims?

In the worrying days of planning reform, it is more vital than ever to demonstrate our true value to policy makers, clients and the public. Many residential developers already undertake work to fulfil their corporate social responsibilities, making this an open door that we could and should be walking through. Together – as unit managers, site staff, consultants, planning advisors and community archaeologists – we can expand the benefits archaeology brings to many more people in many more places.

Tales of potential

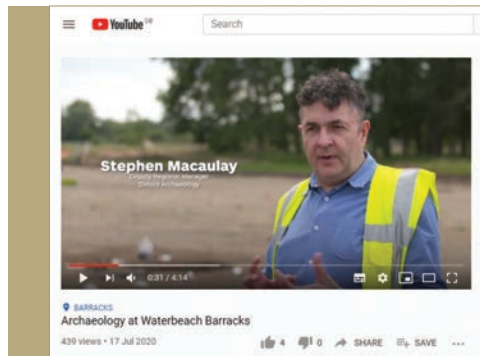
During the evaluation of a site for a housing estate in Warboys, Cambridgeshire, Bellway Homes agreed to members of the local archaeological group getting involved under supervision from and in addition to the archaeological contractors. The volunteers learned new skills and benefited from the physical, social and mental wellbeing of working outdoors as part of a team. Members of the group continued to volunteer during the excavation and assisted with a 'pop-up' exhibition of the findings after the excavation finished. The group advised on the best date and location to hold the exhibition and where to advertise it. They also helped source extra tables and came along to support the archaeological team – even bringing along bunting to put up outside the



The pop-up exhibition at Warboys Methodist Church, held in July 2019. Credit: Oxford Archaeology East

church, creating an air of festivity! Warboys Archaeology Group took ownership of the event, which helped to engage other residents and foster a sense of pride in the heritage of their area.

Opportunities have changed but by no means diminished with the impact of COVID-19, and recent months have demonstrated that there is considerable potential and appetite for off-site engagement. This year, Urban&Civic, the masterplanner for Cambridgeshire developments at Waterbeach Barracks, Wintringham, and Alconbury Weald,



A screenshot of the 'Archaeology at Waterbeach' video recorded and released in summer 2020. Credit: Urban&Civic

has released videos and podcasts to share the findings from archaeological excavations, not only informing neighbouring residents about the areas where they live, but anchoring new communities with a sense of the past.

Rebecca Britton, Head of Communications, Communities and Partnerships for Urban&Civic, said:

“Bringing forward a new community is a very complicated process – both technically as you work through the planning process, and also in how you engage people with it from early planning, through delivery, sales and marketing and then community development. Heritage is literally the gift that keeps on giving in that it consistently engages people in the process: from vision and identity, through to the digs on site and work with local schools and communities, and in to place-making and connecting new residents together, to their new home and to local communities. The heritage of all our developments is really key to putting heart and soul into the new communities coming forward, and the rich tapestry of stories, finds and information from the archaeology in and around our developments is a fundamental part of how we bring that to life.”



Promotional shot for the launch of the Alconbury Weald Stories podcast episode on the heritage of the site, featuring Raksha Dave (left), who presents the podcast, with Clemency Cooper (centre) and Rebecca Britton (right). Credit: Urban&Civic

Sharing the good and the bad

These sorts of case studies are all too often not shared, despite examples existing of the impacts public engagement can achieve on smaller commercial projects. Besides a lack of resources for smaller projects to be formally evaluated or disseminate their own outcomes, there is perhaps a perception that case studies need to be 'impressive' and sizable to be shared. As a profession, we are also poor at recording the benefits clients receive from a project's public engagement. Anecdotally, there are cases of houses being sold more quickly due to public engagement and publicity of the archaeology brought to light during development. We need to be collating and sharing this evidence, so that all can see what there is to be gained – and lost, by not doing more.

Public engagement does not have to be costly or time consuming to be effective – a site noticeboard, primary school visit or short finds session can have a big impact. We are not advocating for weeks of open days on every site, but for more projects to include meaningful public engagement that is proportionate to the scale of work and archaeological significance. How do we determine what is 'meaningful' or 'proportionate'? Whilst there isn't an easy answer, we shouldn't ignore the potential medium- and smaller-scale projects have for generating public benefits. After all, part of ClfA's role is to 'maximise the benefits that archaeologists bring to society'.

Just as it is important to showcase studies of good practice, we also need to better understand the barriers to embedding public benefit in all developer-led projects. There are short turnarounds, the concern of losing tenders due to public engagement costs, fear of negative publicity, sensitive sites, and other such barriers to open and direct conversations with developers. These hurdles are real, and will only be overcome through open, frank discussion and closer collaboration.

Do you have any thoughts to add or case studies to share? Join us on Wednesday 24 February at 10.30am, when we'll be continuing the conversation over a ClfA Digital Tea Break. As practitioners of community archaeology and members of the ClfA Special Interest Group for Voluntary and Community Archaeology, we welcome ClfA's commitment to maximise the value that archaeologists bring to society in its next strategic plan. We are working with the central ClfA team to develop a web resource with a variety of case studies that demonstrate the range of ways archaeologists deliver public benefit. If you wish to find out more or can't make the tea break discussion, please get in touch by emailing admin@archaeologists.net



Clemency Cooper

Clem is the Community Archaeology Manager for Oxford Archaeology, leading public engagement projects in partnership with community groups and educational institutions, and outreach activities as part of developer-funded archaeological investigations. She has worked in archaeological public engagement for ten years, previously in the university and museum sector.



Nina O'Hare

Nina is a Community Project Officer for Worcestershire Archive & Archaeology Service, where she previously worked as a field archaeologist. She runs grant-funded projects alongside a wide range of outreach activities, working across the unit's unique combination of commercial archaeology, HER and archive services.

Outreach in the time of COVID-19:

Archaeology South-East digs deeper

Emily Johnson, Archaeology South-East

Public engagement and outreach have always been high priorities at Archaeology South-East, a commercial archaeology and heritage division based at the UCL Institute of Archaeology. Our archaeologists are regularly engaged in school visits, site open days and large community projects, and our social media channels are full of exciting finds and research. You may have also seen us in the press this year, as we had some fascinating discoveries (like the Red Lion playhouse in London) and research (like the Boxgrove horse butchery site) to share with the world.



ASE's Michael Shapland during the investigations into the Brighton Dome complex. Credit: Archaeology South-East

That being said, we're always on the lookout for innovative ways to disseminate our research, and earlier this year, tech-savvy finds specialist Steve Patton casually floated the idea of an ASE podcast. After some intensive discussion, we decided our podcast would offer an insight into development-led archaeology, demystifying the process, the people, the discoveries and the stories. Our guests would be ASE colleagues from all areas of the archaeological and heritage sector. Ideally, content would be relevant and accessible to a wide range of audiences, from archaeological professionals to the interested public. And – hopefully – it would be a lot of fun!

We recorded the first episode the very next day. Steve brought in some audio equipment, I offered to host, and we cajoled Teresa Vieira, lead archaeologist on the Walberton 'Warrior' excavation, into being our first guest. We all crammed into our photography room (in the days before social distancing) and within 24

hours of its conception, we had a recorded podcast episode!

Then, the COVID-19 lockdown hit. The podcast was put to one side while we adjusted to the 'new normal' of life during a pandemic. It wasn't until the summer when we saw the opportunity to rekindle the project, alongside our imminent announcement of the discovery of the Red Lion, the earliest purpose-built Elizabethan playhouse. We predicted a high level of public and academic interest and realised a podcast episode would be the ideal way to address questions people might have, and in far more detail than the press release allowed.

We rapidly assembled a podcast team of talented colleagues with design, branding, marketing and public engagement expertise. They came up with a name, logo and release strategy, and the Archaeology South-East Digs Deeper podcast was born! I recorded a new episode via videoconferencing with Stephen

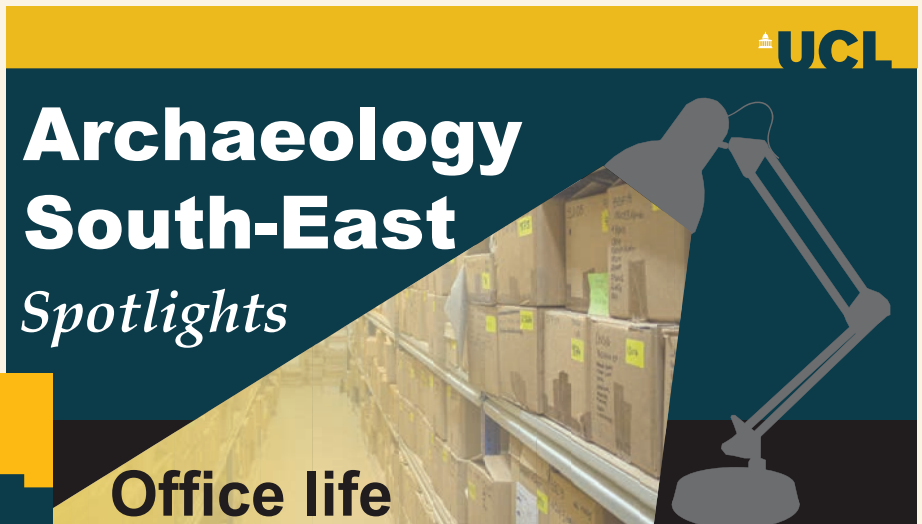
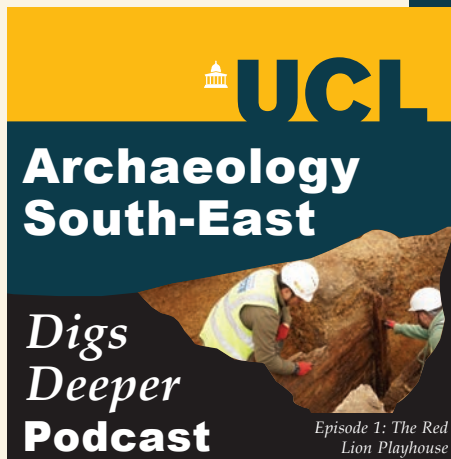
White, lead archaeologist on the Whitechapel excavations where the purported Red Lion was found. I light-heartedly grilled Stephen over the evidence for the playhouse – the timber structure, the dating evidence, the historical maps, and what we think it might have looked like – all information that was included in the press release but that couldn't be explored in such detail.

The first episode got a great reception, with over 200 listens, and that catalysed us to record and release more episodes. Next, I spoke to Simon Stevens about his outreach and research projects based in the South East, including experimental archaeological iron smelting with the Wealden Iron Research Group. Historic buildings archaeologist Michael Shapland was next in the hot seat, talking about how one captures the 'spirit' of soon-to-be-demolished historic buildings during objective recording, and his work on the Brighton Dome complex. And the first recorded episode with Teresa finally saw



Archaeologists excavating the Walberton 'Warrior' grave. Credit: Archaeology South-East

We decided our podcast would offer an insight into development-led archaeology, demystifying the process, the people, the discoveries and the stories.



Ideally, content would be relevant and accessible to a wide range of audiences, from archaeological professionals to the interested public.

the light of day, detailing what we know (and what we're hoping to find out) about the latest 'warrior' burial to be found in West Sussex.

It's not just been archaeological practice on the schedule – we've been discussing some really important issues affecting our sector with Kayt Hawkins of the BAJR RESPECT campaign. We talked about what steps are being taken to tackle sexual harassment in the archaeological workplace and what still

needs to be addressed. These are the sorts of conversations you can expect alongside our more archaeological episodes as we try to unpack all aspects of commercial archaeology.

The ASE Digs Deeper podcast has really galvanised our digital outreach and led to further new projects, like our ASE Spotlights video series on our YouTube channel, which presents short snapshots of the archaeological process. We recently posted a virtual tour of our Sussex office. And the

podcast is certainly not going anywhere! We have lots more episodes planned that I can't wait to record. So look out for our ASE Digs Deeper podcasts, airing roughly monthly for your (hopefully) listening pleasure!

ASE Digs Deeper is available to listen from hosting apps like iTunes, Stitcher and Spotify, or you can find episodes on our Soundcloud (www.soundcloud.com/uclarchaeologysouth-east)

It's not just been archaeological practice on the schedule – we've been discussing some really important issues affecting our sector.



Emily Johnson

Emily is a zooarchaeologist and social media coordinator at Archaeology South-East. When not writing animal bone reports she is busy creating a wide variety of digital content for our online audiences – and that includes hosting ASE's new podcast!

DIGITAL INNOVATION IN ARCHAEOLOGY

Archaeological data and practice are becoming increasingly digital, stimulating the manufacture of software and hardware solutions for in-field data collection. Digital data are becoming central to most archaeological projects. Indeed, many projects are now aiming to become exclusively paperless. In the light of this development, numerous web-based software solutions have become available to facilitate the collection of digital data in the field, some bespoke, others 'off the peg' and in use elsewhere.

The purpose of the traditional recording system is to provide a coherent, consistent, and structured methodology for documenting archaeological remains discovered through the process of excavation (including evaluations and watching briefs).

Survey, graphics, and most publication-related tasks are carried out digitally and the desire is to bring fieldwork practices into line to create a more streamlined process.

Information technology has made steady advances into the archaeological field over the last two decades and in some cases has displaced or works in tandem with more traditional paper-based systems. Survey, graphics, and most publication-related tasks are carried out digitally and the desire is to bring fieldwork practices into line to create a more streamlined process.

Manual paper-based forms create additional project costs; weeks are often spent typing out and digitising paper records and scanning drawings to then digitalise them into a file that can be manipulated on a computer and in AutoCAD. Data input onto Excel spreadsheets is archaic and time consuming. It can take 15–30 days to convert the data from all forms into a digital format. Photos must be managed manually from a digital camera by the user, increasing the chances of human error. Backing up the data is not an ideal method and paper-based systems are inherently volatile and unstable by their very nature. The system in its current format is just not practical and with well over 20 form types, multiple folders and records, sketches and drawings, the whole process can be somewhat unwieldy.

These issues can be bypassed by putting the on-site information straight into a digital format that can be used immediately by project managers in the field, or by clients in their own offices. If all the records are in one location that can be accessed at any time, then the site can be visualised and assessed in real time without having to wait for the paper record to be digitised.



Site surveying in a rural setting. Credit: Wardell Armstrong

Ideally the system would use a GIS map-based or map-linked interface, so that records, photographs and drawings are georeferenced and can be seen on a map of the site and viewed and amended in GIS. The archaeological world is moving more towards using GIS as a way of ensuring the usability of data through all stages of the planning process and it is important that we modernise and enable our systems to have the capabilities to do the same. HS2 and East West Rail are setting standards for GIS deliverable data and are paving the way for archaeological companies to follow suit.

One of the trickiest requirements is to replace the need for Permatrace. Archaeologists need to be able to recreate on a tablet what they do on a paper drawing. Instead of drawing a plan or section on paper, scanning that sketch to turn it into an image file and tracing that image file to turn it into a vector file that you can manipulate on screen, the aim is to just draw something on the screen that is digitalised immediately. Architects create precision drawings in an immediate digital fashion, so the possibility is already there.

However, there are several issues with digital recording that may limit or slow down the overall uptake of a purely digital-based system.

Corrupted data is a real possibility and is potentially non-retrievable, making sites a total write-off. In the same way, human error could be catastrophic, so training is vital. However, training costs and time can be very expensive, and as technology changes this will have to be ongoing. It's also important that staff who find it harder to use new tech aren't left behind and marginalised, so any new systems and hardware should be adaptable and user friendly.

Craig Huddart, Technical Director of Archaeology, Wardell Armstrong LLP



*Traditional manual site recording.
Credit: Wardell Armstrong*



*Completely paper-free digital recording in action.
Credit: Wardell Armstrong*

The cost of hardware, software and data storage can be extremely expensive and the initial costs may be prohibitive. New equipment and new software will run into tens of thousands of pounds and there's also the issue of ongoing maintenance costs. However, these costs will be offset by time saved on site and in person hours of data entry in the office during post-excavation.

Ongoing training should be in place and newly graduated archaeologists should be taught both digital and traditional methods.

Potentially the main issue regarding digital recording is the loss, or perceived loss, of traditional skills. These skills form the backbone of the profession and standards should be maintained. Should there be a technology failure, it is imperative that traditional skills can be relied upon. Ongoing training should be in place and newly graduated archaeologists should be taught both digital and traditional methods.

The purpose of this article is to provide food for thought and I hope that it opens a debate within our profession. Other industries are forging ahead with technological innovation and it's vital that we attempt to stay within touching distance of them. We work hand in hand with many industries and we need to remain relevant, professional and innovative, with information and data being transferred digitally.

Craig Huddart

Craig is Technical Director of Archaeology for Wardell Armstrong LLP and lives in Teesdale, County Durham. From February 2021 he will be appointed as Head of Business – UK at Red River Archaeology Group. Craig has previously written for *The Archaeologist*, authoring a piece on the importance of mental health provision within archaeology.

Craig has been in archaeology for over 15 years and has worked on, supervised, consulted on and managed every type of site from watching briefs through to large-scale infrastructure and renewables schemes. Craig is responsible for large-scale, high-value project delivery and business development. Craig still enjoys the day-to-day management of complex archaeological sites and his major archaeological interests lie in the period spanning late Roman through to early medieval Britain.



Everything happens somewhere – even archaeology

Peter McKeague FSA Scot MClfA (6081)



Every year archaeologists create a wealth of primary data documenting the location, extent, and characteristics of our heritage – irreplaceable evidence of the past. Despite considerable investment in data collection through to project delivery, the long-term potential of that data largely remains unrealised. With UK government and private sector investment in geospatial technologies in the context of decision making, there is an urgent need to harness the potential of this primary data to inform our decision making and research.

By creating the Geospatial Commission in 2018, the UK government recognised the importance and value of geospatial activity to society. The Commission aims to unlock the significant economic, social and environmental opportunities offered by locational data.

Unlocking the power of location. The UK's Geospatial Strategy 2020–2025 (Geospatial Commission 2020) sets out an ambitious vision:

- to promote and safeguard the use of locational data to provide an evidenced view of the market value of location data and promote better use of locational data
- to improve access to better-quality location data, ensuring it is findable, accessible, interoperable and reusable
- to improve skills, capabilities and awareness to meet the UK's future needs and support global development
- to enable innovation by maximising the commercial opportunities for innovation and promoting market-wide adoption of high-value emerging location technologies

The Commission is investing in coordinating a register of underground utility assets (cables and pipes) – but what about the wealth of known and unknown archaeological assets? © Crown Copyright, Open Government Licence 3.0



(left) Mapping the archaeological landscape of St Kilda with a Differential GPS. Archaeological detail from survey or excavation is all too often reduced to illustrations in a report. We need to realise the potential of that data beyond their original projects to contribute to the wider landscape. Credit: Historic Environment Scotland

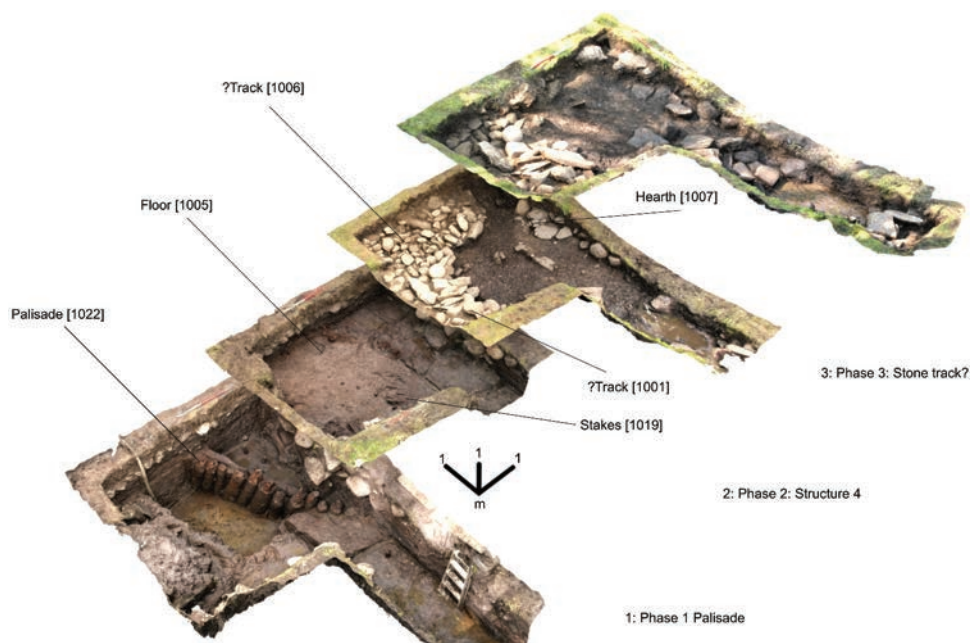
The National Underground Asset Register (NUAR)

The Geospatial Commission recognises the need for good quality geospatial data for the construction and infrastructure sectors, to improve efficiency and reduce risk for everyone working in the industry. Accessing data about the network of cables and pipes beneath our feet is currently hugely inefficient as many different organisations are responsible for these assets. Each asset holder needs to be contacted individually to access data. If provided at all, the data is delivered in varied formats, scales, quality and timescales. The risk of disruption through damaging infrastructure is high.

As the utility industry neither individually nor collectively bears the wider costs of disruption, and there are considerable commercial sensitivities to overcome, the Commission is providing strategic investment and coordination in developing the National Underground Asset Register, launched in July 2020.

Realising the archaeological potential?

The Commission is raising the bar for access and decision making about location, which is to be welcomed, but archaeology must not be left behind or left out. Sophisticated analytical and data-modelling techniques are already assigning value and cost to land and property. Ecosystem services models draw on a wealth of data to support policies and management practices aiming at environmental sustainability. Artificial Intelligence (AI) technologies analyse Big Data to categorise land and property information in a fraction of the time and cost of traditional approaches. But for archaeology, there are problems with this approach: at present we don't have the means for remote automated analysis of most of our data.



Exploded view of trench 10, Black Loch of Myrton in Dumfries and Galloway: curated geospatial data needs to routinely include spatiotemporal dimensions. Credit: AOC Archaeology Group 2020



Archaeologists often encounter underground infrastructure during fieldwork: Edinburgh Tram Extension 2020, GUARD Archaeology excavating the junction of Constitution St. and Baltic Street Junction, Leith. Credit: CECAS 2020

Archaeologists often encounter underground infrastructure during fieldwork: Edinburgh Tram Extension 2020, GUARD Archaeology excavating South Leith Parish Graveyard (c1300–1650). Credit: CECAS

Excepting Protected Sites, which can be accessed through View and Download services, most locational record data in Historic Environment Records are only available online through portals (including PastMap, Heritage Gateway, Archwilio and the Northern Ireland Historic Environment Map Viewer). Even then, data published in these browsers can only ever represent the tip of the iceberg. Most of our knowledge from fieldwork and research is contained in project reports, uploaded through OASIS and shared with the relevant records and often available through the Archaeology Data Service library or in academic journals. Much remains to be discovered and ensuring that ‘unknown unknowns’ are acknowledged by AI is challenging.

Initiatives like *Write Here! Write Now!* (ClfA 2020) recognise the value of data fossilised in project reports and are starting to address unlocking that potential. However, we need to make that data FAIR – Findable, Accessible, Interoperable and Reusable. Moreover, we



lack the archaeological spatial data infrastructure to coordinate, collate and contribute that data to deliver efficiencies for our profession, both for research into and stewardship of the historic environment and to contribute to the national geospatial infrastructure. As a sector, we need to acknowledge the ambitions of the Geospatial Commission, coupled with proposed reforms

of the planning system in England, and respond to them through improved stewardship of our own archaeological spatial data. This can be addressed through broad-brush mapping of sensitivities and risk, underpinned by detailed digital documentation of the archaeological resource to support properly informed decision making and research.

References

ClfA 2020 *Write Here! Write Now!* <https://www.archaeologists.net/projects/write-here-write-now>

McKeague, P, Corns, A and Posluschny, A, 2017 Why the Historic Environment needs a Spatial Data Infrastructure, *Internet Archaeology* 43. <https://doi.org/10.11141/ia.43.7>

McKeague, P, van't Veer, R, Huvila, I, Moreau, A, Verhagen, P, Bernard, L, Cooper, A, Green, C and van Manen, N, 2019 Mapping Our Heritage: Towards a Sustainable Future for Digital Spatial Information and Technologies in European Archaeological Heritage Management, *Journal of Computer Applications in Archaeology*, 2(1), 89–104. <http://doi.org/10.5334/jcaa.23>

McKeague, P, Corns, A, Larsson, Å, Moreau, A, Posluschny, A, Van Daele, K, Evans, T, 2020 One Archaeology: A Manifesto for the Systematic and Effective Use of Mapped Data from Archaeological Fieldwork and Research, *Information*, 11, 222. <https://doi.org/10.3390/info11040222>

The Geospatial Commission 2020 *Unlocking the power of location. The UK's Geospatial Strategy 2020–2025* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/894755/Geospatial_Strategy.pdf

The National Underground Asset Register 2020 <https://www.gov.uk/government/publications/national-underground-asset-register-project-update/national-underground-asset-register-project-update>



Peter McKeague

Peter is Spatial Information Manager in the Heritage Directorate at Historic Environment Scotland. Working within the Data Management team, he has applied his extensive field survey experience to champion improved use of spatial data in Geographic Information Systems as part of a Royal Society of Edinburgh workshop award (2019).

Expedite and upscale

large area archaeological survey in the age of big data and machine learning

Dave Cowley MCIFA (10479), George Geddes MCIFA (2669), Łukasz Banaszek and Kirsty Millican, Historic Environment Scotland; Iris Kramer, University of Southampton

Archaeology is something of a magpie discipline, with a track record of appropriating approaches, theory, and techniques from other fields that has helped, for example, to drive the ‘digital revolution’ in archaeological practice. Digital documentation, 3D datasets and complex analyses are now routine practice rather than revolutionary, but it is one thing that such methods are widespread, and quite another for their implications to be fully explored. Archaeologists at Historic Environment Scotland (HES) are exploring these implications for their workflows, recognising that sometimes assimilation of new technology or practice can happen organically, but also that sometimes a more fundamental reassessment is required of how we do what we do.

Large area survey – expediting coverage in a digital world

Archaeological survey of various kinds is one of the foundations of knowledge about the past. Indeed, most of our monuments are known from survey alone. Routinely, area survey will increase the numbers of known monuments by 100 per cent or more, adding to the evidence for where people in the past lived, farmed and buried their dead. This information informs management, research and our appreciation of the historic environment. The ‘humps and bumps’ of archaeological earthworks and airborne laser scanning (ALS) or lidar has proved a game-changer, creating digital landscapes that can be explored with the roll of a mouse wheel, zooming effortlessly from the general to the detail. While this is now routine, it remains remarkable how much information digital landscapes hold – a treasure chest of archaeological sites and landscapes. A recent ALS-based HES survey of Arran, popularly known as ‘Scotland in miniature’ because of its varied landscape types, added over 900 sites to the record, more than doubling the tally of known archaeological monuments (Figure 1). Moreover, the detailed and textured view of the landscape provided by

the ALS-derived visualisations gave our team the confidence to complete the survey at a dramatically faster rate than normal.

We are also asking questions that explore aspects of our practice. These include how to address the variations between different observers and how to better document the strengths and weaknesses of different processes (ie desk-based and field work). For example, we did some desk-based mapping where multiple interpreters looked at the same ground, and this demonstrated how variable results can be from person to person (Figure 2). This highlights the importance of working in a team, learning from each other’s different ways of looking, and putting in place processes of peer review and quality control. We used handheld GPS units to record the routes we walked during the field work phase of the project. This information helps end users understand how a survey was conducted, as all too often archaeological data is presented with little documentation that can inform considered use. Central to our exploration of approaches to large area survey is ensuring we can reflect on workflows – and that means good documentation of how we did what we did.

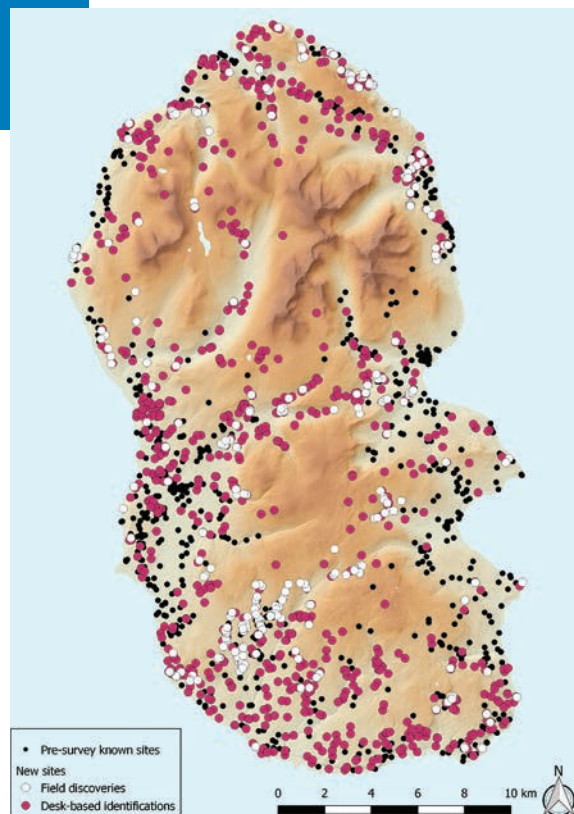


Figure 1: Even on the relatively well-known island of Arran, recent survey doubled the number of known sites, with a mix of desk-based and field discoveries. © Historic Environment Scotland

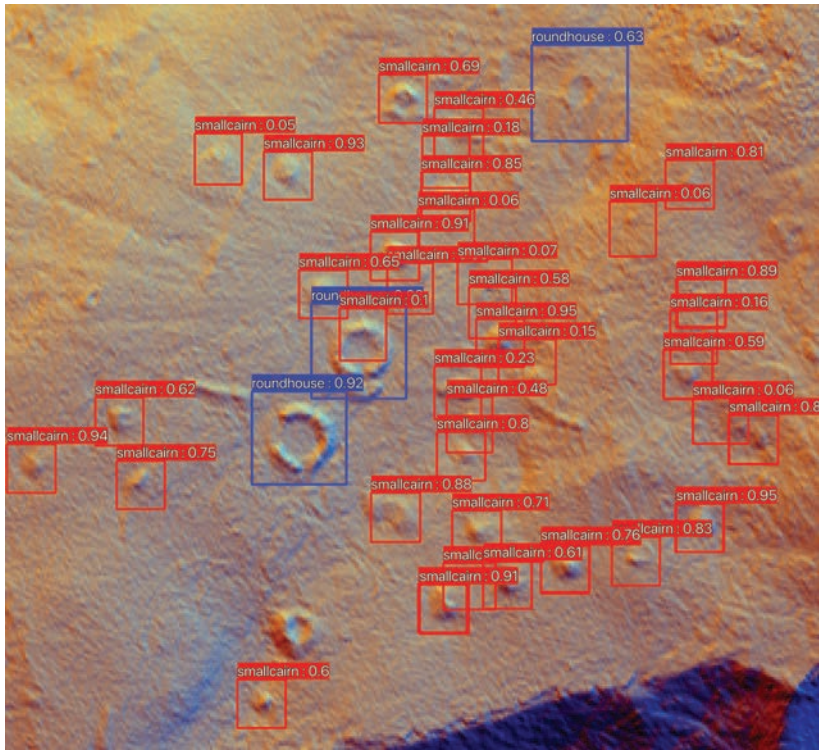


Figure 2: The results of four different desk-based interpreters shown against a multi-direction hillshade, illustrating variability in detections and the confidence attached to those identifications. © Historic Environment Scotland

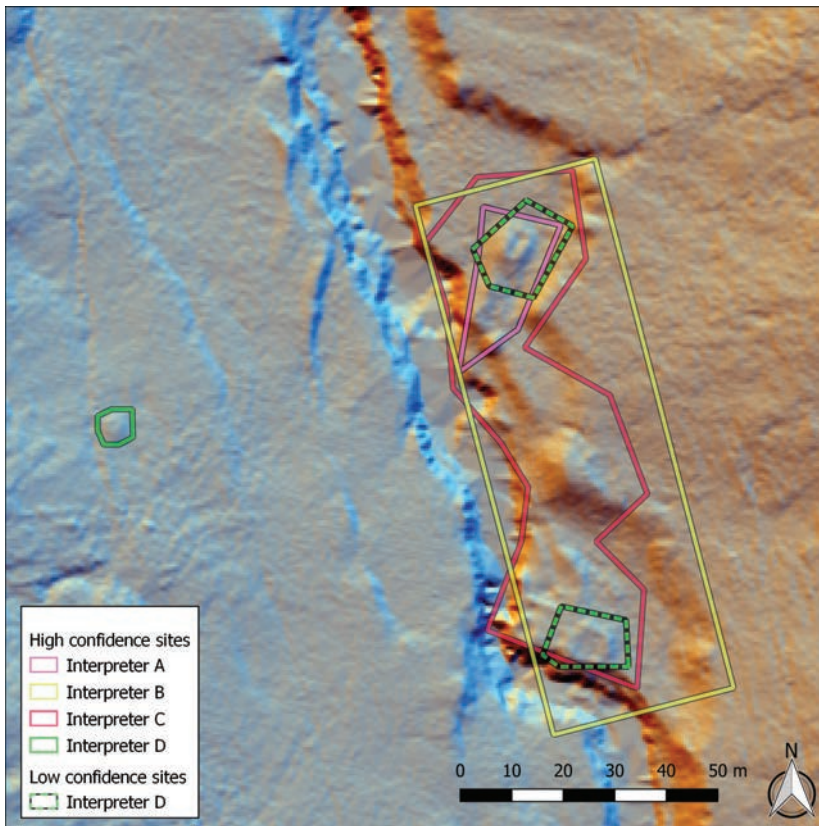


Figure 3: Automated detection in practice: this ALS-derived image of an area on Arran shows the footings of prehistoric round houses, small clearance cairns and possible huts overlain by squares indicating AI detections with a confidence score. The high confidence detections clearly match visible sites, although some features were missed. Image Iris Kramer; ALS source Scottish Government

Artificial intelligence – automating archaeology?

The survey work on Arran was based on largely ‘manual’ methods that rely on desk-based human observation supplemented by ‘boots on the ground’. While the ALS data significantly increased the rate at which we covered the 432 km² of the island, the survey still required considerable staff resource. This raises the challenge of how rates of coverage can be upscaled for very large areas without unrealistic increases in human resourcing. Since only about 10 per cent of Scotland has benefited from systematic survey to contemporary standards, even with the rates of coverage achieved for Arran it would require decades of work to complete the country. Moreover, the available (and proliferating) remote sensed data has already outstripped our capacity to examine it.

This is our primary reason to explore how automation, AI and machine learning can help detect archaeological sites and features in digital data and inform survey processes. Fully manual methods cannot address the growing availability of spatial data like ALS and satellite imagery – much less fully explore the complexity in such data. With the threat of accelerating change in our landscapes, for example through impacts of climate change, the need is pressing for reliable systematic survey data to manage and understand our finite archaeological assets. The use of automation for aspects of data management and processing, as well as detection, should allow human resources to focus on interpretation and better understanding of the past. Bringing AI and machine learning into the mix can also contribute to exploring how we currently detect archaeological features and monuments, providing feedback on our own (human) survey practice.

Studies have established that a computational approach to automated detection has potential. On Arran we got good results in some areas with relatively clear distinctions between the natural terrain and archaeological monuments, but also chaos in areas where the lumpy, broken terrain created confusion and an overwhelming number of ‘false positives’. A promising start, but one that also made it clear that there is still lots of work to do. However, this is a fast-developing field and ongoing work is improving performance all the time (Figure 3), moving the discussion on from ‘should we use AI in archaeological survey?’ to ‘how are we going to use it?’

The superficially simple question of ‘how?’ hides a number of issues that require exploration – centred around understanding what works, why it works, the character of the outputs, and how we integrate AI into our workflows.

For example, there are a multitude of neural networks, which all perform differently, and this is important as some may be ‘better archaeologists’ than others. We need to consider the implications of trying to teach a neural network, for example, to see like us, or perhaps to see things from a different perspective? It is also crucial that we understand the character of outputs – how reliable they are, how ‘competent’ the system that produced them is, and so on. In doing this, we need to reflect on our established knowledge-creation processes and subject them to the same critical review as we do when thinking about how we work with AI. This is a fascinating prospect for anyone interested in how archaeological sites and features are identified and classified. Our understanding of the character of outputs from automated detection will bear on what we do with them – might sites detected with a high probability of being ‘correct’ be added to national and regional historic environment records without human input? Or, how might a fuller range of detections, including those with lower probabilities of being ‘right’, be used in a development control context?

Us, our landscapes, and our AIs

Until recently archaeological survey has been an inherently manual process based on fieldwork and desk-based mapping by human observers. It remains a tried and tested approach that continues to provide us with lots of information about the past. The increased availability of vast digital landscapes to explore has reinforced the value of survey in documenting the material remains of the past. Developments in computational approaches to imagery analysis, under the broad umbrella terms of automation, AI and machine learning, are highlighting the potential of heavily automated approaches for some aspects of the survey process. As this field develops it will challenge our approaches to survey and should make the rapid exploration of vast complex landscape datasets a realistic prospect. It will, of course, bring new issues and problems. Exciting times for archaeological landscape interpretation and mapping!

With the threat of accelerating change in our landscapes, for example through impacts of climate change, the need is pressing for reliable systematic survey data to manage and understand our finite archaeological assets.



Left to right: Dave Cowley, Łukasz Banaszek, Kirsty Millican and George Geddes

Łukasz Banaszek, Dave Cowley, George Geddes and Kirsty Millican are members of the Survey & Recording team in the Heritage Directorate at Historic Environment Scotland. They are working on the Rapid Archaeological Mapping Programme (RAMP), a research and development project exploring economic and rapid methods to enrich the National Record of the Historic Environment. **Iris Kramer** is a final year PhD student in the Electronics and Computer Science Department at the University of Southampton. She recently founded ArchAI, which commercialises the AI technology she developed during her PhD.

Iris Kramer



Further reading

Banaszek, Ł, Cowley, D and Middleton, M, 2018 Towards national archaeological mapping. Assessing source data and methodology – a case study from Scotland, *Geosciences*, 8(8), 272, <https://doi.org/10.3390/geosciences8080272>

Cowley, D, 2020 Scotland in miniature: automating archaeological survey on Arran, *British Archaeology*, January–February 2020, 44–8

Cowley, D, Banaszek, Ł, Geddes, G, Gannon, A, Middleton, M and Millican, K, 2020 Making LiGHT Work of Large Area Survey? Developing Approaches to Rapid Archaeological Mapping and the Creation of Systematic National-scaled Heritage Data. *Journal of Computer Applications in Archaeology*, 3(1), 109–121, <https://doi.org/10.5334/jcaa.49>

Orengo, H A and Garcia-Molsosa, A, 2019 A brave new world for archaeological survey: Automated machine learning-based potsherd detection using high-resolution drone imagery, *Journal of Archaeological Science*, 112, <https://doi.org/10.1016/j.jas.2019.105013>

Trier, Ø D, Cowley, D C and Waldeland, A U, 2018 Using deep neural networks on airborne laser scanning data: Results from a case study of semi-automatic mapping of archaeological topography on Arran, Scotland, *Archaeological Prospection*, <https://doi.org/10.1002/arp.1731>



A geophysics interpretation plot with archaeological anomalies highlighted in green with the results for phosphorous (P) overlain in purple, showing the measurements for samples taken from the surface as well as from the top of the substrate. The correlation with the geophysical evidence can be clearly seen, with the darker the colour the higher the concentration of phosphorous (© HS2 Ltd)

Geochemical sampling as a method for archaeological evaluation and prospection

Jay Carver MClfA (1399), Roger Doonan and Clive Waddington MClfA (6214)

Archaeological Research Services Ltd carried out a programme of evaluation trenching in a low-lying relict flood plain setting with a high water table at Ladbroke, Warwickshire, as part of the HS2 archaeological enabling works during March 2020. This followed the long period of rain from October 2019 to March 2020 and the wettest February on record.

The works were undertaken for FUSION JV on behalf of the HS2 Company on and around a complex of buried archaeological remains thought to relate to a late Iron Age–Roman transition rural settlement site with potential for multiphase activity. Although it was possible to excavate some trenches the ground conditions in the lowest part of the site meant damage to archaeological remains was occurring during the trenching process, due to the impact of having a machine on such wet, soft ground and trying to excavate remains below the water table. A novel solution was identified to complete the evaluation of this site rapidly and under any weather conditions while keeping the works to timetable and budget. This comprised geochemical survey spaced on a 20m grid across the 7.8ha site with measurements taken using a portable XRF machine. This allowed the project to be completed to timetable while also producing a

data set that could be compared with the evidence for buried archaeological remains as identified by the pre-existing geophysical survey. It is very unusual to use geochemical survey to undertake large-scale archaeological evaluation and even rarer for such an approach to be deployed in a commercial archaeological context. The results have been compelling, showing a clear correspondence between certain key elements including phosphorous, zinc, copper and potassium and the areas of archaeology as identified by the geophysics, and similarly low counts where the geophysics identified little or no archaeology.

The geochemical extensive survey approach was selected for use on this project because it was non-invasive, high precision, rapid, cost-effective and there was an opportunity to innovate and test the technique in a way in

which it is rarely, if ever, utilised. Identifying ways to improve archaeological prospection and evaluation forms a key research question as part of the HS2 archaeological works and there was an appetite to test this novel application. The elemental range produced by portable XRF analysis can provide data that indicate a range of practices including burning (Mg, K, P), burial and disposal of animal remains (Ca, P), craft-working, especially metalworking (Cu, Sn, As, Pb), and a broad range of domestic activities (P, Cu, Zn, Pb). In this way the geochemical approach provided an appropriate method for rapidly and accurately assessing a large land parcel in advance of national infrastructure development that required a high level of information to inform the mitigation strategy. Another benefit of using this technique was that it minimised impact on the surviving buried archaeology, which meant key

relationships would stay intact until the mitigation phase.

The technique has proved very useful in helping to delimit the extent of buried archaeological remains at Ladbroke. It has also shown that there is evidently patterning to the human use of the site and further geochemical sampling on a finer-grained grid will help provide understanding of intrasite activities and their zoning across the site, as well as how this may have changed over time as the site evolved. The technique has also provided hints of other types of archaeological residues that may survive on the site – for example, the presence of lead might imply the use of pewter tableware or other non-ferrous activity on the site and this will help in framing research questions when mitigation take place. Given the speed,

accuracy, spatial precision and cost-effectiveness of applying this technique in this way, it shows considerable promise for wider use in UK pre-determination evaluation works, where it could be ideally applied alongside geophysics and/or fieldwalking in advance of highly targeted evaluation trenching, or be sufficient to inform the type and extent of any necessary mitigation works. Its use during open-area excavation or strip, map and sample excavations provides a further context of use at the site-based scale, where greater detail can be produced and questions addressed in relation to the specific use of key structures and spaces across a given site. The utility of geochemical survey in archaeology is only just beginning to be tapped and its potential and roll out in a commercial archaeological context is an exciting prospect.

A toolbox talk describing the geochemical survey approach to the field team under social distancing conditions (© HS2 Ltd)



A geochemical sample being taken in the field using the portable XRF machine (© HS2 Ltd)



Hammering in an augur for extracting a sub-surface sample for geochemical analysis and to record the geomorphological sequence (© HS2 Ltd)

Jay Carver



Jay is a field archaeologist and consultant, and managing director of 4AD Consultants Ltd.

"I'm delighted to be working with Fusion JV and ARS to develop new technologies in the detection, investigation, and characterisation, of archaeological sites. Archaeologists worldwide are constantly being challenged to adopt new scientific techniques to improve our practice, and understanding of the past".

Roger Doonan



Roger is Head of Specialist Services at Archaeological Research Services Ltd where he co-ordinates a talented team of specialists. Prior to joining ARS Ltd, Roger was a university lecturer and directed UK Research Council and EU funded projects in Russia, China, across Europe, and the UK. He has a long commitment to innovation in practice and to supporting community-led initiatives.

Clive Waddington



Clive has worked as a field archaeologist, consultant, lecturer and since 2004 the founder and Managing Director of Archaeological Research Services Ltd amongst other things. With a wide range of specialisms he continues to contribute to national archaeological initiatives, publish books and papers, develop innovative approaches, liaise with sectoral partners and lead the development and growth of ARS Ltd.

Archaeology stinks!

Can we find ancient smells in the field?

Rose Malik, Student (8712)

Olfaction has a significant role to play in human cognition and environmental adaptation. Smell taps into that part of the brain which controls our long-term memory, emotions, learning and behavioural capabilities (Engen 1982, 18–29, 97–110; Hamilakis 2002, 2010).

Field archaeology tends to only access visible and tangible material culture. The invisible has remained uncaptured and unchallenged. Questions about finding smell in the field have been raised but often dismissed (Bartosiewicz 2003, 175–195; Day 2013, 5). However, some archaeologists have been considering ways of finding smell in the field and are recognising smell as an important source material (Buckley et al 2001, 2007; Hardy 2018; Malik 2020).

Focusing on a ground-breaking technique, headspace sampling provides an innovative method of accessing ancient odour molecules for analysis. This method, used in conjunction with gas chromatography and mass spectrometry (GC-MS) processing, detects and identifies odour analytes (Hamm et al 2005).

As a 'tangible' primary source of evidence, the extrapolated data from this analysis can be used to more fully reconstruct past lived experiences by discussing the application of particular aromatic agents in broader sociocultural practices and our interpretations of these. Advances in scientific techniques can allow odour to be used as primary source evidence but can we excavate smell in commercial archaeology, and can we bring together multi-faceted engagement in past cultural contexts?

Considerations about which collection methods for odour compounds may be most useful, convenient, quick and easy to use, and least costly, are currently under investigation and full results will be shared in the new year. As part of a baseline olfactory reference point, soil samples for odour analysis have been collected from excavation and evaluation sites. Two methods for collection are being tested – finds bags (medium and small) and 20ml glass vials.

Finding smell in the field

Finding tangible evidence starts with the archaeologist collecting samples in the field. Samples can be collected from any environment, and any organic material remains are likely to have detectable odour compounds.

This need not be complicated, but rather innovative, by using existing methods of sampling incorporated into the daily routine of excavation and sample collection similar to those designed for small finds collections or environmental sampling in tins or 40L sample buckets. Essentially, what is required are containers that can be sealed and maintain inertia.

For tests in the lab, only small (between 5 to 10ml) amounts of soil are required. Placed into finds bags and glass vials, soil is taken from the excavated feature section and the natural; from evaluation sites: top, sub and natural soils. Collection is conducted using the finer point of a trowel or a small long-handled spoon for soil (utensils used for collecting other types of material remains will vary). Samples are taken as part of the recording process, thereby incurring little increase in time factor (no more than five minutes for sampling) and involving as little invasive activity as possible.

Different features and landscapes and various types of organic material may demand different methods of odour collection. For example, techniques for sedimentary sampling can be considered if gas-tight containers are used (Kibblewhite et al 2015, 249–263). A sealed Kubiena tin, an adsorbent 'trap' (Tenax) tube, or a Nalophan bag may also be used (Malik 2020).

Factors affecting sampling

There are several factors to consider in collecting odour samples, apart from the containers used for sampling. These include the environmental impact of open and closed excavation sites, the time taken to collect samples and exposure to air before containment. Emission during collection could be an indication of degradation; the exudation from exposed soil would suggest that the odour compounds lying compacted within the soil are only emitted during disturbance.

Storage of collected samples may also pose problems for retention of odour molecules prior to lab analysis. For example, environmental exposure time in summer may require avoidance tactics (such as ice boxes) to reduce molecular degradation and maintain molecular inertia. The obvious answer is to freeze the contents to create inert molecules.

However, storing in conventional freezers has resulted in potential degradation occurring and crystallisation arising in samples collected in finds bags. A comparison test is being conducted whereby samples are not frozen to explore whether a headspace sampling technique would provide

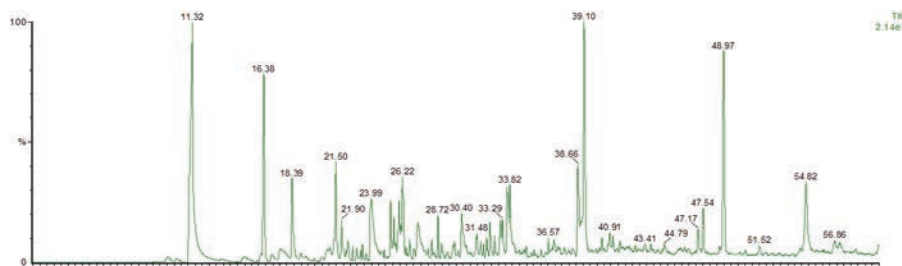
similar results from molecules that have been allowed to remain active within the glass vial or finds bags.

Analysis in the lab will determine how these challenges may influence the final odour emanations and potentially how they compromise the samples, not only of soil but subsequent sampled material remains found within an excavated context.

Nevertheless, the presence of odour molecules in the archaeological record is still evident and samples collected by glass vial and finds bags will continue to be analysed – to discover how well odour compounds are retained and whether other strategies such as auguring should be considered – in order to determine the best sampling methods for use in the field.

The future of olfaction

Odour is integral and innate to human evolution and cognition. Smell, as a communicative process, actively enables material engagement and ontological development, informing our lived experience. Using an innovative technique that produces empirical data from *tangible* archaeological evidence permits us entry into previously unexplored sensorial sociocultural avenues that enable deeper, richer models of archaeological interpretation. But ultimately, the story of our past and finding ancient smells will, inevitably, largely depend on the research questions posed in the Written Scheme of Investigations and project designs, and begins with the field archaeologist excavating and collecting samples in the field.



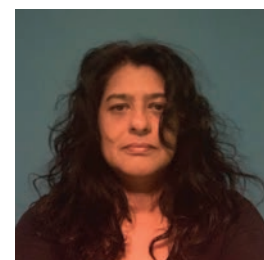
(above) Example of what a graph looks like once the olfactory samples are put through the GC-MS process and turned into data. The peaks and troughs show the smell biomarkers. The peaks usually suggest what smelly compound is present. Further analysis using the software database shows the closest matches to what the odour compound might be.



Soil samples. Credit: Rose Malik

Rose Malik

Rose has been working as a commercial archaeologist since late 2018. She is currently researching odour sampling and analysis in the field for a PhD at Durham University, looking into developing a technique to find olfactory evidence from material remains.



References

- Bartosiewicz, L, 2003 There's something rotten in the state...: bad smells in antiquity, *European Journal of Archaeology* 6, 175–195
- Buckley, S and Evershed, R, 2001 Organic chemistry of embalming agents in Pharaonic and Graeco-Roman mummies, *Nature* 413, 837–841
- Buckley, S, Fletcher, J, Al-Thour, K, Basalama, M and Brothwell, D R, 2007 A preliminary study on the materials employed in ancient Yemeni mummification and burial practices (summary), *Proceedings of the Seminar for Arabian Studies* 37, 37–41
- Day, J, 2013 *Introduction: making senses of the past*. In J Day (ed) *Making Senses of the Past: Toward a Sensory Archaeology*. Carbondale: Southern Illinois University Press
- Engen, T, 1982 *The Perception of Odours*. London: Academic Press
- Hamilakis, Y, 2010 *Re-collecting the fragments: archaeology as mnemonic practice*. In K T Lillios and V Tsamis (eds) *Material Mnemonics: Everyday Memory in Prehistoric Europe*. Oxford: Oxbow
- Hamilakis, Y, 2002 *The past as oral history: towards an archaeology of the sense*. In Y Hamilakis, M Pluciennik and S Tarlow (eds) *Thinking Through the Body: Archaeologies of Corporeality*. Plenum, New York
- Hamm, S, Bleton, J, Connan, J and Tchaplá, A, 2005 A chemical investigation by headspace SPME and GC-MS of volatile and semi-volatile terpenes in various olibanum samples, *Phytochemistry* 66, 1499–1514
- Hardy, K, 2018 Plant use in the lower and middle Palaeolithic: food, medicine and raw materials, *Quaternary Science Reviews* 191, 393–405
- Kibblewhite, M, Tóth, G and Hermann, T, 2015 Predicting the preservation of cultural artefacts and buried materials in soil, *Science of the Total Environment* 529, 249–263
- Malik, R, 2020 Does Archaeology Stink? Detecting Smell in the Past Using Headspace Sampling Techniques, *International Journal of Historical Archaeology* <https://doi.org/10.1007/s10761-020-00552-w>

First works council in German commercial archaeology

Regine Müller ACIfA (9555), Field Director and Technician, SPAU GmbH

The archaeological company SPAU was founded in 2015 and has undergone a rapid development over the last five years. Until spring 2020 SPAU was a private company, directed by its founder Sascha Piffko MA MCIfA. Following the company's quick development from a five-person enterprise to a substantial middle-sized business with up to 50 employees, SPAU also underwent structural changes in order to adapt to this development. One important structural measure was its transition from a privately owned company to a private limited company (GmbH) last year.

So far, so ordinary.

The second important change was the establishment of a works council, coming into effect in spring 2020. While the request to set up a works council often meets resistance from company managers, Sascha Piffko, director of SPAU GmbH, was open to and supportive of this idea from the start. Although pointing out that a works council could be a challenge for him as head of the company and

that some topics supported by the council might cause inconvenience at best or even become a risk for the company itself, he was keen to establish it. He stressed that, on the other hand, a works council for him provides numerous forms of support, ie decision making in sensitive situations, solving intra-company conflicts, supporting the proper development of occupational health and safety, etc.

So on 29 April 2020 the works council was officially elected, being the first in German commercial archaeology. The council consists of its chairman, Hendrik Hofmann BA (affiliate of ClfA), supported by Olaf Krause MA and Dr Regine Müller ACIfA. The voter participation of 98.73% showed that amongst the employees the interest in having a works council within the company was strong.

Being the first works council in commercial archaeology in Germany, the team faces pioneer work here. Many tasks and challenges ahead will have to be mastered, step by step. Doubtless we will learn from our experiences and also our mistakes. Luckily, features like paid holidays, educational leave, company pension scheme, paid overtime hours, etc, for

which most works councils have to step up in order to gain these rights for the employees, already existed within the SPAU GmbH. Hence the cooperation between Sascha Piffko and the works council so far is based upon mutual support and collaboration to push common interests for the company's improvement.

At the moment, this collaboration includes the internal restructuring of the SPAU GmbH in order to qualify for ClfA Registered Organisation status, branded in Germany as Gütezeichen für Archäologie (GZA) as well as for the *Arbeits Sicherheits Management System (AMS)* certificate of the statutory accident insurance institution BG Bau.

The works council is already acting well as contact partner for the smaller and sometimes larger concerns of employees. Hopes are that it will become a success story for our company and will pave the way for encouraging the establishment of works councils in other companies, in order to improve working conditions in commercial archaeology in Germany. Times are changing.



SPAU staff members during the annual health and safety workshop. Credit: SPAU GmbH 2020



Regine Müller

Regine has worked in archaeology for 20 years – the last five years as field director and technician for SPAU GmbH. Her field experience includes almost all kinds of excavation. She has been part of the company's works council since April 2020.

SPOTLIGHT ON STANDARDS

Launching the Toolkit for Specialist Reporting to address quality issues

Jen Parker Wooding MCIa (7885), Senior Professional Standards & Practice Coordinator, ClfA;

Louise Rayner MCIa (6621), Assistant Director: Post-excavation and Specialist Services, ASE;

Duncan Brown MCIa (413), Head of Archaeological Archives, Historic England

A survey undertaken as part of the Historic England-funded project *Review of the Standard of Reporting on Archaeological Artefacts in England* (Cattermole 2017) highlighted considerable variation in the content and quality of specialist finds reports, identifying several areas that required improvement.

Initiated by the ClfA Finds Special Interest Group, this project proposed several recommendations to tackle this issue, including the development of the report checklist that was used during the original survey into criteria that could either be used during the planning and writing of specialist reports, or to assess and monitor their quality. A follow-on project was subsequently funded by Historic England (*Developing a Finds Reporting Standards toolkit for grey literature*) to action this, which led to the development of an online toolkit (soon to be launched) providing resources and guidance to aid in the planning, writing and monitoring of finds reports. The toolkit is predominately for use in association with developer-led archaeological projects and is particularly aimed at the creation of grey literature reports. However, its applicability goes beyond this initial scope with equal relevance to other roles across the historic environment sector, especially project managers, artefact specialists, planning/monitoring archaeologists and those working with archives. The toolkit can also be used to support the training of new specialists, or by students/apprentices, local societies and community groups; in fact, anybody engaged in producing finds reports will find this resource incredibly useful. The toolkit includes definitions and lists

of standard terms (based on the Forum on Information Standards in Heritage (FISH) thesauri for archaeological objects and object materials) and a list of existing specialist standards and guidance for artefacts studies.



Southwick finds. Credit: Duncan Brown

Equality & diversity in archaeology

update from ClfA's Equality and Diversity Steering Group

Equal opportunities are an issue integral to every aspect of archaeological work. It is essential that all people are treated equally and not disadvantaged by prejudices or bias.

Principle 5 of the *Code of conduct* states that any member shall respect the aspirations of employees, colleagues and helpers with regard to all matters relating to issues of equality of opportunity and employment, including but not limited to career development, health and safety, and terms and conditions of employment. Supporting this Principle is the Institute's policy statement on equal opportunities, which provides more guidance for members and the Institute about how best to comply with the *Code* and to lead by example. However, we know that much more needs to happen for there to be the kind of culture change needed around equality and diversity practice in archaeology.

ClfA's own Equality and Diversity Group has been doing much work on this subject since the group was founded in 2015, and now we are keen to embed this culture change within all areas of ClfA's practice. Our work on this

began in 2018 when representatives of Advisory Council reported to the Board on an initial set of priorities for equality, diversity and inclusion relevant to ClfA. In response to this, in April 2019 ClfA, FAME and Prospect issued a joint statement setting out their commitment to tackling bullying, harassment and discrimination in archaeology. ClfA's Board of Directors subsequently established an Equality and Diversity Steering Group to take forward the priorities identified by the Advisory Council report.

Since July 2020 this steering group has been meeting monthly to take forward these priorities, which focus on:

- physical and sexual harassment – to provide greater clarity about the relationship of law, ethics and morality, and how this is addressed in and through the *Code of conduct*
- identifying areas of quantitative and qualitative research to help us understand inequalities relating to ethnicity, gender, socio-economic group and disability, including any barriers inadvertently created by ClfA processes and criteria. Our initial starting point has been to gather more detailed data as part of ClfA's membership survey and to try to replicate these questions in other industry surveys, and future work will include a more detailed and funded piece of research on the subject
- day-to-day harassment – working with FAME and Prospect to encourage greater use of employers' harassment procedures, and providing relevant training events
- discrimination on the grounds of the protected characteristics identified in the

Equality Act 2010 – by promoting existing guidance, case studies of good practice, etc. Recent work around neurodiversity, menopause, bullying and harassment, decolonising archaeology, mental health and disability awareness has all been working towards this priority

- future arrangements for equality and diversity advice to the ClfA Board.

The Steering Group members are Melanie Johnson (Board member), Hannah Cobb (Chair of E&D Group), Penny Foreman (Board member and committee member for E&D and Voluntary & Community Groups), and Kayt Hawkins (RESPECT). The Steering Group is supported by Alex Llewellyn (Head of Governance and Finance, and Board member).

The Steering Group is aware that its own membership is not as diverse as we would like and we will be working with a range of external experts to ensure wider representation in all of the work we undertake. ClfA has also joined the newly formed Professional Associations Research Network (PARN) Group for ED&I to benefit from advice and support from other professional bodies on how they are addressing equality, diversity and inclusion within their professions.

We are very grateful to the members who have engaged in the recent discussions around neurodiversity, menopause, decolonising, mental health and disability awareness and shared their experiences. We hope that all members will support us in making a positive culture change to our profession. If you have any questions or would like to bring anything to our attention please contact alex.llewellyn@archaeologists.net or the E&D Group. All communication will be treated in confidence.

VISUAL IMPAIRMENT and archaeological engagement

James King BA, Dr Benjamin Jennings MCIfA (8167) and Dr Solange Bohling, School of Archaeological and Forensic Sciences, University of Bradford

Archaeology and heritage studies are engaging disciplines that reach wide and diverse audiences in a manner which many subjects cannot; they are simultaneously educational and relatable.

Archaeology in particular is generally considered a visually based discipline, although experienced excavators often discuss tactile aspects and 'feel' to act as indicators when moving between contexts. This belief unintentionally impedes the engagement and inclusion of visually impaired (VI) individuals in archaeology, resulting in the loss of alternative perspectives that can enhance archaeological and heritage interpretations.

Visual impairment is not confined to the contemporary world as individuals from all periods of archaeological interest may have experienced such impairment. Therefore, gaining different perspectives about lived experiences today will enable a more comprehensive understanding of the past.



What does an image show? For visually impaired individuals, the inclusion of imagery in narratives may have little additional benefit. Other manners of description should be used. This article is deliberately light on imagery to act as a thought prompt. Credit: S Bohling & J King

Higher Education (HE) can encourage VI individuals to participate in archaeological and heritage studies. Good pedagogic practice and conformity with the Equality Act (2010) should encourage the creation of curricula and learning opportunities that are accessible to all, although these may require adaptation of HE expectations regarding learning and teaching.

Adapting teaching practice

Institutions should utilise current practice guides from the Royal National Institute of Blind People (2014) for working with and supporting VI students. Sector experience may provide different perspectives on how to support VI students, incorporating practical examples of potential barriers that students may face

during their time in HE (eg University of Leicester 2017).

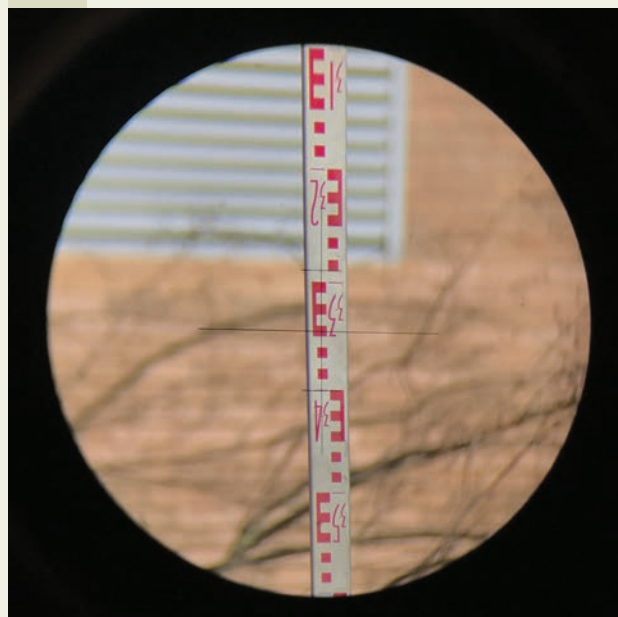
Studying archaeology at HE level requires students to access a wide variety of text-based sources for use in lectures, seminars and assessments. Some VI students may find accessing such resources difficult and therefore communication with the student(s) is necessary to ensure the ability to access resources with assistive technology and participate in learning activities. To support VI students in accessing resources, it is vital to establish a positive relationship with library services. Librarians who are aware of a student's specific needs can identify appropriate accessible resources; for example, the electronic version of a textbook or scanned sources transferred into screen-reader-compatible formats. Additionally, lecturers teaching VI students must ensure that sources are electronically available. If a

specific source is not available in electronic format, a common occurrence with archaeology texts, a comparable alternative accessible source must be identified.

Furthermore, in a lecture/seminar setting it is important to be conscious of the types of materials presented. Images may not be accessible to VI students, and alternative description is required, and will likely benefit the entire audience. As a creative solution, the incorporation of props can also be useful in allowing VI students to grasp new concepts. For example, stacking several books on top of one another can provide a tactile representation of a basic stratigraphic sequence. Such solutions should always be discussed with the student before being developed, so that the aim of the activity can be properly contextualised. JISC has a breakdown of considerations to be aware of when teaching students with disabilities, including VI (JISC 2017a, b). One of the key messages emphasises that communication between student and staff is essential.

Laboratory exercises are commonly used in HE for learning and teaching. Again, good communication is essential, and can allow for a VI student to have a productive learning experience. For example, some aspects of osteology may seem problematic at first to a VI student. With communication, experimentation and experience in handling human remains, the student can develop skills in tactile analysis of objects and remains, and can sometimes be better able to identify specific features than their non-VI peers. Specific laboratory assistance for the VI student is a reasonable adaptation, as a lecturer may not be able to provide sufficient one-on-one teaching for the student in larger classes. Technologically adapted teaching activities can also be appropriate, for instance, the use of a handheld digital microscope to project images onto a large computer screen (eg to analyse cranial suture closure as an age estimation technique). Adjustments relying on digital projection are entirely dependent on the individual's impairment, and a 'large screen' could mean 50" or greater.

A core component in HE archaeology courses is excavation experience. It is important to note that when a VI student is on excavation, good coordination and organisation is paramount. When entering a new environment, some VI individuals develop a spatial awareness that includes navigating the



This simple adaptation to fieldwork practicals demonstrates the need to converse with individuals when considering adjustments, and consider each person's specific impairments. While it was not possible for the visually impaired person to use a dumpy level, through discussion and conversation it became apparent that the adjustment of using mobile phone camera to take a picture through the dumpy level eye-piece, capturing the graticule and E-staff reading, would allow the individual to zoom in on the image to a high degree and take the measurement. This also benefitted non-VI persons in allowing the demonstration of correct adjustment to see the target cross hair and stadia, and with older models allows rotation of the image to allow for easy calculation of the level and stadia readings. No adaptors were used in the capture of this image, and the smartphone camera lens was simply held directly adjacent to the dumpy level eye-piece. Credit: S Bohling & J King

environment using the same routes regularly. Ensuring routes are hazard free is extremely important, therefore all excavators need to be aware of where and how they place materials. When approaching excavation, it must be acknowledged that not all students will be able to access the same tasks as others, depending on the level of their impairment. A period of self-evaluation by the student can be extremely useful to assess what they may find difficult, especially for their first experience of archaeological excavation. Phillips et al (2007) further outline self-evaluation techniques, giving a broader description of potential approaches to excavation for a wide variety of disabilities.

Considerations for learning, teaching and practice

The suggestions presented arise from the teaching and learning experiences of a VI

undergraduate archaeology student and teaching staff. Three key messages for creating teaching and learning activities that are accessible to VI persons are:

- 1** Discuss with the student any adjustments to existing teaching and learning practice and/or the development of new practices to ensure that these are appropriate and attainable. Good communication is crucial
- 2** Everyone is individual, and visual impairment can range from slight to severe: adjustments which work for one person may not work for another. Flexibility and willingness to adapt is key
- 3** Developing teaching and learning practice for VI students will benefit all students. Increased accessibility leads to benefits for all

HE is only one route into archaeological professions and is only the beginning of a career. Based on the roles and experiences of the authors, this discussion has focused on teaching archaeology in HE, but similar considerations should be made within wider professional archaeological and heritage settings. Insights from VI persons offer the opportunity to develop teaching and learning practices, and also offer new perspectives on, for example, artefact and osteological studies, and the development of accessible information and outreach activities.

Fundamentally, archaeology tells stories to our audience, stories of human and social developments, and past lives. Understanding, engaging and incorporating the experiences of VI persons today within archaeological practice can not only increase our understanding of how individuals in the past may have lived with impairment, but also enhance our archaeological knowledge and ability to create holistic narratives of past societies.



James King

James graduated from the University of Bradford in 2020. At the age of 12, he was diagnosed with macular dystrophy and his sight deteriorated sporadically until around the age of 16, when he was told that his vision had seemingly stabilised. James received a BA First Class Honours degree in Archaeology and throughout his time at the University worked closely with the department to make archaeology more accessible for those with visual impairments. He is continuing to do so as he is now enrolled on an MA course in Archaeology and Identity at the University of Bradford.



Dr Benjamin Jennings

Benjamin is a lecturer in Archaeology and programme leader for BSc Archaeology at the University of Bradford. He has commercial excavation experience from the UK and has conducted research excavations in the UK and mainland Europe.

References

JISC, 2017a *Institutional practice and accessible technology – using assistive and accessible technology in teaching and learning* <https://www.jisc.ac.uk/guides/using-assistive-and-accessible-technology-in-teaching-and-learning/institutional-practice-and-accessible-technology>

JISC, 2017b *Tutors and teaching staff – Enhancing staff support for students with disabilities*. <https://www.jisc.ac.uk/guides/enhancing-staff-support-for-learners-with-disabilities/tutors-and-teaching-staff>

Phillips, T, Gilchrist, R, Hewitt, I, Le Scouiller, S, Booy, D and Cook, G, 2007 *Inclusive, accessible, archaeology: Good practice guidelines for including disabled students and self-evaluation in archaeological fieldwork training*. Guides for teaching and learning in Archaeology 5 https://www.heacademy.ac.uk/system/files/Number5_Teaching_and_Learning_Guide_Inclusive_Accessible_Archaeology.pdf

Royal National Institute of Blind People, 2014 *Effective practice guide. working with students with a visual impairment in Higher Education* <https://www.rnib.org.uk/professionals/education-professionals/teaching-and-learning-guidance>

University of Leicester, 2017 *Information for staff teaching blind and visually impaired students* <https://www2.le.ac.uk/offices/accessibility/staff/supporting-students-with-disabilities/information-for-staff-teaching-blind-and-visually-impaired-students>



Dr Solange Bohling

Solange recently finished a PhD in Archaeology at the University of Bradford, which focused on disability in Anglo-Saxon England. She also provided disability support for the first author throughout his undergraduate career.

Archaeology and ME

chronic illness in the workplace

Sarahjayne Clements BA MA ACIfA (6668)

I was inspired with confidence to write about my experience of working in archaeology with chronic conditions after honest accounts in *The Archaeologist 110* by Amy Talbot and Rosie Loftus as well as the work done by the late Theresa O'Mahony.

In the past, I was fearful of limiting future career opportunities by speaking about my conditions, but I hope that my account will help employers and the rest of the archaeological community to understand the nature of chronic illnesses as well as highlighting the valid contributions we make. I hope that it will also serve to empower others and normalise what may present as 'invisible' illnesses.

My conditions started with the onset of glandular fever but worsened after the birth of my first child. For a long time, I managed to continue to work as a commercial archaeologist with the support of my current company, after eventually receiving a diagnosis of ME and disclosing this. Making a disclosure is often nerve-racking, especially if you have had a previous negative experience, but this is where you can start to get support through reasonable adjustments and supportive management. Without disclosure, employers might not notice any issues, but they do need to create a supportive culture to allow issues to be raised.

“ We can and should adapt our practices to be able to be more inclusive and supportive for disabled people in the workplace as anyone can develop a disability at any time in life. ”

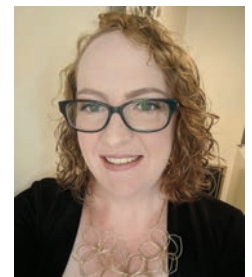
We were able to work together to make reasonable adjustments relating to travel time, working hours and working patterns. Unfortunately, commercial work is no longer currently possible after I developed a rare pelvic condition. The company have kindly given me desk-based work, mainly in the Historic Environment Record and Heritage Management teams. The current situation with COVID-19 has meant that I have been able to test out working from home and flexibility with working hours when I am having a flare-up. Making reasonable adjustments can help to minimise any time that otherwise may have been lost.

Desk-based work can be easier with adjustments such as a sit-stand desk and anti-fatigue mat. If your employer needs help supporting you financially with modifications there is a scheme called 'access to work' that can help cover costs, including funding disability awareness courses for your workplace. I would also recommend a mental health awareness course as mental health issues are often co-morbid with chronic conditions.

ME, or myalgic encephalomyelitis, is a chronic, fluctuating, neurological illness that affects many systems in the body. The symptoms vary greatly between different people. Fibromyalgia is a condition that causes widespread pain in the body; condensans ilii is sclerosis of the ilium. Unfortunately, as there are no definitive tests for these illnesses and no exact causes known, there is often a lack of treatment and support.

We can and should adapt our practices to be able to be more inclusive and supportive of disabled people in the workplace as anyone can develop a disability at any time in life. Unfortunately, I had a bad experience with one company I previously worked for.

Although enabled archaeology is becoming a prominent topic, we still need to work harder to promote open discussions, disability awareness and look at how we can better make adjustments.



Sarahjayne Clements

Useful links

- <https://www.actionforme.org.uk/uploads/pdfs/employers-guide-to-me-booklet-2016.pdf>
- <https://www.gov.uk/access-to-work>
- <https://www.gov.uk/reasonable-adjustments-for-disabled-workers>
- <https://www.sja.org.uk/courses/workplace-mental-health-first-aid/book/adult-mental-health-first-aid-2-days/>

JOBS IN BRITISH ARCHAEOLOGY 2018–20

Poppy German and Doug Rocks-Macqueen MClfA (654)

Since its establishment in 1993, JIBA has collected data from job advertisements with the aim of analysing salary and job trends for archaeological positions across the UK. This latest instalment gathers data from the 2018–19 and 2019–20 financial years, painting a picture of how salaries in the field of British archaeology have changed during that time.

Data acquisition

Data was gathered from the ClfA Jobs Information Service and Training (JIST) and from British Archaeological Jobs and Resources (BAJR) in the form of job listings. These advertisements have been found to be reliable sources, enabling the accurate depiction of salaries within British archaeology (Aitchison and Rocks-Macqueen, 2013).

All job postings from 1 April 2018 to 31 March 2020 were evaluated. Those with no salary specification were not included in the final analysis. Wages for part-time positions were calculated pro-rata to provide a comparative value. High and low values (Tables 1 and 2) represent the highest and lowest recorded salaries for each job category. Each listing was treated as a single data point, and

Table 1: Average, highest and lowest advertised salaries per field/laboratory role 2018–20, plus number of advertisements per role

	2018–2019					2019–2020				
	Low	Average (Mean)	Median	High	Count	Low	Average (Mean)	Median	High	Count
Trainee	£8,198	£17,166	£17,398	£26,658	34	£8,998	£17,391	£17,910	£26,658	43
Technician	£17,777	£20,299	£19,868	£28,000	136	£17,832	£20,691	£20,330	£27,000	74
Supervisor	£19,036	£22,191	£22,310	£28,874	54	£19,000	£22,345	£22,750	£26,138	34
Officer	£19,037	£26,050	£26,000	£34,000	59	£21,700	£26,884	£26,703	£32,630	52
Project Manager	£25,000	£34,460	£34,550	£55,000	64	£27,131	£36,135	£35,150	£54,152	37

Table 2: Average, highest and lowest advertised salaries per other archaeological role 2018–20, plus number of advertisements per role

	2018–2019					2019–2020				
	Low	Average (Mean)	Median	High	Count	Low	Average (Mean)	Median	High	Count
Community & Education	£18,746	£26,478	£26,355	£39,620	28	£12,000	£25,031	£25,000	£40,416	30
Conservator	-	-	-	-	0	£21,412	£28,934	£29,054	£38,000	8
Consultant	£18,000	£30,621	£29,000	£78,000	66	£19,000	£28,631	£29,500	£40,732	48
CRM/SMR	£18,870	£26,782	£26,020	£37,889	24	£19,000	£31,843	£32,000	£47,274	53
Curator & Collections	£17,571	£25,975	£24,029	£50,618	21	£17,832	£28,198	£25,088	£55,009	39
Geophysics	£18,600	£22,667	£23,208	£32,973	16	£18,300	£24,774	£23,103	£36,461	14
Illustration	£18,900	£23,136	£22,744	£27,500	15	£20,000	£24,700	£24,815	£29,326	14
Researcher	£19,200	£34,034	£32,777	£100,000	56	£3,677	£33,497	£35,525	£52,559	82
Specialist	£19,305	£27,569	£26,525	£48,676	35	£19,500	£29,481	£28,457	£54,875	34
Studentship	£5,871	£16,370	£14,777	£40,838	42	£8,933	£15,137	£15,009	£25,000	41
Surveyor	£18,900	£26,713	£26,008	£35,000	9	£27,464	£36,106	£36,048	£56,007	20
University Position	£19,850	£41,958	£36,677	£123,732	88	£29,250	£43,755	£41,118	£95,669	109

Averages were taken across all disclosed rates of pay for each group. As mentioned in previous years, the JIBA process omits freelance and self-employed archaeologists (Rocks-Macqueen, 2014). Regional effects on wages, such as the London allowance, were added onto salaries where stated in the job description. However, some listings likely did not specify the inclusion of these funds within their advertisement. This could lead to some slight inaccuracies in wage averages.

Changes to JIBA

Over the last decade the CRM/SMR category has become a catch-all for heritage management positions that archaeologists could do. For this JIBA, we have redefined this category to only count PAS staff, HER staff and local planning authority archaeologists in planning – ie those that specify planning conditions, not those that undertake the specified work. ‘Local authority’ in ‘Local authority archaeologists’ refers to the ultimate organisation responsible and not the actual employer, as in some cases this work can be contracted out to non-local authority organisations.

Four new categories were tracked: Researcher; Specialist; Studentship; and University Positions (Lecturers, Professors, Readers and Post-docs).

ClfA and BAJR minima

BAJR has a salary minimum, meaning jobs with wages under that level will not be advertised, but at *Technician* level only. There are other recommended wage levels on BAJR, but these are not enforced like the minimum. Similarly, ClfA sets recommended salaries for its three accredited membership levels: Practitioner (PClFA), Associate (AClFA) and Member (MClFA). All ClfA members must ‘endeavour to meet or exceed’ these salary guidelines, as per ClfA’s *Code of conduct* (ClfA, 2014). Indications of ClfA’s recommended minima are included within Figure 1 for comparative purposes.

Key findings

- From 2018 to 2020, average salaries grew steadily across all roles in field and laboratory jobs (Figure 1).
- In general, the number of jobs advertised for each role has decreased between 2018–19 and 2019–20, though there are exceptions – *Trainee*, *Community & Education*, *Conservator*, *CRM/SMR*, *Curator & Collections*, *Researcher*, *Surveyor*, and *University positions* (Table 1 & Table 2).
- Although *Supervisors* will be paid more than *Technicians* within an organisation, over time it has become increasingly evident that these *Supervisors*

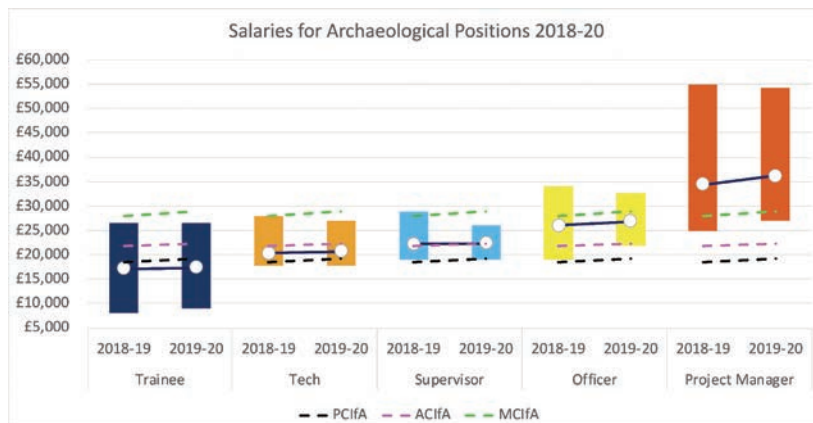


Figure 1: Highest, lowest and average (white dot) salaries per role for the 2018 and 2019 financial years, compared to the ClfA minimum recommendations

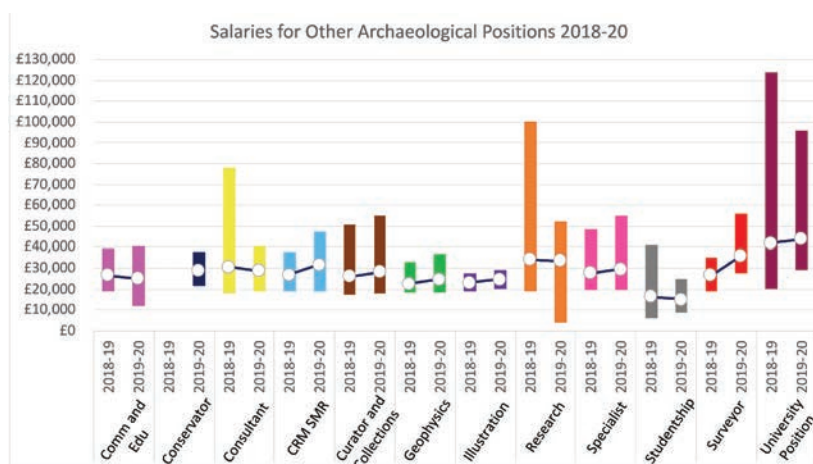


Figure 2: Highest, lowest and average (white dot) salaries per other archaeological role for the 2018 and 2019 financial years

could be paid less than *Technicians* working for other employers. Consequently, some archaeologists could be earning a reduced wage compared to peers who hold less responsibility (Figure 1).

- The *Consultant* category remains somewhat enigmatic, with only 56% of listings providing a salary range in 2019–20. This is much lower than all other groups. It is, however, an improvement on 2017–18 when only 38% of *Consultant* listings disclosed this information (Lewis, Rocks-Macqueen and Ann, 2019).
- The highest recorded wage in both years was for a *University Position*. The salary range for these roles, however, was vast. Consequently, the lowest value for these positions remained similar to those for all other roles (Table 1 & Table 2).

JOBS IN BRITISH ARCHAEOLOGY 2018–20

References

Aitchison, K and Rocks-Macqueen, D, 2013 *Archaeology Labour Market Intelligence: Profiling the Profession 2012–13*. Landward Research

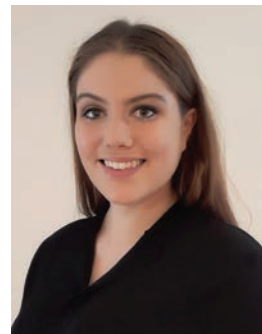
CIfA, 2014 *Code of conduct*. Retrieved 18/09/20, from <https://www.archaeologists.net/sites/default/files/CodesofConduct.pdf>

Lewis, B, Rocks-Macqueen, D and Ann, S Y, 2019 Jobs in British Archaeology 2015–18, *The Archaeologist*, 108, 27–29

Rocks-Macqueen, D, 2013 Jobs in British Archaeology 2012–13, *The Archaeologist*, 90, 31–34

Rocks-Macqueen, D, 2014 Jobs in British Archaeology 2013–14, *The Archaeologist*, 93, 31–34

Rocks-Macqueen, D, 2015 Jobs in British Archaeology 2014–15, *The Archaeologist*, 96, 9–11



Poppy German

Professional conduct statement



CIfA's accredited professionals (PCIfA, ACIfA and MCIfA) and Registered Organisations have agreed to be bound by the Institute's ethical *Code of conduct*. As part of the application process they demonstrate they have the necessary skills and competence, and their accreditation means that they are subject to the oversight of peers. Our professional conduct process and its sanctions provide that oversight. These underpin an institute's primary function of public and consumer protection, ensuring that clients and society in general receive the best possible service from the profession. In fulfilling this role, the institute also protects the reputation of the remainder of its membership.

Professional conduct investigation results in expulsion of a Member (MCIfA) of the Institute

Following an investigation into an allegation of misconduct against Dr Neil Phillips, MCIfA (4717), the Chartered Institute for Archaeologists found that Dr Neil Phillips had breached the CIfA Code of conduct.

Dr Phillips was found to have told his client that additional costs had been incurred which were outside what was needed to fulfil the Written Scheme of Investigation (WSI) and due to the archaeological advisor to the planning authority pursuing their own personal research objectives. The actions taken by Dr Phillips were found to have unjustifiably injured the planning archaeologist's reputation contrary to Rule 1.5 and also constituted misleading or unwarranted statements about archaeological matters contrary to Rule 1.2. The panel also found that Dr Phillips' comments about the length of time needed for additional work (not merely work required to meet the requirements of the WSI) amounted to dishonesty and/or misrepresentation of archaeological matters contrary to Rule 1.8. The Panel further determined that these matters had brought archaeology into disrepute contrary to Rule 1.1.

As a result, a sanction of expulsion from the Institute has been imposed. In determining the sanction, the Panel took into account that Dr Neil Phillips had within the last three years been issued with a formal reprimand by the Chartered Institute for a breach of the Code. In reaching the decision on the sanction, the Panel was conscious that the Respondent had not shown any degree of contrition or indication that he would reflect upon how he might improve his conduct in future.

Member news

Adrian Olivier MCIfA (59)

Adrian retired from English Heritage in 2012, where he was Heritage Protection Director and Head of Profession for Archaeology. Before that he was Director of the Lancaster University Archaeology Unit, following extensive early career work as an active field archaeologist in northern England. He has worked across a wide range of historic environment activities, crossing many traditional professional and subject-based boundaries.

Adrian has had a long involvement as an expert for the Council of Europe and continues to work with European and international organisations; he was the founding President of the European Archaeological Council, and is the Secretary-General of the ICOMOS International Scientific Committee on Archaeological Heritage Management. He also works alongside national bodies devoted to the protection and promotion of the historic



Adrian Olivier

environment and chairs the National Trust Historic Environment Advisory Group.

Adrian is looking forward to his new role as Chair of the Historic Environment Forum, where he hopes to continue the work of John Sell and Ben Cowell in fostering collaboration and coordination between its members and helping the sector work together to develop and pursue its common objectives.



Rebecca Jones

Rebecca Jones MCIfA (9010)

'Coddwompling' is the best way to describe my career in archaeology – travelling purposefully towards a yet unknown destination. My recent job change is a new beginning, for both myself and the organisation.

I started my career on the circuit and from 2012 to June 2015 made my way through eight units across the UK. I then decided to settle in one place long enough to learn something new. Most may know me as a senior project officer at Wardell Armstrong from November 2017, becoming Associate Director and archaeology lead for the Birmingham office in April 2019. Working at that level made me realise I missed the field, the team and the archaeology. When 'new kids on the block' Dalcour Maclaren came calling, the decision was made quickly and I joined an Environment & Planning team that is two years old.

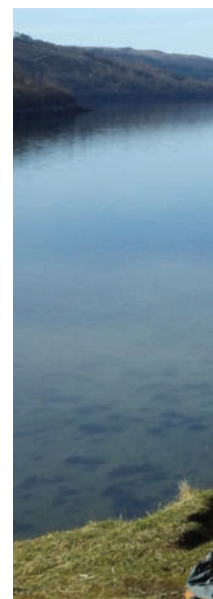
In my new role as Principal Archaeologist, I'm looking forward to having a great mix of office and site work. We're new and expanding rapidly, and we have a great opportunity to use all the experience the team has to design and build our standards and brand from scratch.

Jenni Morrison MCIfA (1947)

I joined the former IfA early in my career and have been meaning to upgrade for about 15 years. After graduating, I started working as a digger on large infrastructure projects and smaller digs. I discovered buildings archaeology while supervising an evaluation that also had a recording requirement for the adjacent building; I found I loved applying my archaeologist's skills to understanding and recording buildings. I increased my skills and eventually became a buildings archaeology specialist. Apart from the benefit of sometimes having a roof over your head, you always find something!

I joined Addyman Archaeology as a buildings archaeologist in 2009 and upgrading my ClfA membership regularly appeared on my annual review. In the end it took a global crisis and being furloughed to finally make me apply. Having embarked on the process I was surprised at the positive experience.

Looking back over my career reminded me of the fantastic projects I have had the privilege to work on and the great people I worked with. From a professional perspective it was



Scott Chaussee ACIfA (7007)

I originally hail from Lawrence, Kansas and hold my degree in Anthropology from the University of Kansas (Rock Chalk!). In 2010 I moved to England, where I studied for an MA in Social Archaeology at the University of Southampton and then undertook doctoral study at UCL, researching Anglo-Saxon kingdom formation. I started my commercial archaeology career first as an excavator at MOLA, then as a terrestrial geophysicist at Wessex Archaeology. I also lead my own research, including community-based work, which seeks to engage under-represented groups with archaeological concepts and methods.

My goal in upgrading my accreditation with ClfA was to seize the opportunity to consolidate my experience, quantify my CPD and gain recognition for my work to date. The process gave me the confidence to seek promotion and transition to a new role in marine



Scott Chaussee

geophysics, where I can continue to develop. I am passionate about archaeological contributions to sustainability and green energy projects, such as offshore wind. By being proactive in maintaining my ClfA accreditation, I am reaffirming the basis from which to seek further and more diverse opportunities within a framework of personal and professional growth.

constructive to review the range of projects and buildings I have worked on. I am more aware of my skills and gaps I would like to fill. I encourage anyone thinking of upgrading to see it as a positive process, whatever your career stage. The key is to ensure you set aside enough time to get the most out of it.



Jenni Morrison

Tiffany Snowden MCIfA (9423)

As a heritage consultant, I am lucky to be involved in a wide range of work, but my focus is buildings archaeology. Living in Yorkshire, the diversity of the built environment is one of my favourite things about working in the area. I particularly enjoy schemes that combine historic buildings with modern designs, especially those that incorporate glazing. One of my passions is to help future-proof our historic buildings, making them thermally efficient while also preserving those elements that contribute the most to their significance.



Tiffany Snowden

Over the last couple of years, I have been working on my own projects, including providing design and heritage advice for complex schemes, particularly those in or around listed buildings. I decided to upgrade to MCIfA during lockdown, as although I was still busy with work, it gave me the chance to reflect on my career and what I had accomplished so far. Achieving MCIfA gave me the confidence to take the next step in my career, which assures my colleagues in the field as well as any potential clients that they can trust me and the quality of my work.

New members



Member (MCiFA)

11430 Robert Engl
11343 Elizabeth Foulds
11342 Andrew Platell
8070 Sally Prothero
6030 Marc Steinmetzer
11415 Ailsa Westgarth
5501 Duncan Wright
11401 Virgil Yendell

Associate (ACiFA)

11348 David Errickson
1274 Adam Ford
8650 Marta Fortuny Torruella
11402 Bonnie Knapp
11333 Patrick Lambert
11424 Daniel Misterek
11340 Adam Parker
10995 Frederick Salmon
1668 Adrian Scruby
11345 Kirsty Smith
8568 Emily Taylor
11335 Anastasia Vasileiadou
11068 Lisa Waldoock

Practitioner (PCiFA)

11293 Katherine Bostock
11416 Hannah Burke
10907 Raymond Cachart
11414 Sarah Carter
11432 Francisco Catalano
11334 Juan Ignacio De Vicente
Ojeda
7937 Zoe Emery
10323 Eleanor James
11297 Verity Landrock
5316 David Lang
11227 Cecilia Levratto
11459 Alvaro Lopez de los Mozos
11346 Sebastian Loyzaga
9212 Robbie Luxford
11421 Malgorzata Malecka
10258 Kieran Mason
11069 Richard McGregor Edwards
11419 Francisco Morales Tomas
11454 Clifford Moth
11347 Callum Murray
11070 Briannie Price
9515 Blazej Prus

11294 Rachel Robertson
9018 Filipe Santos
11400 Freddie Sisson
11423 Emma Smart
11418 Anthony Teis
11456 Andrew Ward
11436 Beatrix Weatherill
11339 Alistair Wilson

Affiliates

9911 Anna Anzenberger
11338 Phoenix Archer
11393 Rebecka Bale
10574 Sophie Beckett
11434 Carol Cragoe
9897 Jonathon Curtis
10372 George Davies
11316 Gabriela Domene-Lopez
11311 Thomas Edge
11280 Steven Ellis
11444 Samantha Ferrer
11278 Dana Gaskell
11332 Maximilian Greeves
11283 Angela Groat
11384 Matthew Hammonds
11351 Joshua Hogue
11088 Thierry Daniel Jean-Baptiste
11410 Ben Ludlam
11438 Georgina Matthews
11397 Lucie Molkova
10672 Joseph Molton
11356 Emma Moody
6259 Ruth Nugent
11426 Poppy Nunn
11387 Liam O'Kelly
11344 Thomas Olliffe
11365 Giulia Pellanera
11381 Paul Redish
11284 Amanda Robinson
11385 Penelope Lucy Ryan
11364 Finnoula Taylor
11279 Heather Thexton
11308 Gillian Weir
11313 John Whyte
11386 Ethan Yuille

Students

11301 Tarek Alaam
11299 Declan Anforth
11452 Nichola Armsby
11287 Valentina Arroyave
11282 Alexandra Bailey

11328 Maxine Bainbridge
11395 Ross Baker
11354 Natalie Barker
11370 Samantha Benbow
11411 Alexandra Bonett
11461 Alexandra Bowers
11353 Sophie Boyle
11290 Daniel Brown
7277 Catherine Caseman
11317 Joseph Chappell
11392 Eddie Chrzczonowicz

11286 Jake Clarke
11449 Tom Clayton
11327 John Conley
11380 Kathryn Cotton Betteridge
11437 Rosie Crawford
11450 Natasha Crocker-Horn
11383 Sam Cross
11329 Edmund Cush
11442 Giulia Lauren De Cesaris
11366 Gemma Deaney
11367 Andrew Dyer
11306 Yanena El-lamaa
11429 Emily Elliott
9945 Jonathan Farley
11277 Corey Fennessy
11463 Evie Foster
11368 Beth Frangleton
11355 Jamie Geddes
11445 Maia Giles
11362 Laura Gilmore
11350 Samantha Hammett
11377 Jorge Lewis Hardman
11406 Shaun Hetherington
7263 Denise Hillier
11324 Megan Hinks
11403 Charles Holubek-Roth
11302 Sarah Ruth Hunt
11363 Jacob Hurst Myszor
11428 Tim Jopling
11441 Stephen Joyce
11431 Nilam Kaur-Bhakar
11357 Oscar Kelly
11446 Tori Kelly
11374 Zofia Kibalo
11465 Megan Kimmelshue
11331 Phoebe King
11361 Charlotte King
11447 Isabel King
11330 Danielle Knights
11292 Lucy Koster
11319 Kira Lee
11466 Erin Limmack
11391 Alan Little

11321 Leah Lucas
11325 Emma MacFarlane
11388 Daniel Maguire
11303 Ines Malaquias
11412 Amy-Rose Mansbridge
11322 Gemma Martin
9592 Phelim McIntyre
11382 Scarlett Meese
11318 Rachel Metcalf
11379 Sarah Mitchell
11372 Yolande Monks
11360 Angus Morrison
11376 Nyomie Morrison
11440 Tess Nolan
11281 Briony Ogle
11407 Latif Oksuz
11300 Rebecca Oldfield
11460 Kate Pedersen
11298 Alexander Peterson
11320 Olivia Phillips
11409 Brooke Pollio
11315 Kate Potter-Farrant
11427 Siobhan Purcell
11389 Ellen Rafferty
11312 Alexandra Rayner
11378 Emily Richardson
11435 Victoria Robinson
11305 Victoria Rogers
11373 Jack Rogers
11375 Hannah Rowlands
11448 Astrid Rudjord
11398 Simona Schifano
11352 Emma Schlauder
11314 Michial Schmitt
11462 Jennifer Scott
11310 Annabel Searle
11396 Jessica Shaw
11404 James Smalley
11304 Hannah Snaddon
11405 Andrew Stafford
11413 Samuel Stokes Myers
11359 Jacob Sutherland
11371 Eleanor Swallow
11289 Joshua Taylor
11390 Ellen Tubritt
11443 Emma van der Velden
11323 Jon Walsh
11307 Jack Wellings
11470 Oliver Williams
11453 Natalie Wilson

Upgraded members

Member (MCIfA)

11220 Tom Collie
 2002 Vanessa Clarke
 4730 Charlotte Dawson
 11273 Aaron Goode
 9957 Peter Guest
 9981 John Hammond
 767 Robin Jackson
 7319 Iain Leslie
 10919 Catherine Whitehouse
 6628 Nuala Woodley

Associate (ACIfA)

9469 Mike Birtles
 10424 Thomas Dooley
 10635 Clara Drummer
 8838 Stephen McLeod
 7636 Steven Watt

Practitioner (PCIfA)

7817 Mandy Kingdom
 8558 Richard Morkill

Obituaries

Robert Barnett ACIfA (2462)

Information from Robert's brother, Steven, for the celebrant

Robert began working in archaeology from around 1988, then working in pine and furniture restoration for a number of years before returning to archaeology in the early 1990s, going on digs throughout the UK and even appearing on an episode of *Time Team*, until the onset of ill health. He was a member of ClfA from 2003.

He loved the countryside, holidaying as a child in North Wales, and his interests included climbing, walking and mountaineering. Later, mainly nature-based photography, especially of hares, became his main interest, alongside frequent visits to sites such as Glastonbury, Stonehenge and Avebury.



Robert Barnett. Credit: Steven Barnett

John Coles HonMCIfA (7)

Professor Richard Bradley, for The Guardian

John Coles was one of the Institute's founding members and he will be greatly missed. To read the full obituary please go to <https://www.theguardian.com/science/2020/dec/01/john-coles-obituary>.

John Coles. Sourced by The Guardian



NOTICEBOARD

CifA2021 – Promoting our profession

21–23 April 2021, online

Sponsored by Towergate Insurance

Preparations for CifA2021 are now well underway. We are looking forward to holding our first exclusively online annual conference which will still include the usual keynote addresses, wide-ranging sessions and training workshops. These discuss current professional issues, showcase new developments, and present research in archaeology and the wider heritage sector.



In moving to an online format for the CifA 2021 conference, our hope is that our digital programme will improve the accessibility of the conference for all, whilst shielding participants – particularly those who may be at risk or vulnerable – from COVID-19.

Theme

At CifA2021 we will be looking to the future and asking what more can we do to promote the profession and our professionalism. Over the last decade we have defined new entry routes into archaeology and set out the career structures and competence requirements for professional archaeologists, but how can we maximise these to attract new, and diverse, talent and promote the value and quality of the work we do? Where can we further develop and reinforce the standards and good practice championed by the Institute to ensure we consistently understand and meet our professional obligation to deliver public benefit? And how, as a profession, can we better equip ourselves with the ethical and professional knowledge, skills and behaviours required in a changing, and challenging, environment? None of these are new concepts, but ones that we must all engage with.

Booking information, news and a full timetable of sessions can be found on our conference website: www.archaeologists.net/conference. Early bird registration pricing available until **Friday 19 March 2021**.

Special offers

To help Registered Organisations support staff to attend the conference we are offering a free place for an early career member of staff. Please contact us if you need more information.

Conference bursaries

In our aim of making the conference as accessible as possible, we have a number of bursary options available to assist with the cost of registering and participating in CifA2021. These include

The MSDS Marine bursaries for students who have a background or experience in, or are studying marine archaeology

The Theresa O'Mahony Memorial bursary; which will aim to cover the cost of conference registration and assistive technology to aid professional dis/Abled archaeologists in accessing and participating in the conference

The Hal Dalwood Trust bursary for early career archaeologists of any age

CifA conference bursary scheme for students, unemployed, on a low income or for whom the cost of registering to attend the conference would otherwise be prohibitive

Find out how to apply for a bursary at www.archaeologists.net/conference. Deadlines for applications are 31 March 2021.

We look forward to seeing you at CifA2021! #CifA2021



DEPARTMENT FOR
CONTINUING
EDUCATION



Part-time courses in Archaeology and the Historic Environment

Online courses and virtual classes

Short courses for beginners and professionals in archaeology, historic buildings and the built environment.

Part-time Oxford qualifications

Undergraduate award courses and postgraduate degrees.
Apply now for autumn 2021 entry

www.conted.ox.ac.uk/archaeology2021

 @OxfordConted



Oxford Radiocarbon Accelerator Unit

<http://c14.arch.ox.ac.uk>



ORAU is dedicated to providing high quality radiocarbon dating services for archaeologists:

- Advice on sampling strategy
- Sample-specific chemical pre-treatment
- Isotope and elemental analysis ($\delta^{13}\text{C}$, $\delta^{15}\text{N}$, CN)
- Precision AMS measurement
- Prompt reporting
- Comprehensive quality assurance
- Interpretation, calibration and modelling

Visit our website for the OxCal calibration software and our online searchable database of published radiocarbon dates.



ISO-9001
FS-53284

Director
Administrator

Prof Tom Higham
Emma Henderson

Oxford Radiocarbon Accelerator Unit
Research Laboratory for Archaeology
Dyson Perrins Building
South Parks Road
Oxford
OX1 3QY
UK

Telephone
Email
Website

01865 285229
orau@rlaha.ox.ac.uk
<http://c14.arch.ox.ac.uk>

*Please see our website for more information
including current prices and turnaround times*



Power Steele Building
Wessex Hall
Whiteknights Road
Earley
Reading RG6 6DE
www.archaeologists.net