EDITORIAL: Geoarchaeology from Landscapes to Material Culture: papers from the 7th Developing International Archaeology conference

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Geoarchaeologists’ can be both geoscientists applying their expertise to archaeological problems or archaeologists using methods from geosciences, and it is a sub-discipline both of archaeology and geography, closely aligned to Quaternary science, and operates across the full-range of spatio-temporal scales. While geosciences and archaeology have obvious overlaps, particularly in the study of long-term environmental change and earth materials, the disciplines are distinctive with their own histories and traditions, and modes of training. The diversity of what comprises a geoarchaeologist is even more pronounced at an international level where archaeology falls variously under anthropology in North America, and as a historical discipline in the UK and Europe. Increasingly in the latter, it is seen as a highly scientific discipline, that nevertheless has a strong humanities component. The disciplines of archaeology and geology developed parallel to each other in 19th century Europe, linked to geological, paleontological, and paleoanthropological discoveries that transformed our understanding of the earth’s history (Pollard 1999). In North America, geoarchaeology emerged in the 20th century as one of many subfields of anthropological archaeology necessitated by the increasingly complex questions emerging from archaeological research (Waters 1992). Despite these different historical trajectories, geoarchaeological research in Europe and North America is unified in a common goal of enhancing our interpretation of human history, and increasingly we are seeing a greater integration of approaches.

Highlighting this breadth of research and approaches in geoarchaeology, from landscape to material culture, was the focus of the Developing International Geoarchaeology conference (DIG2017), held at Newcastle University UK, 4 – 7th September 2017. DIG2017 was the 7th in a biennial international conference series that aims to bring together researchers, students and professional practitioners from across the world, to facilitate discussion and research, and promote international geoarchaeology and collaborations. The first DIG was held in 2005 to bring together new and old world geoarchaeologists and was published as an edited volume (Wilson et al 2007). The second DIG was hosted at the McBurney Laboratory in Cambridge in 2007, and the papers from this were published in CATENA (French and Milek 2009). Several of the papers presented at DIG 2009 at Macmaster University, Canada were published in Geoarchaeology volume 26, issue 2 (2011). The 5th DIG in 2011 was held at the University of Tennessee in Knoxville, Tennessee and published selected papers in Geoarchaeology (Mcnamee et al. 2013), and the current issue follows this tradition. Sessions at DIG2017 spanned the full diversity of geoarchaeological approaches and time periods from early prehistory to the post-medieval period, and that is reflected in the papers presented here.

Starting with early prehistory, Blong discusses human adaptation to landscape changes in central Alaska in the terminal Pleistocene and Holocene, combining geomorphological and palaeoecological analyses to reconstruct the evolution of the upland glacial landscape and the implications for human occupation and activity in Beringia. Angelucci et al. continue the theme of upland landscapes, this time in Europe. They present new research at the Monte Fenera sites, a series of Palaeolithic caves located along the southern border of the western European Alps. A combination of geoarchaeological approaches, including geochemical characterization and sediment micromorphology, have enabled a new reconstruction of formation processes and chronology within the cave environment, and the
impacts of post-depositional processes. The site offers an important contribution to debates on the evolution of Neanderthals in the Mediterranean and demonstrates how micromorphology can be integrated with other methods.

Sediment micromorphology is always strongly featured at DIG conferences, and papers reflect the diversity of applications of this technique. Both the student paper and poster prize were awarded to students utilizing sediment micromorphology (Magnus Halaand, Bergen and Marta Mateu, Barcelona, respectively), and the conference showcased a wide range of research in progress. Both have since completed their research, with Mateu et al. (2019) recently publishing this work on Early Iron Age semi-cemented floors in Spain (Mateu et al. 2019).

In this special issue, Kulick uses micromorphology to investigate neopalatial buildings at the Bronze Age site of Palaikastro, Crete. Her ‘microecological narrative’ approach identifies geomorphological processes during the time of occupation that may relate to landscape management such as terracing, and phases of environment instability linked to Mediterranean climate patterns. Moving from the Mediterranean to northern Europe, Wouters et al. combine micromorphology with the analysis of plant phytoliths to investigate urban soils in Atuatuca Tungrorum, a Gallo-Roman town in Belgium. Their research identifies a range of activities and processes, providing a narrative of the evolution of this area that has not been possible through more ‘traditional’ archaeological approaches.

We could perhaps argue now that the ‘microarchaeological’ approach that featured heavily at DIG2017 can no longer be described as non-traditional, and certainly not ‘new’; Davidson et al. reviewed its applications back in 1992 and rightly concluded it would become an essential part of the geoarchaeology toolbox. However, it is still less established than other specialties and remains poorly understood by others within archaeology. Several authors have suggested this is due to difficulties in accessing micromorphological data and in linking it to macroscopic, and even other types of microscopic data (Shillito 2017, Goldberg and Aldeias 2018).

It is now almost unthinkable to present micromorphology without visual data. Angelucci et al., Kullick, and Wouters et al. in this volume make ample use of photomicrographs to demonstrate features of importance. DIG2017 also saw what will arguably become the new future standard for micromorphology, with student prize-winning paper “Evaluating the Nature and Behavioral Implications of Laterally Extensive Occupation Deposits in the Middle Stone Age Levels of Blombos Cave, South Africa” by Magnus Halaand. This paper showed how photogrammetry enables us to link micromorphology back to macroscale deposits in the field. This has huge potentials for research, in addition to enabling better communication of microarchaeological data. This is geoarchaeology’s contribution to a growing trend within archaeology as a whole for more open communication and showing data alongside interpretation, and digital platforms which enable these new ways of presenting research and supporting arguments (Opitz 2018, Halaand et al. 2018).

Moving beyond sediment micromorphology, the state of the art in geoarchaeology is also demonstrated by Huismann et al. This paper is an excellent example of how geoarchaeology is continually evolving and developing new methods to address archaeological questions. In this case, the novel combination of OSL and fall out isotopes has enabled the authors to develop a quantitative approach to assessing the erosion of archaeological sites, a crucial part of any management strategy.

Carey et al. provide an overview of deposit modelling, a major geoarchaeological technique that provides the wider landscape narrative in which individual sites are situated. Their analysis demonstrates the importance of collaborative work between the commercial and academic sectors. Whilst focused on UK terrestrial case studies, the recommendations are applicable to other geographic regions, and this paper is likely to be an important reference resource for students, researchers, and practitioners in the future.
The continuum between the broader landscape and the individual object in archaeology was highlighted in the material culture sessions where artifact characterization studies featured heavily. Fiers et al. use a combination of microscopic and geochemical methods to describe prehistoric flints in NW Belgium, to better understand alteration features such as patination and burning, how these relate to the variable characteristics of flint, and what impact this may have on preservation of use wear traces. Agam and Wilson present an experimental study aimed at assessing consistency in lithic materials analysis between researchers with differing levels of experience. Their results demonstrate the utility of blind tests as a means of checking the accuracy and reproducibility of results and improving the classification process.

In conclusion, the papers presented here provide an overview of the range of periods, topics and approaches presented at the DIG2017 conference. While highly diverse, a number of themes emerged across several papers and sessions. The first of these themes is that geoarchaeology is at the forefront of multiproxy approaches in archaeology, and it is now standard for researchers to be applying several methodologies simultaneously to address their research questions. The second theme is the crucial question of scale, and how this multiproxy approach can be extended to include methodologies and data from outside the geoarchaeology sub-discipline. Carey et al, with their analysis of deposit modeling of landscapes, raise similar issues that have also been discussed at the microscale (e.g. Shillito 2017), namely the difficulty in integrating diverse multiscale datasets with archived excavation records. This theme is one that was raised frequently at DIG2017 in a number of papers beyond those presented in this issue, and we hope that in the future we will see further unification of approaches that enable an accurate linking of archaeological data from the landscape to micromorphology of sediments.

Thanks to generous funding from Newcastle University’s conference support fund, the School of History, Classics and Archaeology, and the McCord Centre for Landscape, we were able to offer reduced rates for students and early career researchers, reflected in the ratio of established to ECR delegates. Out of a total of 73 delegates, 52% were student/ECR, and we were also pleased to see a good split between male to female delegates, at 42% and 57% respectively. With regards to sector, 83% of attendees were affiliated with a university (including students, ECRs and established academics), with 9% from the cultural resource management/commercial sector, and the remainder coming from museums, government bodies, and research institutes.

DIG2017 also had a good international representation; whilst the largest proportion, (36%) of delegates were based in the UK, the remainder traveled from across mainland Europe (Austria, Belgium, Denmark, France, Germany, Ireland, Italy, Netherlands, Norway, Poland, Czech Republic, Spain, and Sweden), Switzerland and further afield including Israel, Canada, the USA and Australia. We would also like to thank our external sponsors, Beta Analytic, Quest, and ScARF (The Scottish Archaeological Research Forum) who contributed variously to sponsoring prizes for student papers and posters, and providing bursaries.

A first for DIG and one that we hope will be repeated in future years, many of the paper presentations were also recorded, and are available free to view on YouTube (the full playlist of videos can be accessed here: https://www.youtube.com/playlist?list=PLy3HmLpOiOP1TP1pxuS-rrLdA_E-Z0dm-2). As well as expanding the audience of the conference, we hope that the videos, together with the final published papers in this volume, will be an invaluable teaching resource for geoarchaeology and showing the process of research from initial conference presentation to final presentation. As part of the DIG conference, two workshops were run on pXRF and sediment micromorphology. We would like to thank Kamal Badreshany from Durham University for running the pXRF workshop, and Geosciences at Newcastle for providing access to microscope labs. Thank you also to Rob Collins at Newcastle University for leading the conference fieldtrip to Hadrian’s Wall. Finally, thank you to the
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References


