A reconstructed timber tomb façade burns in the twilight at the Loch of Yarrows, Caithness, Scotland. A collaboration of archaeology and art, three such 'Build N Burn' events have been held in different locations in Scotland, each of which have been free to the public and have combined experimental archaeology with entertaining spectacle. For more details, see Brophy et al. *in the April Project Gallery: http://antiquity.ac.uk/antplus/projgall (photograph by Alex Carnes.)*

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The rock reliefs of Taq-e Bostan, Iran, dating to the Sassanian Empire (226–650 AD). In this month's Project Gallery (http://antiquity.ac.uk/antplus/projgall), authors Qader Ebrahimi and Sirvan Mohammadi Qasrian describe a new stonecutting workshop discovered at Taq-e Bostan and discuss its place in the stonecutting industry of the wider Kermanshah region.

EDITORIAL

Few of those with any understanding of the scientific evidence have any doubt that the Earth's climate is warming at an accelerating pace. A recent study of European climate since Roman times has underlined how exceptional the last 30 years have been, with average summer temperatures significantly higher than at any time in the previous two millennia[1]. The cause, too, seems now (at last) to be generally agreed: that human activity, and sheer human numbers, are so great that they are affecting the planet's climate system. For some, that is, of course, an inconvenient truth, obliging us to change behaviours in ways that might be costly and troublesome. For archaeologists, versed in the effects of previous climate shifts both large and small, it should provide a golden opportunity to demonstrate the relevance of our discipline, and to cast present problems in the perspective of past events. The Maya drought, the Moche floods, and the low Niles, which may have put an end to the Egyptian Old Kingdom, all offer examples of what can happen to human societies. And of course, at the larger scale, there are the successive 'Ice Ages' that characterised the Pleistocene. There is an argument that we are all, in a sense, a product of the Ice Ages, and it is certainly remarkable how successful our ancestors became at exploiting sub-Arctic habitats. A 45 000-year-old butchered mammoth in Siberia, 72°N, provides the most vivid recent testimony[2].

But if modern humans were moulded by the Ice Age, then there is a growing argument that the Holocene was moulded—to some degree—by modern humans. And that underlies some of the recent debates about the Anthropocene, the reality or utility of a new epoch of geological time marking the impact of human societies on the planet. Climate change is only one of the outcomes; there have also been dramatic changes to soils as a result of deforestation and farming, to the seas through nitrates and acidification, and to sediments of many kinds through the accumulation of plastics, concrete and other manufactured materials. A couple of years ago, *Science* reported the discovery of a new kind of rock on Hawai'i, 'plastiglomerates', a composite of melting plastic, rock fragments, sand and shell debris[3]. And then there is the suggestion that we are living through the sixth mass extinction, the next in line since the demise of the dinosaurs at the Cretaceous/Tertiary boundary some 65 million years ago.

[1] Luterbacher, J., J.P. Werner, J.E. Smerdon, L. Fernández-Donado, F.J. González-Rouco, D. Barriopedro, F.C. Ljungqvist, U. Büntgen, E. Zorita & S. Wagner. 2016. European summer temperatures since Roman times. *Environmental Research Letters* 11(2): article 024001. http://dx.doi.org/10.1088/1748-9326/11/2/024001

[2] Pitulko, V.V., A.N. Tikhonov, E.Y. Pavlova, P.A. Nikolskiy, K.E. Kuper & R.N. Polozov. 2016. Early human presence in the Arctic: evidence from 45,000-year-old mammoth remains. *Science* 351: 260–63. http://dx.doi.org/10.1126/science.aad0554

[3] Chen, A. 2014. Rocks made of plastic found on Hawaiian beach. *Science,* 4 June 2014 (available at: http://www.sciencemag.org/news/2014/06/rocks-made-plastic-found-hawaiian-beach); research originally reported in: Corcoran, P.L., C.J. Moore & K. Jazvac. 2014. An anthropogenic marker horizon in the future rock record. *GSA Today* 24(6): 4–8. http://dx.doi.org/10.1130/GSAT-G198A.1

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The changes are all too apparent, but whether they justify a new geological epoch continues to be contested. Even those who do accept that argue about when it began. Candidates range from the extinction of the megafauna (assuming humans were largely responsible) and the origins of agriculture (with its methane-producing cows), to the detonation of the first atomic bomb. The onset of the Industrial Revolution at the end of the eighteenth century is a popular option. That was the proposal of Paul Crutzen and Eugene Stoermer who first coined the term 'Anthropocene' some 15 years ago. The Anthropocene is being taken so seriously that a subcommission of the International Commission on Stratigraphy is currently in conclave, seeking to give an official definition. They are considering it as potential geological epoch, equivalent to the Pleistocene or the Holocene (which would imply that the Holocene has ended), or alternatively as a subdivision within the Holocene. From a geological perspective, the crucial criterion is the stratigraphic signature that the Anthropocene is leaving: would future geologists identify these changes from the rock strata alone?

The subcommission is due to report during 2016, but, for archaeologists, the issues raised by the Anthropocene debate may take us in a different direction. We can argue about when it began, but is it fundamentally a useful concept? Haven't human societies always sought to modify their environments? And is there a danger that we might 'normalise' the global environmental crisis by giving it a geological label? That is one of the challenges considered by archaeologist Todd Braje in his debate article below (pp. 504–12).

Whether or not we accept its validity, the Anthropocene, as a concept, is clearly destined to be with us for some time. The relevance of the archaeological evidence, however, has still to be argued rather than assumed. The same is true in the broader climate change debate. Archaeology features only once in the recent report of the Intergovernmental Panel on Climate Change, *Climate change 2014: impacts, adaptation and vulnerability* (although it is gratifying to see a recent *Antiquity* article[4] among the few archaeological papers mentioned there). We may not be very good at advising how to cope with the future. Yet where archaeology excels is in setting current changes in context, and allowing us to chart the growing impact of human societies on the 'natural' world, not just over the last century or so, but since the late Pleistocene and before.

Victims of success?

☙ Rising populations and prosperity are not only having an impact on the environment; they are also placing enormous pressure on popular archaeological sites. Archaeological tourism has been one of the great success stories of the past few decades, but, in extreme cases, it presents a serious dilemma to heritage managers. Few would wish to diminish the popular interest in archaeology: that, after all, is one of our main justifications, all the more so in a world of government austerity and free-market economics. Public support is essential if we are to argue the case for the protection of some sites and the excavation of others before the bulldozers move in.

[4] Van der Noort, R. 2011. Conceptualising climate change. *Antiquity* 85: 1039–48. http://dx.doi.org/10.1017/S0003598X00068472

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But the archaeological site as visitor attraction can all too easily become a major headache. An earlier editorial (March 2014[5]) noted the enormous pressures on Angkor Wat, which received some 2 million visitors in 2013, a 20 per cent rise on the previous year. Those numbers seem subsequently to have levelled off, growing only slightly to 2.1 million in 2015, but that generated an estimated income of US$60 million, a considerable contribution to the Cambodian tourist economy.

Angkor Wat will be particularly familiar to readers of *Antiquity* through our special section in the December 2015 issue. Recent research by Roland Fletcher and his team has revolutionised our knowledge of the construction and development of the temple, and its setting within the Greater Angkor complex. In January, French newspaper *Le Monde* ran an article reporting on the latest meeting of the UNESCO-sponsored International Coordinating Committee for the Safeguarding and Development of the Historic Site of Angkor[6]. The challenge, as usual, is not to deter visitors, but to manage them more effectively, and to reduce the wear and tear on the archaeological structures at the same time. A number of measures are envisaged, including timed tickets and regulated tourist flows, to cope with the overwhelming numbers that flood the key temples of Angkor Wat, the Bayon and Ta Prohm at particular times of day. Another initiative seeks to spread the visitor impact more evenly across the several dozen impressive temples within the Angkor complex. If that could be achieved, it would benefit both the archaeology and the visitor experience.

A radical solution of a different kind is to exclude visitors from the sites themselves and offer a replica instead. That was the adopted option for the Palaeolithic painted cave of Lascaux in the Dordogne, France. The original cave had to be closed to visitors in 1963, when temperature, humidity and carbon dioxide levels began to damage the cave walls, and the opening of the replica Lascaux II in 1983 did allow something of the original experience to be restored. Inevitably, it is not the same as the real thing, but it set a trend. Altamira in northern Spain was closed to visitors for the same reasons and a replica opened nearby in 2001. A facsimile of Tutankhamen's tomb, using advanced laser technology, was installed near to the original site in 2014. And, most recently of all, and reviewed by Nick James in this issue (pp. 519–24), a long-awaited replica of the Palaeolithic painted cave of Chauvet in southern France opened exactly a year ago, in April 2015.

Chauvet Cave is different from the others as it has never been open to the public, so the replica presents the first opportunity for visitors other than specialists to view the spectacular motifs in something like their original setting. We should surely be grateful that modern technology allows this, and that the originals are being protected from the impact of too many visitors and preserved for the future. There is nonetheless a sense of unease with having to settle for a replica rather than the original. Replicas do of course have a long history in Western museums. We have only to recall the impressive eighteenth- and nineteenth-century collections of casts of classical Greek and Roman sculpture in the Akademisches Kunstmuseum in Bonn, the Museum of Classical Archaeology in Cambridge or the Victoria & Albert Museum in London. Indeed, the multi-part cast of Trajan's Column

[5] Scarre, C. 2014. Editorial. *Antiquity* 88: 5–12. http://dx.doi.org/10.1017/S0003598X00050183

[6] Evin, F. 2016. L'Unesco veille à la gestion des temples d'Angkor. *Le Monde*, 20 January 2016. Available at: http://www.lemonde.fr/architecture/article/2016/01/20/l-unesco-veille-a-la-gestion-des-temples-d-angkor_4850196_1809550.html (accessed 8 February 2016).

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Large panel in the End Chamber, Chauvet Cave (© Ministère de Culture et de la Communication).

in the Cast Courts of the V&A offers the best chance to inspect the spiralling sculptured frieze at close quarters. Furthermore, casts have sometimes been painted to demonstrate the original appearance of the sculptures.

But a replica cave, for all its merits, is somehow different. Is it that the galleries of plaster casts were never pretending to be full substitutes for the originals? Neither, of course, are the replica caves, but it is perhaps less surprising that visitors who have travelled hundreds or thousands of miles to the original location, and are then directed to a replica nearby, however faithful and accurate that may be, are sometimes dissatisfied. It raises the hoary old question of whether we would be content to visit the Louvre and see only a copy of the Mona Lisa. Yet faced with the pressure of visitor numbers, it is hard to see how heritage managers can do otherwise, and we can only marvel at the modern technology that makes possible these faithful reproductions, not just of individual sculptures but of entire caves.

Shanghai 2015

In the December 2013 Editorial[7] we reported on the first Shanghai Archaeology Forum, held in August of that year. December 2015 saw the second of these major events to showcase world archaeology. Brian Fagan has kindly provided the following report of the proceedings:

> *The Shanghai Archaeology Forum is an extraordinary experience. First organised in 2013 by the Shanghai Academy under the auspices of the Chinese Academy of Social Sciences, and the Shanghai Municipal Government, and destined to be held every two years, the meeting is unique in its format and expectations. Each Forum has a*

[7] Scarre, C. 2013. Editorial. *Antiquity* 87: 963–70. http://dx.doi.org/10.1017/S0003598X00049796

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central theme, for which about 10 scholars from different parts of the world are invited to give presentations in the World Archaeology Keynote Lecture Series. The organisers call for nominations worldwide in two categories for Field Discovery and Research awards. A panel of international advisors selects 10 winners in each category. The lucky 20 are invited to Shanghai, receive their award, then deliver a talk on their research. Archaeologists from 28 countries, as well as Chinese participants, spend three days learning about exceptional discoveries from every corner of the world. No other archaeological conference that I know of is so ardently international. You cannot sign up for the Forum: you're invited, which keeps it small and unique.

The range of discoveries was truly remarkable, all described by the people who actually made them. We learned, among other things, about the earliest tools in the world, the magnificent and still unfolding discoveries under the temples and pyramids of Teotihuacán, the latest Stone Age excavations in the Altai, research along the Silk Road, Çatalhöyük, LiDAR at the Maya city of El Mirador, pharaonic ports on the Red Sea, debates about dispersed cities, and rescue excavations in Taiwan—to mention only a few dishes in a unique archaeological feast. As far as Chinese archaeology is concerned, the Forum has played an important role in expanding research beyond the Central Plain region into borderlands and frontier areas, hitherto often ignored. We also had the chance to talk to archaeologists from almost everywhere, which made the experience even more memorable. Many of the discoveries resulted from close-knit teamwork in the field and laboratory, and from long-term research, clearly the dominant research strategies for future years.

Professor Wang Wei and other people behind the Forum believe that world archaeology is profoundly relevant to today's fast-moving world. They also ran a series of public lectures by internationally known archaeologists during the conference, designed to expose young and aspiring Chinese archaeologists to world archaeology. The talks were crowded to the doors, which augurs well for the future of Chinese archaeology.

Several authors who have featured recently in these pages were the recipients of prizes and accolades at the 2015 awards ceremony for this international event, and it is stimulating to see recognition given to such a wide range of major archaeological projects. The second Shanghai Archaeology Forum is further testimony to the growing prominence of Chinese archaeology on the world stage.

Chris Scarre
Durham, 1 April 2016

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