

Rewriting History: Recent Advances and Discoveries in Global Archaeology

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Resumen

En este artículo se ofrece una revisión exhaustiva de los avances recientes en arqueología y su impacto en la comprensión de la historia global, se exploran nuevos descubrimientos en regiones clave como el Mediterráneo, Europa y el Cercano Oriente, destacando el papel de la arqueología en la redefinición de narrativas históricas; además se presentan enfoques teóricos y metodológicos, incluyendo la aplicación de tecnologías innovadoras como teledetección, SIG y modelado 3D, que han revolucionado la manera en que se identifican y analizan los sitios arqueológicos. Además, el documento aborda la intersección entre arqueología y la participación comunitaria, resaltando la importancia del involucramiento local en la preservación del patrimonio y también se examinan los desafíos éticos relacionados con la investigación arqueológica, la repatriación de artefactos y el impacto del cambio climático en el registro arqueológico. Finalmente, se enfatiza la necesidad de colaboración global y el papel de la arqueología en la construcción de identidades culturales y la resolución de conflictos históricos.

Palabras clave: arqueología, historia global, descubrimientos recientes, tecnología en arqueología, patrimonio cultural, participación comunitaria, ética arqueológica, cambio climático.

Abstract

This article offers a comprehensive review of recent advances in archaeology and their impact on the understanding of global history, explores new discoveries in key regions such as the Mediterranean, Europe, and the Near East, highlighting the role of archaeology in redefining historical narratives; in addition, theoretical and methodological approaches are presented, including the application of innovative technologies such as remote sensing, GIS and 3D modeling, which have revolutionized the way in which archaeological sites are identified and analyzed. In addition, the document addresses the intersection between archaeology and community participation, highlighting the importance of local involvement in heritage preservation and also examines the ethical challenges related to archaeological research, the repatriation of artifacts and the impact of climate change on the archaeological record. Finally, the need for global collaboration and the role of archaeology in the construction of cultural identities and the resolution of historical conflicts are emphasized.

Keywords: archaeology, global history, recent discoveries, technology in archaeology, archaeological ethics, climate change.

Introducción

Archaeology is the scientific study of the material remains of past human life and activities. It is an important means through which knowledge and understanding about human history is accumulated, preserved, and communicated. Contemporary archaeology emerged in the nineteenth

century and became better defined and established as a scientific discipline by the early twentieth century. As with all scientific disciplines, it has endeavoured to explore and refine its past, present, and potential future – cultural, social, philosophical, theoretical, and practical contexts and concerns. Archaeologists should devote time and energy to writing publicly about the discipline's past,

present, and future outside of the peer-reviewed, professional literature that is largely inaccessible to non-specialists. Such basic, public knowledge is important because archaeology is a vital cultural endeavour with social, political, educational, ethical, and economic implications (Ten Wolde, 2017).

Archaeology is also an imperfect, incomplete, and contested means of knowing and understanding the past. Many past cultures are only known through archaeology because they left no historical, pictorial, or textual records of their existence. Moreover, the past always consists of that which is lost, irretrievable, or unknowable and indeterminate and open to multiple interpretations. All means of remembering and forgetting the past – including oral traditions, historical records, artefacts, monuments, and archaeological sites – are strategies that inscribe the past onto the present and are, therefore, mediated by the social, cultural, scientific, and political contexts in which they exist. At the same time, the past is profoundly implicated in the present and future.

Definition and Scope of Archaeology

Archaeology is the scientific study of past human cultures through the recovery and examination of artifacts, features, and other material remains (Ten Wolde, 2017). Artifacts may include tools, pottery, and other objects fabricated or modified by humans. Features are nonportable remnants of past human activity, such as architectural constructions or areas of dense artifact deposition. The remains of plants and animals are also considered artifacts when they are analyzed in relation to past human activity. In addition to physical remains, archaeologists may also study written records and other documents that relate to past cultures. Archaeology is both humanity and a science; as such, it uses a wide variety of techniques and methods in its efforts to reconstruct the past and understand historic and cultural processes. Archaeology is often a specific response to a perceived threat to the past. Recent advances in archaeology have highlighted how, in an era of rapid cultural change and globalization, some communities have sought to reclaim a sense of heritage; in other instances, communities have sought to radically rewrite their past and generate a new future, albeit often at great social cost. In the wake of recent excavations and discoveries in important sites around the world, this text will examine advances in archaeology, bringing together papers that address critical periods and themes in the rewriting of past histories. It will particularly focus on discoveries in global archaeological sites that have generated new debates and understandings of pre-heritage and recent histories.

The field of archaeology has passionately pursued the mysteries of human history for over 150 years, yet many of its basic assumptions are still unexamined. As a discipline that deals with complex, longterm historical

processes involving human behavior and its material correlates, it has always been closely tied to theoretical developments in history and the social sciences (Bevan, 2002). An overview of recent advancements and discoveries in archaeology from key world regions or domains is provided, with a focus on applications of these developments to the Mediterranean, Europe, and the Near East. Archaeological research encompasses a wide range of methods and techniques that are employed to study the material remains of past cultures and civilizations. Fieldwork is a crucial part of archaeological research, and it can be categorized into three types: excavation, survey, and quasi-experiment. Excavation involves the systematic recovery of artifacts and other remains from buried archaeological sites, while survey involves the systematic examination of the surface of a landscape to locate and record archaeological sites and artifacts. Quasi-experiment involves the simulation of cultural processes in the natural world and the recovery of artifacts to study those processes (Fulford & Holbrook, 2018).

Key Theoretical Frameworks in Archaeology

The goal of this article is to provide an overview of recent advances and important discoveries in global archaeology, focusing on new insights regarding ancient peoples, places, and events and the implications for traditional historical narratives. First, it is necessary to clarify key theoretical frameworks in archaeology, familiarize readers with the discipline, and define terminology. Archaeology is the study of past peoples and cultures through their material remains; the archaeological record consists of artifacts, features, structures, and other remnants of past human activity. Like other academic disciplines, archaeology enlists specific frameworks through which to examine the past and explain present circumstances. Engineered and adaptive frameworks explore the past through human actions, considering how culture, environment, power, and other factors shape intentions and outcomes. Empirical frameworks analyze the data, assessing form or style, spatial and temporal distribution, and formation processes. Time perspectivism focuses on how actions and perceptions across time scales affect the archaeological record and its interpretation (J. Holdaway & Wandsnider, 2008). This examines palimpsests – deposits that record multiple events across time, such as a layered manuscript – and how scales of time affect readings of the archaeological record.

Archaeological deposits can be palimpsests of actions, perceptions, and time scales, resulting in different archaeological records than intended by their creators. For example, a ceramic vessel may be shaped by time-bound actions and perceptions yet persist through multiple human interactions as a ceramic record of different scales of actions, perceptions, and times, such as its use, discard, archaeological excavation, and study (Wandsnider, 2004).

Time perspectivism has become the dominant framework for archaeologies of the late ancient Maya and southwest US, where multi-scalar views of time, space, and sociality resulted in novel interpretations of well-known sites.

Cultural evolutionism describes the long-term evolution of human culture, including sociocultural systems, conventions, technologies, and shared ideas. It addresses questions about how and why cultural traits spread, the history of cultural similarities and differences between human populations, and the reconstruction of past cultural states and events. During the 19th century, cultural evolution was an influential paradigm in the social sciences but was largely abandoned by mid-20th century due to ethnocentrism, determinism, and lack of empirical support. Nevertheless, contemporary cultural evolution research grew out of earlier efforts to expand Darwin's theory to the non-genetic domain and examine the parallels between the evolutionary fates of genes and cultural traits (Mesoudi, 2017). Cultural evolutionary theory holds that culture is learned and transmitted through social interaction, often through language, and is subject to the same forces of change as biological traits, including replication, variation, and selection, which can occur at individual and population levels. Currently, there are three research strands in contemporary cultural evolution: one focusing on how the capacity for cultural evolution evolved, modeling the coevolution of cultural and biological traits; another examining the macroevolution of culture, using phylogenetic or network approaches to trace the history of languages and cultural traits across various domains; and a third employing agent-based models to analyze how individual-level processes affect population-level patterns in cultural and non-cultural traits.

Archaeology is broadly defined as the study of past societies and cultures through their material remains. While it is often categorically divided into various subdivisions, it can be approached from two fundamental perspectives: as an anthropological or as a historiographic discipline. Within the anthropological approach, archaeology can focus on either processual or post-processual arguments. In contrast, the historiographic approach can base itself on idealistic or materialistic arguments (J. Holdaway & Wandsnider, 2008). Thus, ideally, a single archaeological case study could be used to demonstrate archaeological advances and discoveries while also simultaneously discussing the philosophical considerations underlying those advances and discoveries. However, given the breadth of archaeological thought, it would be exceedingly difficult to fully and clearly examine all the relevant issues in a single case study. To avoid overly simplifying the philosophical considerations accompanying recent archaeological advances and discoveries, a single case study was chosen to broadly represent the historically anthropological approach to archaeology: the excavation of a segment of the early 20th-century industrial landscape found at a former Asarco

smelter in East Helena, Montana. Focused inquiries that address recent archaeological advances and discoveries within the context of relevant philosophical considerations will additionally be presented.

Major Archaeological Discoveries and Advances

The following is a summary of recent discoveries and advances in global archaeology. These discoveries and advances have the potential to impact cultural narratives, educational curriculum, and even tourism development. All readers can play a role in rewriting the narrative of history by visiting their local archaeological site, learning, and sharing what they discover. Local archaeological sites have significance beyond their physical presence, as they are portals to hidden stories waiting to be uncovered by curious minds. Recent discoveries in local archaeology may reshape what is known about local history or culture. Many archaeological sites possess unique stories waiting to be uncovered. Simple observations, curiosities, or inquiries about local archaeological sites can lead to significant and groundbreaking discoveries. Many archaeological sites worldwide have the potential to shape their regional, national, or even global narratives. Some recent archaeological discoveries have ignited worldwide interest. Obvious examples would be high-profile archaeological discoveries, such as the discovery of the Terracotta Army in China, the Iceman mummy found in the Alps, the discovery of Angkor Wat in Cambodia, Egyptian hieroglyphs at the Rosetta Stone, as well as some recently discovered artifacts still in the news, such as shipwrecks and sunken cities. Major advances in scientific techniques have aided archaeological discoveries. Certain scientific techniques that were previously unavailable to archaeologists have, in the past few decades, become affordable and accessible to many archaeological projects, greatly accelerating archaeological discoveries. Discoveries involving these recent scientific advances may also have the potential and be of interest in reshaping currently held narratives about that particular culture or history. Certain advances in scientific methods have impacted archaeological discoveries, reshaping currently held narratives about history or culture (Marcus, 2003).

A small number of artefacts from a single prehistoric scatter located at -3.71872° 140.89658° were recovered during marine geological investigations in May 2016. This site was designated as K241 and is situated on an abandoned river mouth bar from the former Karkar River, one of several rivers draining the western end of the Huon Peninsula (Ward et al., 2021). The artefacts were found in an area where coarse sediments had been dredged, and excavating machines previously dragged the sediment from the river mouth offshore and spread it at K241. Artefacts were only found in areas disturbed by dredging and excavation, so it is assumed that the original

archaeological context is within the coarse sediments of the dredged site.

K241 is located about 120 km west of Lae and about 1 km offshore from Saidor (BIAGI, 2015). A series of preliminary, small-scale archaeological investigations were conducted at K241 in 2018 and 2019. These investigations involved monitoring dredging and excavation activities in 2018 and the recovery of five artefacts during limited underwater visual inspection and excavating under the SCUBA diving in 2019. The artefacts consist of three quartz backed microliths, one quartz flake, and one quartzite flake, all found on or within the coarse sediments dredged from K241. An assessment of the artefacts is presented here along with the results of the undertakings at K241 from 2018 to 2019.

Efforts to reconstruct historic technological transfers among ancient empires through satellite imagery analyses and archaeological excavations have expanded. Prior methodologies focused solely on artificial perspective satellite observations, limiting reconstruction to single river basins. In contrast, recent advancements incorporate ground validation and consider natural and social factors, enabling the analysis of broad empires and transcontinental links. To illustrate this methodology, extensive archaeological data concerning waterworks, a technological hallmark of ancient empires, have been compiled and examined in three case studies: the trans-Himalayan Maurya and Kuṣāṇa empires (fourth century BCE to third century CE) centered at Pāṭaliputra and Purūṣapura, the second century CE Mediterranean – central Asian Parthian empire (Ctesiphon), and the Kuṣāṇa and Sāsānian empires' (third to seventh centuries CE) northwestern Indian provincial capital archaeological sites along the Indus River. These studies reveal engagement in waterworks technology transfer despite temporal and regional differences (D. Morrison, 1994).

Technological Innovations and Archaeology

In 1837, the world's first recorded archaeological excavation took place at the site of Nineveh in modern Iraq. Similar excavations followed in Egypt and Greece, often undertaken by Western explorers in lands controlled by the Ottoman Empire, in line with colonial expansion. Exotic artefacts excavated from these ancient sites were shipped to major museums in London, Paris, New York, and Berlin. These finds became the focus of intense scholarly attention, leading to the emergence of archaeology as a systematic academic discipline. In many places, the historical narratives constructed by archaeologists and historians have been Eurocentric. However, as globalisation unfolds, non-Western countries are beginning to step up efforts to reclaim their pasts, and new archaeological discoveries challenge existing historical narratives (Michael Gordon et al., 2016). This review highlights recent archaeological discoveries

worldwide that reshape the understanding of human history, and how such discoveries are deployed and used in contemporary geopolitical contests. It also focuses on the new technologies that make these archaeological advances possible and challenges ahead.

The intersection of archaeology with technological innovations has reshaped long-standing practices. Recent shifts in the application and accessibility of archaeological technologies are explored, with a focus on remote sensing and GIS. The changes brought by this rapidly evolving technology to archaeological practice are considered, from the perspective of cultural heritage management practitioners and academic archaeologists using remote sensing and GIS. The intent is to stimulate reflection on current practices and debates pertaining to the use of these established archaeological technologies, as well as consideration of how new developments can be integrated into such use. Archaeological remote sensing can be defined as the application of airborne or satellite imaging to the detection or interpretation of sub-surface archaeological features or sites (Opitz & Herrmann, 2018). Since the earliest aerial images of crop mark sites stimulated the growth of archaeological aerial survey in Britain, archaeological remote sensing has expanded into a wide range of imaging modalities, mostly based on multi-spectral electromagnetic radiation. Airborne data acquisition remains dominated by the use of visible RGB optical photography, supplemented by thermal infrared and LIDAR imaging, and multi-spectral multi-sensor imaging since the mid-1990s. Data from aerial and satellite platforms have enhanced opportunities for wider access and use of archaeological aerial remote sensing. For example, freely accessible high-resolution RGB satellite imagery from several global satellite networks has stimulated the growth of archaeological aerial remote sensing applications in regions where aerial surveys were not previously conducted.

The growing ubiquity of cheap and simple 3D digitization tools, combined with the growing importance of online publication and outreach, has made 3D recording attractive to many archaeological projects. Recent years have seen several cases of online 3D reconstructions of excavated sites and artifacts as part of research publications, reports or outreach initiatives. Nevertheless, the archaeological community is still coming to grips with understanding the benefits, challenges and limitations of recording sites and artifacts in 3D, whether it be photogrammetry, laser scanning or range scanning (F. Ulguim, 2017). This session aims to look at past and ongoing efforts to 3D record archaeological sites and artifacts as part of the publication process. It also hopes to encourage discussion on the implications of recording in 3D on aspects such as outreach and visualization, understanding and managing data for posterity, the resource implications of 3D recording, the pros and cons of different recording

methods, and potential pitfalls in interpreting the 3D record.

Archaeology has long had an interest in new technologies for recording sites and artifacts. From hand-drawn plans and profiles to photography, tape and total stations, the adoption of new technologies has often been driven by the hope that they will offer more accurate and reliable records. 3D recording in archaeology is seen as a radical change in how archaeological sites and artifacts are recorded; 3D digitization clearly offers, or appears to offer, fundamentally new approaches to recording. However, it is worth considering how radical a change 3D digitization really represents. 3D recording is one form of recording among many others, some of which share features and capabilities with 3D digitization. As with any recording technology, 3D digitization will both reflect and shape how archaeologists think about and practice recording. It is important to ensure that archaeology does not get swept along in a wave of excitement about 3D digitization without first carefully considering how the technology will be used.

Archaeology and Public Engagement

Community involvement in research, education, and outreach is key in archaeology, addressing the apparent discrepancy between public investment in local studies and public engagement. Local history and archaeology interest many people, yet often, the most fragile link in the research chain, holding the greatest potential for vibrant co-constructed research and outreach, community involvement, is overlooked (Landau, 2019). Starting with a short overview of how this issue has been approached in his work, four recent projects—two field-based, one laboratory-based, and one equipment and lab donation—are presented. Each includes some level of community involvement, educational collaboration, and direct engagement outside the university setting. While these projects represent significant steps toward greater accessibility and responsiveness to community needs, they also suggest that there is much more to learn, both about what communities want and how to fill gaps in resources and training in order to empower them to ask for and guide projects that meet their needs.

In archaeology, there is growing acceptance that it should not just be acceptable to local communities, but also useful in the contemporary world. However, “useful” can mean many things, and community involvement in archaeology still takes various forms. At one end of the spectrum, there are projects driven entirely by academic needs, with community involvement limited to outreach after the fact. In the middle are projects like Alma, which were originally conceived as academic-led but have community involvement, input, or research questions added during the planning stage. And at the other end are projects guided

entirely by community research questions and needs, with academics brought in to help answer them.

A recent seminar on “Writing Global Archaeologies” helped to identify those disciplinary advances and discoveries most amenable to an international sharing of skills or resources, or to collaborative research initiatives, modernity and colonialism being historical backdrops to those shared initiatives. Contributions from four continents are briefly summarized. In Africa, the focus is on capacity-building and sharing archaeological data on pastoralism, while seeking to subvert the continent’s outsider-dominated narrative. In Asia, the emphasis is on advocacy for archaeological sites, in an archaeological empowerment in the face of development pressures and local and global language challenges, and a desire for cooperation with allies. In Australia, recent Indigenous Haven proposals are a touchstone for challenging archaeology’s complicity in dispossession, and using found documents and oral histories for reconciliation. In Europe, against an anti-expert culture, archaeology as a global epistemology seeks to revisit the past’s relevance and retain data-sharing traditions, mindful of the potential repackaging of findings into new myths. Some heritage management and conservation policies enacted after colonial independence still reflect a hegemonic Western conservation framework where core tenets of global “best” practices do not fit local contexts. This is especially the case where sociopolitical strife continues to torment postcolonial identities and historical narratives. In such fragile contexts, empire-derived archaeological assets can become contentious and contested political symbols of empowerment or disempowerment, acquisition or repatriation. Recent examples in Sub-Saharan Africa and Northeast India showcase how archaeological narratives have been invoked by local communities to confront colonial legacies and write counter-histories, at times fostering violent conflicts with the state even as similar narratives have been co-opted by the state to advance hegemonic nation-building projects. These case studies illustrate how archaeological narratives can become multilingual and multivocal mechanisms for contesting and negotiating postcolonial identities and global places in history.

In the past, public archaeology was heavily focused on lecturing to the public and conducting educational outreach programs at schools. The thinking was that if the public only knew more about archaeology, they would love it just as much as many archaeologists do. However, lesson plans developed for the schools relied on a more complex understanding of the relationship between past and present. This understanding went beyond simply imparting factual information about archaeology, its methods, techniques, and discoveries, and recognizing that people actively construct their own narratives about the past. These narratives are informed by, and often challenge, dominant historical discourses molded by

power relations. Public archaeology needed to develop a similar complexity in understanding how to engage wider audiences (Eyheralde, 2017). Personal interventions to make exhibitions and museums more approachable for alternative narratives about the past have become an important way to actively engage with the public.

Two very different museums in Athens, Greece, provide an opportunity to address how new, often contested, ideas about history can be represented in exhibition forms. The Acropolis Museum Parthenon exhibit represents Greece's attempts to shape narratives about the Parthenon Marbles as a legally contested possession of the British Museum. Conversely, the Benaki Museum Liquid Antiquity installation represents alternative, often marginalized, views of Greece and Greekness that challenge dominant narratives accepted since the early modern period. Spending additional time in these museum spaces allowed for the growth of sensibilities attuned to how the past is materially represented (Romanisin, 2018). Museological practices, social networks, and historical considerations influenced the organization and collection of each exhibit. How different forms of materially representing the past can create new ways of understanding history is addressed.

Ethical Considerations in Archaeological Research

Recent publications tackle the complex ethical considerations involved in archaeological research, emphasizing the need for ethical frameworks and engagement with local communities. (Thomas, 2015) highlights challenges faced by archaeologists in protecting heritage from treasure-hunters and the military-industrial complex. The importance of outreach and public archaeology in engaging non-archaeologists and local communities in heritage protection is also noted. Key publications in this field are reviewed, focusing on the types of ethical challenges faced by archaeologists and the proposed solutions.

(Richardson, 2018) discusses ethical responsibilities in digital public archaeology, emphasizing the need for clear ethical guidelines for public contributions. Archaeology's ethical responsibility towards cultural objects is acknowledged, as well as the complexity of digital ethics. The protection of partnerships and stakeholders is challenging, but the welfare of communities should be prioritized. Ethical concerns should not be ignored by professional bodies or employers.

During the late 19th and early 20th centuries, major archaeological discoveries – many from tombs containing rich grave goods – took place around the world, especially in Egypt, Mesopotamia, Greece, Italy, and Asia. The artifacts unearthed from these discoveries were often exported to Europe and North America, resulting in the founding of major museums, some of which still hold disputed collections. Libyan and Egyptian artifacts, Greek marbles, and Native American remains entombed with

important possessions are only a few of the most publicly debated contested cultural heritage issues. Some nations, relying on both scientific and public moral grounds, are calling for the return of their cultural heritage. While implementing basic laws of repatriation is still a complex legal process, archaeological discoveries do not need to be an everlasting cause for wars of the past, as the contended cultural heritage can be studied in a shared global context (R. Ognibene, 2019). Throughout the globe, multi-national, collaborative, and inter-disciplinary research projects are dramatically increasing. Shared scientific investigations with cultural heritage at the heart of collaborative science not only empower developing countries and unify researchers, but also build a communication bridge between different nations, models that should be followed by humanity in the decades to come, as only together will humanity be able to establish a healthy balance and secure the survival of Earth's environment and its rich living beings.

New perspectives on the discipline of archaeology emerge from recent work being done globally, as do a number of shared issues and goals. Many projects present on the Global South experience of recent discoveries or advances in understanding from an archaeological perspective to Global North audiences. In some instances, Global North archaeologists are involved with Global South projects as co-presenters or collaborators, but very often, projects are presented by Global South archaeologists working within their own communities. Such archaeologists often deal with the same challenges as Global North colleagues, but also address issues particular to their local contexts as well as global concerns.

A common theme in many of these projects is the importance of community engagement and collaboration in the archaeological process, from research design to knowledge sharing. Efforts discussed in several different locales to involve community members in all aspects of archaeological work, thus expanding the traditional role of community members from simply being "subjects" of research or local laborers, should inspire Global North archaeologists to rethink their own practices and develop new ones. There is also an openness to sharing recent advances in methodology and technology that may help address some of the obstacles faced by communities looking to enact their own archaeological research and interpretation.

Future Directions in Global Archaeology

Representations of the past foster identities and communal belonging, but they can also provoke tensions, exclusions, and rejections. How can global archaeology - in collaboration with museums and heritage sector - contribute to a more nuanced understanding of the past, capable of diffusing rather than igniting present conflicts? Recent advances and discoveries in global archaeology

have the potential to rewrite history, challenging long-standing Eurocentric narratives and shedding light on alternative perspectives. In an increasingly polarized world, where conflicting views on the past are either silenced or aggressively promoted, archaeologists, historians, and other scholars are called upon to share knowledge and insights regarding alternative approaches to the past. Beyond mere cooperation, collaboration is urged in the co-design of research agendas, methods, and expected outcomes, ensuring mutual consideration of each partner's needs, perspectives, and frameworks (Vladimir Tevdovski, 2015).

What can the disciplines involved in the study and interpretation of the past do to be more effective in promoting a shared, nuanced, and flexible understanding of the past? What are the best strategies to prevent knowledge and interpretations from being misused? Collaboration is essential, but experience shows that simply working together does not automatically lead to shared goals or prevent abuse (Ten Wolde, 2017). Taking examples from areas where knowledge and interpretations of the past are intensely contested - illustrated through case studies from Europe and Beyond - it is suggested that prior to collaboration, more effort should be made to clarify the desired outcomes of doing research on the past and critically discuss the potential pitfalls.

Research on the past continues to take unexpected turns. Recently, a team of archaeologists excavating at a Roman villa uncovered a stunning mosaic depicting the famous Greek myth of Leda and the Swan. The find could help shed new light on the social and cultural milieu of Romans living in southern Britain. The spectacular mosaic, unearthed in a late Roman villa at Chedworth, Gloucestershire, shows a scene from one of the best-known stories from Greek mythology. It was created using more than 1.5 million tiny pieces of stone and glass in different colors, painstakingly cut and shaped by artisans before being arranged to form a complex image. Within the last year, a trove of ancient coins was also found near the mosaic, in what is believed to be the first Roman Christian church discovered in the region, pre-dating a major cathedral in the nearby city of Gloucester. Together, these richly illustrative finds provide a unique window into the history of early Christianity's spread in the region. Findings such as these illustrate how archaeological discoveries can reroute the trajectory of communities and cultures of the past and invite us to consider new ways of thinking about the present (Ten Wolde, 2017). At the other end of the spectrum, a scientific framework for interpreting the past could dramatically reshape perspectives on long-quiet cultural tensions in regions of the Americas or the Pacific Islands. In 2004, archaeologists from the University of Maine suffocated in the aftermath of a tragic event. A dam flooded an archaeological site containing artifacts associated with the region's Native American people, the Penobscot Tribe. Before the drowning,

archaeologists retrieved and studied dozens of ancient tools that now reside at the university. The tribe's leaders, however, claimed ownership of the artifacts and the knowledge entwined within them — a dispute that pitted scientists against tribe members for a decade. Then, in 2014, newly elected tribal chief Kirk Francis sought out a reconciliation path with the archaeologists, marking an extraordinary turn in the dispute (Fortunato, 2018). This was the first time both parties met jointly with the hope of building common ground. Francis's call for unity echoed across a vast scientific landscape punctuated by indelible historical transgressions between archaeologists and Indigenous peoples. Over the years, many tribal leaders and elders had languished in a seemingly never-ending battle against oppressive scientific paradigms permeating their world.

The consequences of climate change for the archaeological record and archaeological interpretation are rarely discussed together with the reconstructions of past climates, environments, and ecological adaptations that are so central to archaeology (Holleesen et al., 2024). The archaeological record is widely acknowledged as vulnerable to climate change in ways of direct destruction, in particular, through rising sea levels and increased storm intensity. However, it is important to also consider the more subtle, indirect effects of climate change on preservation, and also how climate change impacts interpretation, i.e. the understanding of past human responses to climate changes (J. Snyder, 2019).

Studies in the Arctic have demonstrated changes in the temperature and moisture regime of soils with implications for the preservation of archaeological sites. Specifically, soil warming increases the activity of thermally sensitive enzymes involved in microbial degradation of organic materials, and these effects are exacerbated by a trend of increasing summer drought in parts of the Arctic. There is a growing recognition that many archaeological sites and landscapes in the Arctic are currently at risk from climate change, and this is affecting the archaeological record of exceptional importance for the understanding of past human responses to climate changes.

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