

Sustainability and an archaeology of the future

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Introduction

Hutchings and La Salle (2019) pose a fundamental question regarding sustainability and its significance within archaeology. Much of the authors' critique focuses on sustainability within the context of cultural resource management and what they regard as the complicity of states in committing heritage crimes. Surprisingly, however, conventional research-driven archaeology is virtually absent from their assessment. This is concerning, as sustainability cannot be fully discussed without consideration of this important component of our discipline. Furthermore, while I agree with their point that contemporary archaeological theory reflects and serves contemporary society, it must be emphasised that archaeology which does not resonate with the public, including local and descendant communities, is irrelevant (see Pikirayi 2015). It is irrelevance that is the source of anxiety for all archaeologists, hence the references to sustainability. Viewed in this narrow context, sustainability is merely about meeting the disciplinary requirements of the present. Rather, focus should be on understanding how past societies lived sustainably and, in the process, avoided losing their socio-culturally complexity or failing completely (e.g. Chick 1997). The reason for locating sustainability within this context is so that archaeologists can work to understand the value of the past in the present. This is what an archaeology of the present is and what an archaeology of the future should be. Sustainable archaeology must therefore be situated in this research context, rather than being narrowly focused on archaeological resource management.

For many archaeologists, an archaeology of the future is difficult to imagine because the disciplinary focus is on past events. It is the consideration of the deep human past and how humanity has sustained itself over millennia, however, that situates archaeology in the present. The entire archaeology of Holocene Africa, for instance, should be regarded in this way, recognising value and relevance in such work in the present. A prominent example is the desertification of the Sahara and the relocation of human settlement to adjacent regions, such as the Lake Chad Basin. Such case studies of environmental change and the human experience over time are relevant because they illuminate issues of major concern today.

Holocene human settlement in the Lake Chad Basin

The Lake Chad Basin is the largest inland endorheic basin in Africa, covering some 2.4 million square kilometres. In 1963, the shallow freshwater Lake Chad covered approximately 1400km²; today, it has shrunk in size by up to 95 percent, although its levels have improved since the beginning of this century (Fortnam & Oguntola 2004). The lake provides

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water for more than 30 million people and is therefore as important today as it was during the Early to Mid-Holocene, when humans first converged around its shores. The shrinkage of the lake has triggered conflict over which of the bordering countries have rights to the remaining water. Violence is increasing between the people who farm, herd and fish in this region, creating problems for the ecosystem and the wider population. Such conflict appears to have deep historical antecedents. Access to an environment that allowed hunting, gathering and aquatic resource exploitation, as well as livestock and crop farming, must have had enormous influence on the social sphere, marking a significant departure from the past (see e.g. Cohen 1979).

Humans have interacted with and transformed the Lake Chad Basin for over 7000 years. Large-scale archaeological excavation projects conducted since the 1960s have revealed deep sequences of human occupation and palaeoenvironmental evidence at Daima, Dufuna, Konduga, Gajiganna and other mounds (Connah 1976; Gronenborn 1998; Maceachern 2012).

The palaeolake Mega Chad was much larger and deeper than the present lake. A canoe recovered at Dufuna and dated to *c.* 6000 BC suggests that humans made use of boats to enhance mobility around the southern edge of the Sahara during the humid phase from the Early to the Mid-Holocene (Gronenborn 1998). At this time, Mega Chad was an important, ecologically favourable environment that attracted considerable human settlement.

Over time, the Basin's ecosystem has shifted from forest to savannah, due initially to the intensification of hunting and subsequently, at some point around 300 years ago, to the development of agriculture. The desiccation of the Sahara is often associated with the introduction of herding and sedentary village life. Today, places such as Gajiganna have a harsh environment, which permits herding only during the rainy season. This lifestyle indicates palaeoecological changes that have taken place during or after the initial occupation of such locations. It is highly probable that the combination of climate change and the increasing demand for water for agricultural irrigation will result in further shrinkage of Lake Chad.

Desertification of the Sahara

The Holocene desertification of the Sahara and the adjacent Arabian Peninsula is attributed to significant climate change around 5000 years ago (Claussen *et al.* 2013). Prior to this, annual grasses and low shrubs covered the Sahara (Claussen & Gayler 1997). The transition to today's arid climate was not gradual, but rather occurred in two episodes. The first, which was less severe, dates to between 6700 and 5500 years ago; the second—and harsher—period extended from 4000–3600 years ago. Summer temperatures increased sharply, and precipitation decreased. The socio-economic systems of the complex Neolithic societies that had previously flourished along the valleys of the Nile, Tigris and Euphrates Rivers were devastated (see e.g. Ponting 1992).

Climate science must consider not only the human consequences of climate change, but also our species' own contribution to these developments. I therefore disagree with the conclusion that the main driving forces behind Saharan desertification were feedback loops within the climate and vegetation systems, amplifying the effects of shifts in the Earth's orbit (Brovkin *et al.* 1998; Claussen *et al.* 2013). The latter position implies that the land-use practices of humans who lived in and cultivated the Sahara did not significantly influence desertification. Rather, we should envisage the equivalent of what we now refer to as a 'climate

crisis', in which humans began to damage the ability of the land to sustain them. The rapid emergence and spread of agriculture in the Near East and North Africa was a response to Mid-Holocene aridification and accelerated forest depletion. The desertification that started at that time continues to this day, and has accelerated due to forest clearance for cultivation and for livestock grazing. Nowhere is this more evident than in the Lake Chad Basin.

Conclusion

Sustainable archaeology should ideally present the human experience in contexts that resonate with the greatest challenges of the present—a rapidly degrading environment and climate change resulting in the increased marginalisation of certain groups. It is about confronting such contexts in order to address emerging issues around humanity's uncertain future. The re-evaluation of past scholarship in the light of new research is a useful starting point. Engaging other disciplines, such as climate and environmental sciences, on past and present human experience is another. Regardless, although archaeology is about the study of the past, it is also about the present and the future.

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