Humans in Deserts – Stories of Exploitation and Survival

Symposium

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Alison Betts
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Game drives and the communal hunt across the Asian Steppes

Once, when game was plentiful and large herds of ungulates wandered the marginal lands of the Middle East and Eurasia, techniques were developed to hunt migrating game in large numbers using often sophisticated methods and structures to kill large numbers of animals at one time. The scale of these practices created the development of social, economic and ritual activities that were an important part of the life of steppic communities well beyond the simple acquisition of food. Game drives are hard to study archaeologically but with the advent of satellite imagery, there has been a renaissance in their study. This paper looks at game drives across Asia from Egypt to Tibet, exploring their significance in the ancient world from prehistory to the early 20th century.

Susanne Binder
Macquarie University

From the Nile Valley into the deserts: Mac Weidenbach's diary as it documents the Lepsius Expedition (1842–1845)

At 19, Max Weidenbach was a trained artist and the youngest member in the team of six with the Egyptologist Richard Lepsius to travel to Egypt and Nubia, commissioned by the King Friedrich Wilhelm IV of Prussia to explore and document the ancient monuments in a pioneering scientific expedition. Unexpectedly, in 2013, Weidenbach's extensive expedition diary was found in the South Australian Museum in Adelaide. It is currently being prepared for publication.

The diary is an important new source, a mid-19th century voice on travel in and experience of the deep desert. Max's diary records the practicalities of the everyday life on the expedition but also his reactions to encountering the landscapes and the people with their traditions, his awareness of political issues and conflicts of the time, the dangers en route, an experience of near-death, the cooperation with and reliance on the locals as well as the role of travellers who had gone before them. The significance of the text lies in its first-hand and historical account of numerous monuments and sites that have since been transformed through archaeological exploration, are being endangered by modern civilization, or have been lost entirely through 100 years of dam constructions along the Nile river.

The question is to what extent "legacy data", in this case a view of ancient cultures 200 years ago, can influence, inspire and transform, our encounters as scholars today.

John Burn
Macquarie University

The A.R.I.D. Hypothesis: A River in Drought

My Ph.D. thesis investigated the ecological changes that may have occurred as a consequence of a river that did not flow with as great a volume as normal. It suggested environmental changes that may have occurred due to excess nutrients remaining in the river. After identifying which plants would benefit most from this new situation, the thesis went on to attempt to trace an environmental narrative in tomb decorations that could be an indicator of changing cultural responses to a river in A.R.I.D. times. As cultivation diminished, marshland resources became more important and cattle became a significant factor in the resource bases. At the same time, desert animals became more habituated to human contact and became an increasingly important part in offering procession scenes at the end of the Old Kingdom. The presentation will present a summary of these findings and, hopefully, identify future directions of investigation.

John Darnell
Yale University

Mineralogical religiosity in the ancient Egyptian deserts

Far from a landscape that inspired fear or dread, the ancient Egyptians viewed the deserts east and west of the Nile Valley as living and often sacred landscapes. Divinities, especially the goddess Hathor, had endowed the deserts with their mineral wealth, and the quarrying of royal and divine statues—even the simple stones for temple constructions—released the latent forces already present within the natural environment. Already during the Predynastic Period, the creation of rock art and inscriptions can represent an interplay between the skin of the rock and the skin of the human artists. Encounters of human and desert bodies made desert rock art and rock inscription sites particularly suited to performances involving interactions both human and divine, providing a basis for most inscribed material at Egyptian desert road sites. Parallels in other rock art traditions—particularly those of Australia—may help illuminate further aspects of the Egyptian deserts as living entities.

Ginger-Rose Harrington
Macquarie University

Is the price really what you pay? The psychology of resource unavailability during the First Intermediate Period

The Egyptological theory that the so-called “collapse” of the Old Kingdom was triggered by a short-term aridification event, although popular, is problematic at best. This work addresses the inexcusable reticence of this dialogue to the overwhelming evidence that the climatological events experienced during the First Intermediate Period, namely severe drought and agricultural hardship, were long-term effects of an extended period of landscape evolution to which the Egyptian people adapted over time. It argues, based on Commodity Theory and other psychological research, that the fundamental cognitive effect

of any resource's heightened unavailability is an increase in its value, and that, therefore, worsening agricultural yield-losses effectuated profound and measurable changes to Egyptian economic life at least by Dynasty Four. During this time, several economising architectural trends first emerge from the archaeological record, followed by a shift towards the frequent integration of at-risk foodstuffs into the offering cult via metaphor. Later, as agricultural hardships intensified, psychology also relates resource unavailability to higher rates of property crime during the First Intermediate Period. Thus, as part of a growing body of climatological research into the late Old Kingdom and First Intermediate Period, the present work advocates for greater integration of psychological theory into this discourse.

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Ten thousand years of human–environment interaction in a high altitude desert in the Southern Andes

The highlands of the Southern Andes in Jujuy (Argentina) have been populated since *ca.* 10,000 years ago and the area of Tres Cruces has been a strategic link between the highlands and lowlands in the flow of people, culture and goods. During that span of time, human interactions with the natural environment have been intense, since the first hunters-gatherers occupied the region but mainly since *ca.* 4,000 years ago, when agricultural practices (herding and farming) started, developed and intensified. Human impacts on the environment have increased since European colonisation of this still largely indigenous society. While aspects of the archaeological history are known, the study of the history of interaction with the environment is still rare and it is important to have an interdisciplinary approach to understand how human–environment interactions have shaped the natural and social landscape through time. Our project will explore how these processes occurred, applying earth science and archaeological approaches to different time intervals and across the landscape, capturing different archives of environmental data according with different land management and practices and how these set the conditions for the further use and availability of resources for subsequent generations.

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Strategic resources and large-scale industry in arid environments: Archaeometallurgical survey and excavation in Oman

Over 40 years of research has established southeastern Arabia as an important ancient source of copper in the Near East and beyond. While the development and spread of copper production technologies in ancient southeastern Arabia had a pronounced impact on the sociocultural and natural environment, we still know relatively little about the organization of production and its diachronic development. This problem is in part a function of periodic production, in which industrial-scale copper production during the early Iron Age is bracketed by intervals during the Bronze Age and later Iron Age/late Pre-Islamic periods

with little evidence of production. This paper presents key results of the 2019–2020 survey and excavations in Wadi al-Raki in the Al-Dhahirah Governate of Oman conducted by the Archaeological Water Histories of Oman (ArWHO) Project. The ancient industrial landscape of Raki, with evidence of industrial-scale copper production evinced by nearly 200,000 tons of copper slag and associated settlements, shows four bursts of production: 3100–2900 calBC, 1200–800 calBC, 700–950 calAD, and 1600–1700 calAD. Here we report on this new interdisciplinary research in materials science, anthracology, geochronology, pottery analysis, and satellite detection of ancient copper working sites.

Alex Mackay
University of Wollongong

Arid areas as innovation engines in human behavioural evolution: Evidence from Varsche Rivier 003

The archaeology of southern Africa has contributed disproportionately to our understanding of the evolution of human behaviour through the late Pleistocene. Depictions of and explanations for behavioural evolution in this region, however, are skewed by over-representation of data from humid, near coastal areas. The potential contribution of arid areas to the pool of innovations that enabled human survivorship and expansion has been largely overlooked. In this paper I will discuss findings from excavations at the site of Varsche Rivier 003, located in arid southern Namaqualand in western South Africa. The sequence suggests phasing of cultural connection with sites in more humid regions to the south. Periods of cultural differentiation are marked by the production of a range of novel technological items, including ornaments, unusual stone tools, and potentially water-transport technologies as early as 90 000 years before present. Arid areas of southern Africa were thus likely important sources of innovation during the evolution of human behaviour.

Justin Pargeter
New York University

Population size and connectivity do not correlate with increased technological complexity in Late Glacial (~18-12 kcal BP) South Africa

Many anthropologists have argued that population size is a strong predictor of technological complexity because larger populations can sustain the loss of skills without affecting overall complexity. Archaeologists have long drawn on these observations to argue that technological patterns in small scale societies would have been particularly vulnerable to the loss of skills thus explaining the erratic pattern of prehistoric technological complexity shown previously. While much work has been done to assess this demographic hypothesis with anthropological datasets and at large scales, little work has demonstrated its validity using archaeological data at smaller scales. Here I test the demographic hypothesis using lithic, fauna, and site occupation intensity data from the Late Glacial deposits at Boomplaas Cave in South Africa's semi-arid southern Cape region. My results show an uptick in regional population size as the southern Cape lost ~80,000 km^2 of productive foraging grounds due to rapidly rising Late Glacial sea-levels. Humans at the time were well-connected as shown through shared symbology on engraved ostrich eggshell and ostrich

eggshell bead exchange. Yet, they opted for simple and low cost lithic technological strategies using bipolar flake and bladelet production. This talk concludes by exploring the possible reasons for the mismatch between this archaeological evidence and the demographic hypothesis.

Molly Quinn
Macquarie University

The tools of life in an unforgiving desert: 13000 years in the Pilbara

Western Australia contains a wealth of Aboriginal cultural material, with sites extending back ~40,000 years, but the majority of Pilbara archaeology (80% of dated locations) is less than 4,000 years old. These sites offer valuable evidence for human occupation in this region, however, this data is inaccessible as most results are confined to the grey literature of mining companies. The majority of published work focuses on the earliest occupation (~40 kyr) and occupation during the last LGM (21-19 kya\r). As such, published research on temporal artefact use at rockshelters and Pilbara Aboriginal occupation between 19-4 kyr is limited, despite ample evidence. While there is merit in studying the earliest occupants, it is the continuous and prolonged occupation in the harsh environments of the Pilbara that provide the most interesting evidence for the lifeways and behaviours of these Aboriginal populations.

To increase our understanding of these populations, optically stimulated luminescence was applied to quartz from the burial sediments from two rockshelter in the Pilbara region. The burial sediments contain a wealth of stone tool use indicating use from 12-3 ka. The cultural material identified at the sites, combined with the temporal context suggests that rockshelters in the Pilbara were used intermittently as short term camping locations in the post-LGM period, providing a valuable insight into how Aboriginal people survived in the unforgiving Pilbara during this time.

Mike Smith
National Museum of Australia

Modes of adaptation: The long history of foraging societies in Australia's drylands

Deserts by definition have pronounced water deficits. With persistent aridity, extreme temperatures, and low or episodic productivity, deserts are widely seen as posing challenges for human societies. The notion of' 'adaptation' frequently arises during discussion of their archaeology without exploration of what this actually involves . In this paper, I review the history of socio-economic adaptation in Australia's deserts. Archaeological research shows that this arid continental region has been occupied by people for 50 millennia. Until British incursions in the 1860s, this occupation was entirely by foraging societies, living off the land, without the aid of ramified transport, food production and distribution, or elaborate water-harvesting systems. So, the question arises how does a foraging society adapt to a desert environment? This paper explores the ethnography to identify key adaptations to the aridity of this region, and then reviews archaeological evidence to look at the history of adaptation in these drylands.

Lloyd Weeks
University of New England

Understanding seasonal desert sites in SE Arabia's late prehistoric settlement systems: Insights from Saruq al-Hadid, Dubai

In the past decade, increasing attention has been paid to the archaeological record of human occupation in Arabia's desert interior in the Pleistocene and Holocene. This research has focussed particularly on periods of climatic amelioration that facilitated human utilisation of areas that are now hyper arid, for example the 'Holocene Climatic Optimum' [c. 9000-6000 BP] during which greater water and resource availability in the interior allowed for significant exploitation by Neolithic communities. However, the discovery of sites such as Al-Ashoosh, Uqdat al-Bakrah, Jabal Mudhmar, and Saruq al-Hadid in the desert fringes of SE Arabia indicates that human exploitation of the desert continued throughout the Bronze and Iron Ages and later, during periods of variable but occasionally marked climatic and environmental deterioration. This paper reviews the evidence from these sites, with a particular focus on persistent, long-term, seasonal occupation at Saruq al-Hadid, to assess the changing roles – economic, political, cultic – of desert sites in the society and economy of late prehistoric SE Arabia and to understand why individuals and groups continued to return to such superficially 'hostile' environments.

Michael Westaway
University of Queensland

Investigating Aboriginal trade, food production and village settlements in Channel Country, Central Australia

Aboriginal historian Bruce Pascoe's novel 'Dark Emu' has generated national debate in Australia by arguing that many forager systems across the continent should be redefined as agriculture. Pascoe has highlighted that the 'hunter-gatherer' label has played a key role in downgrading Aboriginal culture for the majority of Australians as one of naïve simplicity and primitivism. His arguments employ ethnohistoric accounts of Aboriginal people living in villages and translocating and cultivating plants. Few archaeologists have commented on his highly publicised views, but some historians have suggested he is "captivated by the enduring myth of progress – articulated as the move from foragers to farmers…. Dark Emu explicitly privileges the language of 'agriculture' above all else".[1]

Before dismissing Pascoe's hypothesis, it is important to ask whether Australian archaeology has developed the transdisciplinary methodological approach necessary to investigate this question.

I will present results of initial archaeological research undertaken in partnership with the Mithaka Aboriginal Corporation in Channel Country in Central Australia. Mithaka 'country' is uniquely placed in arid Australia archaeological studies. Located within the heart of Australia's vast inland channel system our investigations have revealed through remote

[1] Griffiths, B. & Russell, L. (2018). What we were told: Responses to 65,000 years of Aboriginal history. *Aboriginal History* 42, 31–54.

sensing, field survey and excavation a society that thrived in a classic boom and bust ecological system. I would argue it represents an archaeological landscape ideally suited to testing some of the key components of the Dark Emu hypothesis.

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Using archaeological field survey and satellite remote sensing to understand anthropogenic deforestation in ancient southeast Arabia

Research focused on the long-term impact of anthropogenic environmental change in arid west Asia has seen recent interest. In particular, several studies have shown that communities across this region developed novel strategies to mitigate resource stress, in particular with wood fuel sources, in order to overcome the devastating ecological problems associated with deforestation and environmental degradation. To the present day, mining and metallurgy is one of the most impactful on wood resources, even more so in arid environments where wood fuel is relatively scarce. Our study examines this problem by conducting targeted a survey of primary metal production sites in Oman, a region well-known for its deep history of copper production and connections to cultures across Arabia, the Persian Gulf, Mesopotamia, Iran, and South Asia. This paper will use data from our survey of Wadi al-Raki to test the impact of large-scale copper production on the local wood biomass availability. We use a combination of field survey methods, high resolution multi-spectral satellite remote sensing, charcoal analysis, and compositional analysis of copper production debris to estimate environmental impact over time. Our goal is to evaluate the role of anthropogenic deforestation which has already been suspected to be one the major contributors to change in the wood exploitation patterns across western Asia from Bronze Age to the Early Islamic Period.