

developed over the last few decades in the Pacific. One issue that they do not discuss is that of problems created by flat areas in the calibration curve, which often seem to lie at crucial points of interest. Development of U/Th coral dating, which gives very precise dates, will, as discussed, help with this problem in the tropical Pacific.

An area of general interest, given the widespread use of Pacific models of political organisation and development, is the comparative study of Pacific chiefly societies. The region reminds us that simple neo-evolutionary models or evolutionary theory can be challenged by the archaeology. Most of the chapters deal in one way or another with the topic. Burley and Addison's chapter on Samoa and Tonga makes for an interesting study. The tiny island of Tongatapu and its even smaller neighbours are contrasted with the islands of Samoa, some three times larger. Tonga is described in late prehistory as a near state or a maritime empire, while in Samoa we see only limited evidence of intensification and comparatively limited hierarchy and consolidation of power. In Tonga and in Hawai'i, as described by Patrick Kirch (Chapter 17), the increasing use of oral tradition helps us understand the importance of agency in the formation of these societies.

In addition to the archaeology chapters we have several contributions dealing with important related fields. Andrew Pawley offers a very brief but useful summary of Pacific linguistics. The recently deceased and much-missed geologist Bill Dickinson provides an introduction to coastal landforms in the Pacific, which informs on sea-level change and its effect on archaeological visibility. The final and very interesting chapter is on seafaring by Atholl Anderson. In it he challenges what he calls the 'traditionalist' model of Pacific seafaring. This is part of an ongoing debate that he has had with the other authority on the topic, Geoff Irwin. Readers should look at Irwin and Flay (2015) and most recently Irwin *et al.* (2017), which discuss early canoe remains from New Zealand.

References

- IRWIN, G. & R.G. FLAY. 2015. Pacific colonisation and canoe performance: experiments in the science of sailing. *Journal of the Polynesian Society* 124: 419–43. <https://doi.org/10.15286/jps.124.4.419-443>
- IRWIN, G., D. JOHNS, R.G. FLAY, F. MUNARO, Y. SUNG & T. MACKRELL. 2017. A review of

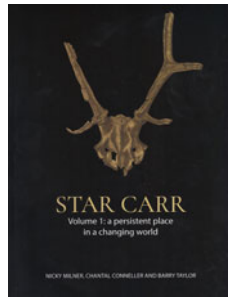
archaeological Māori canoes (Waka) reveals changes in sailing technology and maritime communications in Aotearoa/New Zealand, AD 1300–1800. *Journal of Pacific Archaeology* 8: 31–43.

PETER J. SHEPPARD

Anthropology, University of Auckland, New Zealand
(Email: p.sheppard@auckland.ac.nz)

NICKY MILNER, CHANTAL CONNELLER & BARRY TAYLOR (ed.). 2018. *Star Carr volume 1: a persistent place in a changing world*. Leeds: White Rose University Press; 978-1-912482-04-7 £32.68.

NICKY MILNER, CHANTAL CONNELLER & BARRY TAYLOR (ed.). 2018. *Star Carr volume 2: studies in technology, subsistence and environment*. Leeds: White Rose University Press; 978-1-912482-00-9 £46.99.



The Mesolithic site at Star Carr, North Yorkshire, is one of the most extraordinarily well-preserved sites of its age in Europe. Its initial excavation by Grahame Clark (1954) pioneered approaches to interpreting prehistoric archaeology; these two volumes represent the culmination of the most recent investigations at the site,

almost seven decades later, and present an insight into Mesolithic life on a scale far beyond that envisaged by Clark.

Visually, the volumes are stunning. They are richly illustrated throughout, with high-resolution photographs from the various campaigns; detailed plans of artefact scatters and occupation phases; and clear, uncomplicated data representation. One standout feature is the use of QR codes that link to digital media, such as the excellent simulation of the environment around Lake Flixton at the time Star Carr was occupied (Chapters 4 & 9). Moreover, the authors' commitment to ensuring that Star Carr remains widely accessible to all is exemplified through publication of the volumes both in hardback and as freely downloadable pdfs.

Volume I is dedicated to the history and interpretation of the site, and is divided into six parts. Part 1

© Antiquity Publications Ltd, 2019

introduces Star Carr, and places the significance of the site within the past and present understanding of the Early Mesolithic in Britain (Chapter 1). While this picture is painted perhaps a little bleakly, it serves to emphasise the major contribution that a truly holistic and multidisciplinary approach to archaeological investigation can make, not only to Mesolithic studies but to the discipline as a whole. This is traced through a detailed history of previous excavations and reinterpretations of Star Carr (Chapter 2), and the methodological approaches of the most recent campaigns between 2003 and 2015 (Chapter 3). The latter are described more fully in Volume 2, part 7.

Part 2 (Chapter 4) introduces the Early Holocene climate and immediate environment of the site, beginning with the formation of Lake Flixton *c.* 12 600 BC. This section goes on to discuss the changing environment and vegetation surrounding Star Carr throughout the course of its occupation, building upon detailed palaeoenvironmental records described in Volume 2, part 8.

Part 3 of the first volume presents an interpretation of the spatial patterning of activities conducted at the site. This begins by characterising the three dryland structures, which represent the earliest 'built structures' in Britain (Chapter 5), and the wooden structures that line the lake-edge (Chapter 6). The two distinct areas of dryland and wetland form the basis for a detailed consideration of the complex distribution of faunal (Chapter 7) and artefact (Chapter 8) assemblages at the site.

These spatial analyses prove key to untangling the multitudinous activities and aspects of Mesolithic life, played out over *c.* 800 years of occupation, which are brought together as a narrative in part 4. Chapter 9 traces the shifting patterns of activities over several generations, informed by Bayesian modelling of a comprehensive radiocarbon dating programme (Volume 2, Chapter 17). Chapter 10 considers the societal implications of the archaeological data, and how human relationships with plants, animals and stones affected the organisation of activities and treatment of the materials deposited at the site. This is supported by ethnographic evidence and a wealth of experimental projects that accompanied and informed the post-excavation process.

Part 5 situates Star Carr within the context of Early Mesolithic occupation in Britain (Chapter 11),

Southern Scandinavia and Germany (Chapter 12) through brief descriptions of the archaeological material recovered from major contemporaneous sites. It highlights the significant contribution of Star Carr in enhancing our understanding of rarely observed aspects of Early Mesolithic life in Northern Europe. Star Carr stands alongside only a handful of similar remarkably well-preserved sites that indicate distinct regional differences in hunter-gatherer lifeways across the Northern European plain at this time. The representation of activities at this site are certainly the exception rather than the rule.

Chapter 13 brings Star Carr into the public domain, describing the ways in which the excavation has widened participation and promoted public engagement with this little-known period of prehistory. A proposed framework to enhance the accessibility of the Mesolithic to a wider public audience is based on engaging and interactive museums displays in Scandinavia, Germany and the Netherlands. Similarly, the authors have developed an exceptional (and, again, free) online resource pack for primary schools, which is a great leap forward in ensuring this period of prehistory is successfully embedded within the education system.

Lastly, part 6 concludes Volume 1 by distilling the three main aspects of Mesolithic life that Star Carr has transformed our understanding of: a persistence of place, a people with strong belief systems, and crucially, a people with their own history.

Volume 2 provides the data to supplement and enhance the narrative of Volume 1. It is rigorously scientific yet accessible for non-specialists. Part 9 discusses the sedimentology of the site and, importantly, the precarious preservation conditions that threaten its future. The subsequent sections follow Clark's original format of animal (part 10), vegetable (part 11) and mineral (part 12), presenting the data for each of the various faunal, botanical and lithic assemblages. These are enhanced by an arsenal of scientific and experimental inquiry that has rarely been applied to Mesolithic excavations, including soil geochemistry (Chapter 21), traceological analysis of osseous technology (Chapters 24–26), phytolith analysis (Chapter 32), and microwear and residue analyses. It is noteworthy that the authors do not shy away from the fact that the delicate and unstable nature of the site has affected certain interpretations, and they readily acknowledge that there is still work to be done.

Clark's investigations are described as "an example of what can be achieved by asking new questions and examining new classes of data" (p. 18). These volumes fittingly uphold his legacy. Milner, Conneller and Taylor set a precedent for the capabilities that a forensic-level of archaeological investigation can achieve, and use this to interpret life in the Early Holocene on a truly human scale.

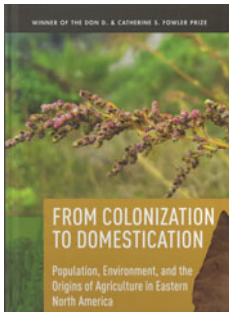
References

CLARK, J.G.D. 1954. *Excavations at Star Carr: an Early Mesolithic site at Seamer near Scarborough, Yorkshire*. Cambridge: Cambridge University Press.

STEPHANIE F. PIPER

Department of History, Classics and Archaeology,
Newcastle University, UK
(Email: stephanie.piper@newcastle.ac.uk)

D. SHANE MILLER. 2018. *From colonization to domestication: population, environment, and the origins of agriculture in eastern North America*. Salt Lake City: The University of Utah Press; 978-160-7816-17-1 \$55.



This volume, winner of the Don D. & Catherine S. Fowler Prize, is based upon the author's dissertation research. It showcases an innovative approach to understanding the 'deep history' of eastern North America from initial colonisation to the

beginnings of food production, using models developed within the field of behavioural ecology. This approach allows the author to explore the economic implications of different strategies of tool manufacture and maintenance in an environmental context. He is able to identify correlations between the frequency of tool replacement, hunting success, projectile point form and major changes in resource availability. The topic of the book then shifts to explaining how this correlation broke down as cultivation of weedy annuals took the place of broad-spectrum hunting as a response to resource scarcity.

Miller adapts the marginal value theorem, originally developed to predict the optimal time to spend foraging within a resource patch, to the problem of artefact manufacture and use. This 'artefact as patch' model predicts that a projectile point (for example) should remain in use until a better rate of hunting returns can be obtained by investing time in fashioning a new tool. One important implication of this model is that as long as returns from hunting remain relatively low, hunting tools will be maintained rather than replaced. After illustrating the utility of this model by applying it to two archaeological case studies, Miller turns to an analysis of projectile point size and shape during the Palaeoindian and Archaic periods in his study area in central Tennessee. He finds that periods of rapid tool replacement (indicated by metric proxies for the frequency of resharpening and maintenance) correlate with major environmental shifts that would have affected the availability of game, particularly whitetail deer. The Middle Holocene climatic optimum, for example, is associated with relatively large points that were discarded when they still had considerable use life remaining, an efficient strategy because hunting yields were high enough to offset the costs of tool manufacture. No evident environmental change marks the increase in biface size observed for the Late Archaic period, however. Miller argues that stone-tool manufacture had by this time become uncoupled from resource abundance as regional population growth placed limits on mobility. A strategy of intensification (including cultivation of weedy annuals and their eventual domestication) replaced the pursuit of less profitable or more distant prey as a response to declining foraging efficiency. The take-home message of the book is that population growth was an important factor driving initial food production in eastern North America.

The argument Miller presents here is convincing on many counts. It is an innovative approach that ignores (in a good way) the methodological and theoretical divides that often isolate specialists in archaeology. The book champions the use of behavioural ecology models, effectively illustrating their ability to advance knowledge in ways that the simple contemplation of data is unlikely to replicate. Unfortunately, the impact of this research is lessened somewhat by a suite of issues that often plague the transformation of dissertations into books. While the sequence of chapters is logical, the connections between them are sometimes difficult to grasp, as is the case for the end of Chapter 4. Its final paragraph alludes to plant domestication

© Antiquity Publications Ltd, 2019