BOOK REVIEWS

AMICK, DANIEL S. & MAULDIN, RAYMOND P. (EDS.). *Experiments in Lithic Technology*. Oxford: British Archaeological Reports, International Series 528, 1989. 276pp. £18.00.

Experiments in stone technology are not new in archaeology. They were at first limited to the replication of certain tool types considered important in archaeological assemblages. More recently the role of debitage in archaeological patterning and as an indicator of technological processes in lithics has come to the fore. *Experiments in Lithic Technology*, as we are informed in the preface, is a collection of thirteen papers which consider 'the role of experiments in lithic technology' and describe experimental methods used to study 'the causes and nature of lithic assemblage variability'. It achieves these goals with some success.

Although it is not common to find a book devoted to experiments in lithic technology, archaeologists increasingly use the expertise of accomplished stone knappers to help in the interpretation of lithic assemblage patterning. The strength of this book lies in the detailed description of experimental methods and procedures which will facilitate the accurate replication of the same experiments by others. This is further enhanced by the willingness of many of the authors to share their data on request. The extensive bibliography is also of great value.

The making and using of stone tools by lithic technologists, while enjoyable, are not ends in themselves. There must be an archaeological reason for making a biface, hafting a sickle blade, processing a hide or dismembering a carcass. The 'why' is as important as the 'how' in lithic experimentation. The first paper by Amick, Mauldin and Binford, addresses the importance of a good research design which should incorporate the continuous interaction between experimental and archaeological material and which should go hand in hand with statistical analysis of the data and research results. The papers which follow collectively exemplify these points.

Most of the papers are concerned with the recognition of reduction techniques in lithic debitage. There is general agreement that it is possible to differentiate between core and bifacial technique with some success. Problems arise in the distinction between different types of core techniques, or different bifacial techniques which prove more difficult to distinguish. Under highly controlled experimental situations with the same raw material, the same knapper, the same goal and the same tool kit, Mauldin and Amick show that variability may still occur. They claim that core shape and size cause some of this variability while Prentiss and Romanski add the effect of taphonomic processes and raw material properties.

How then can differences between reduction techniques and between different stages of reduction be recognised? Many of the authors use typological attributes such as platform preparation, dorsal scar count, cortex cover and a number of other variables familiar to all lithic technologists. In isolation individual attributes are of limited use but in combination they can provide more information on reduction stage and technique. Tomka's lithic analysis included both single and paired attributes and suggests that the latter may be a useful tool for distinguishing between bifacial reduction techniques. Ingbar, Larson and Bradley claim that their approach is nontypological. Typological approaches to debitage analysis, they say, look for

'constants' which may define reduction stage, core forms etc. Such constants are found in controlled experiments but not in archaeological assemblages. Finding typological techniques advocated by others of limited success, Ingbar, Larson and Bradley have begun work on a statistical regression technique which does not seek constants but compares reduction sequences with each other.

The complicated issue of assemblage variability, highlighted through experimentation, stresses the need for caution when making inferences from archaeological assemblages. Baumler and Downum, among others, comment on the large amount of debris and shatter which arises from all stages of reduction, some of which might mistakenly be interpreted as a 'retooling' area in an archaeological context. Magne looks at the effect of raw material availability on assemblage formation and uses some palaeoindian archaeological assemblages to demonstrate his model. Kuhn proposes that subsistence and mobility patterns of hunter/gatherer communities will be reflected in the degree of tool use, debitage and tools discard patterning in lithic assemblages. Using ethnographic and archaeological evidence to support his theory he suggests that groups which rely on seasonal availability of food resources will favour the manufacture of new tools over the heavy maintenance of old tools, hunters requiring tools that will not fail in crucial hunting times. Residential groups with a year long food supply have a renew-when-worn-out policy towards implement manufacture.

Further aspects of assemblage variability are disclosed in the ethnoarchaeological study reported by Pokotylo and Hanks. 'Memory culture' accounts by present day Indians of lithic procurement, use and discard indicate the role of ideology in assemblage composition. How can archaeologists distinguish and account for such ideological patterning?

As I have mentioned above, the strength of *Experiments in Lithic Technology* is the detail in which experimental procedures are described. This detail is well exemplified in the papers by Ahler and Odell. Ahler reports on experimental work which has been ongoing for 10 years and unlike the other authors (hard and soft hammer work by Hayden and Hutchings excepted) has built up a data base from many experiments. While Odell has defined the variables with great care and illustration, his report covers only a few experiments. Apart from Ahler, Hayden and Hutchings, all the experimental papers describe a very limited number of experiments, in most cases with one experiment for each tool or core type, or in the ground stone use-wear experiments by Adams with one experiment per material type. This is unfortunate. However, most of the experiments described in this book can be, and one hopes, will be replicated by the authors and other interested archaeologists.

In their introductory essay, Amick, Mauldin and Binford stress the importance of statistical methods in analysis. A number of statistical approaches are taken in the book. However, to be well understood, some papers require that the reader have a good background in statistics. It is possible that for this reason these papers will not be universally appreciated.

There are a number of misspellings (not Americanisms) and the photographs are not good. These are irritating but minor points. *Experiments in Lithic Technology* is a book which will be of use and interest to lithic technologists and those who are interested in experimental procedures in archaeology.

N. Moloney

BUCHANAN, W.F. *Shellfish in Prehistoric Diet: Elands Bay, S.W. Cape Coast, South Africa.* British Archaeological Reports, International Series 455, 1988. 257pp. £16.00.

As rubbish heaps go, the shell midden has a better-than-average chance of survival over the millennia. Being encased in shell and so protected from the elements, other organic contents are often extremely well preserved, and the shells themselves serve as important ecofacts. The realisation of this potential for archaeology is not exactly new.

"That they were hunters as well as fishermen is attested by the presence of the bones of wild animals . . . as well as the bones of certain birds". So wrote Edward S. Morse in 1879, following his pioneering work in Japan. Both he and his colleagues also grasped the role of variability in shellfish species as indicative of changes in salinity, water temperature, and sea level.

Since then many researchers have helped develop shell-midden research. Collectively they form a hard act to follow, hence the question arises as to whether this new book makes any significant contribution to the literature. I think it does, but not so much from the author's objectives (p.10), as from the detailed accounts of the climatic peculiarities of this area, the rich abundance of the shellfish colonies, and the episodic visitations of mussel poisoning.

The area described is between latitudes 35° to 33° South on the Atlantic side of the South African Cape. The offshore winds and consequent upwelling of cold water from the depths makes this coast one of the most productive areas in the world. Black mussels, some limpets and a few whelks provide most of the evidence in the middens. The preference for the black mussel is not surprising given its generous size of up to 15cms. long, and ease of gathering.

Extensive as the mussel beds are, the limpet population is claimed as being unequalled anywhere in the world, and the author goes on to make the interesting point that there has been no experimental archaeology anywhere concerning limpet gathering, cooking and eating.

The section on the lethal P.S.P. (Paralytic Shellfish Poisoning) from mussels makes grim reading as there is no preventative, no antidote and no immunity. The outbreaks follow the unpredictable phenomena of 'red tides' caused by massive overproduction of marine phytoplanktons with a resultant discolouration of the sea. "Red water outbreaks have been reported in most of the oceans and P.S.P. epidemics have a similar near-worldwide distribution" (p.83). As to human mortality on a massive scale, the author denies that any evidence exists for this in South Africa where the ethnographic record shows that observation of red tides is followed by an abstinence from mussel eating of about six months. However, he gives historical examples of high mortality rates among North American Indians. Obviously the more episodic the outbreak, the more likely it would be for the warning signs to go unnoticed by the gathers.

Although sampling strategies appear well-considered, the author freely admits to the partiality of the evidence within any shell-midden. The statement of aims is prefaced by a disclaimer, "We cannot say with any degree of certainty how important shellfish were to the prehistoric occupants of the area in terms of diet, foraging strategy, site location or mobility" (p.10). The author therefore concentrates mainly on the energy and nutritional assessments of the faunal

assemblages (bones of fish, sea and land mammals, and birds), together with an attempt at some environmental reconstruction.

The conclusions mainly consist of claiming to have added valuable information according to the aims expressed. While true for this specific area, it is hardly an original work providing insights to be applied elsewhere. In my opinion Kimio Suzuki's 1986 'Volumetry and Nutritional Analysis of a Jomon Shell-Midden' is a more systematic and better focused work. Curiously, Buchanan's extensive bibliography makes no reference to any English language paper by Japanese researchers whose work on their 3000 odd shell-middens began over a century ago.

E. Field.

Reference

Suzuki, K. 1986. Volumetry and Nutritional Analysis of a Jomon Shell-Midden. In: Akazawa & Aikens (eds). *Prehistoric Hunter-Gatherers in Japan.* Tokyo: University of Tokyo Press. 55.

GERHARDT, JULIETTE CARTWRIGHT. *Preclassic Maya Architecture at Cuello, Belize.* Oxford: British Archaeological Reports, International Series 464, 1988. 148pp. £10.00.

Gerhardt's report constitutes a major contribution to the study of early Lowland Maya Prehistory. Her documentation of "the development of the Formative architectural tradition at Cuello" and her examination of the "mechanisms which led from the earliest, presumably domestic, construction in the Early (Middle) Preclassic Period to the final phases of pyramid construction in the Late Preclassic Period" are also commendable for their organization as well as their content.

In the introductory section of the text she clearly states the focus of her thesis, provides a brief, but concise, outline of the research conducted at the site, and describes her research methodology and terminology. Subsequent chapters present a detailed description of the excavations in the main trench at Cuello, discuss the diachronic changes in architecture at the site and provide a functional interpretation for each structural modification. These are complemented by a host of well produced construction plans, line drawings and photographs.

The concluding chapter subsequently divides the Formative Period structures into type categories and includes tables with architectural information on each of the structures within the different categories. In the "Forward" Gerhardt also alerts the reader to the recent reassessment of the Cuello radiocarbon dates, which are listed in the appendices along with data on the burials and caches recovered in the main trench excavation.

The data contained in Gerhardt's thesis is without any doubt a major addition to our limited knowledge of early Middle Formative occupation in the Maya Lowlands. Furthermore, it should provide Mayanists with a major source of information for future comparative studies. The one slightly confusing, but minor, problem with the report is the use of non-sequential numerals for numbering the features within a given structure. With Structure 35, for example, feature numbers commence at No. 5, followed by No. 30, then No. 70, and so on (See p.83). If each structure had its own feature sequence that increased in ascending order (i.e. Str. 35,

Feature 1, 2, 3, etc.) it would be much easier to follow the architectural modifications described in the text, without having to constantly refer to the plan of the structure.

Gerhardt's use of the word "ceremonial" (see p. 3 and elsewhere) also ignores the recent practice in settlement studies which argues against the use of this and other functionally loaded terminology. The use of center instead of "ceremonial center" and non-domestic in place of "ceremonial structure" would therefore be more acceptable terms for classifying Cuello and some of its architectural types.

Finally, on page one she erroneously classifies Nohoch Ek and Barton Ramie as Peten sites. Both of these centers are geo-politically located within the country of Belize and it is questionable whether they were culturally affiliated with any of the Peten sites during the early Middle Formative Period. Regardless of this, these minor discrepancies do not detract from the main thrust of the thesis which, apart from contributing substantially to our overall knowledge of Maya cultural processes, also provides one of the most comprehensive reports on early Lowland Maya architecture.

J. Awe.

SUAREZ DIEZ, LOURDES *Conchas prehispánicas en México (Prehispanic shells in Mexico)*. Oxford: British Archaeological Reports, International Series S514, 1989. 262 pp. £16.00.

In this book, written in Spanish, Lourdes Súarez Díez offers a comprehensive and complete account of the shell material found during excavations of the burials in various sites located in the Rio Balsas basin of Guerrero. This is the first complete research in Mesoamerica concerning worked-shell artifacts . The author not only outlines the various aspects referring to the study of shells, from the acquisition of the raw material to the distribution of the finished product, but also deals in depth with the analysis of the material, and its typology.

The first part of the book, from chapter one to five, covers both general and specific considerations. In the first chapter, the author looks at the two main classes of molluscs found in archaeological excavations, together with their biological characteristics: the Pelecypods, or bivalves, and the Gastropods, or univalves. In the next few chapters the author deals with the main stages in the production of the worked-shell artifact, which consists of the following:

- the variety of manufacturing techniques used for the production of shell artifacts, together with the techniques of decoraction.
- the different methods used for the collection of the raw material from the sea, and its transportation and storage, with specific references to archaeological problems.
- a definition of workshops, with specific references to the manufacture of worked-shell artifacts, together with a list of the main criteria allowing their identification within an archaeological context.
- the problems of identifying trade routes for shells, with particular reference to the Rio Balsas area and to the various types of trade transactions.

Then chapter six describes the various usages of shells in Precolumbian times, in Mesoamerica and in the Southwestern United States. The author divides these usages into three main categories: tools, such as bowls and scrapers, ornamental pieces, such as pectorals, pendants and bracelets, and miscellaneous

usages, such as musical instruments and dyes. The importance of symbolism attached to shells is referred to in chapter seven, with specific references to post-Hispanic written records. The author explains how these can help in the interpretation of the usage of shell material within a religious and a secular context, and provides useful illustrations taken from the "Códice Florentino" and from the "Códice Borbónico".

The last section of the book consists of the analysis of the material and of its classification. The author deals with non-worked and worked-shell artifacts, which make up the bulk of the material. The classification of the last category is divided into fifteen different groups, based upon the function of the artifact (ornamental and utilitarian). A definition of the pieces within each group is provided within each heading, together with the techniques of manufacture and decoration. Then the author divides each group into sub-groups, according to the shape of the pieces and to the modifications they have gone through in the process of manufacture. Each sub-group, when necessary, is in turn split into several types and sub-types, in accordance with the variations in shape. Under each heading, the author has provided, when possible, the biological identification of the material. This classification is accompanied by good drawings which illustrate the material within each heading, and the process of manufacture of each group.

The appendix offers a useful and complete list of all the biological species identified in the sites, together with the faunal provinces they belong to.

This publication is a good reference book for anyone doing research on shells, not only Mesoamerican shells, but also those from other cultural areas. It gives a clear and coherent idea on all the aspects covering this type of research, together with most of the problems associated with it. In addition, the author stresses the importance of shell material in helping to reconstruct the archaeological past, and as a valuable source of information, such as trade routes and dating. Lourdes Suarez can be considered as a pioneer for giving the credit it deserves to this material.

Although the typology can be used as a good indicator for future classifications of worked-shell artifacts, I feel that there is a certain risk in relying only on the functional aspect of the artifact. To begin with, we cannot base our interpretation on the shape of the artifact, and relate it to the function it would have in present day society, such as "pectorals" and "pendants"; there is always a risk in relying on our own definition of the artifact. Secondly, the relationship of the artifact to the skeletal remains in a specific burial context may not in itself provide a sufficient indication of its function. For a more precise interpretation of the function of the artifact, comparisons with other burial contexts should be taken into consideration, backed by further evidence from written records, which the author does in one of the chapters, or by ethnoarchaeological sources.

Although I feel that the classification needs some minor modification, *Prehispanic shells in Mexico* is a book I will refer to in the future, and I can certainly recommend it. I suggest, however, that the author should consider adding a numbering to her classification. This could help the reader who has to refer to a specific category of worked-shell artifacts.

R. Novella