MISCELLANY

Environmental archaeology at Khok Phanom Di, Central Thailand: an update

Much progress has been made since my first report on this site was submitted for publication in 'Miscellany' in these pages last year (Circaea, **4**(1), 8-10). The archaeological stratigraphy of the midden (using the term very loosely) can be divided into Zones A, B and C (working from the base upwards) for the purposes of generalized description and discussion, and of these Zones B is now covered by five radiocarbon dates from the Lower Hutt laboratory in New Zealand, ranging from c. 3000 to 1500 B.C. The error terms, ranging from ±150 to ±820, are larger than one might desire but since the datings were obtained free of charge one can hardly complain! The Australian National University will have begun dating samples from Zone A (expected to range in age from c. 4000-3000 B.C.) in July 1987, and ten samples from pollen cores KL2 and BMR2 (collected north of the site) are currently being dated on the accelerator at Oxford.

Gillian Thompson has just finished a second period of fieldwork in Thailand as I write (April 1987), aimed at collecting plant material from mangrove and other environments to identify the plant macrofossil remains. She has been working at the Institute of Archaeology, London, during July 1987, extracting material from the coprolites.

Five of the larger coprolites were sent to me first so that I could extract what I needed for pollen analysis. These were all calcified and absolutely rock hard. I scraped out sufficient material from centre of the very largest and prepared this using hydrochloric acid, then a weak solution of tetra-sodium pyrophosphate followed by routine methods. It proved to be poor in pollen but had some phytoliths, monocotyledon leaf fragments and microfossil charcoal. There was nothing there to identify it positively as of human origin or to give much information of any value at all. I have sliced small sections out of the four other coprolites but need to find more information on preparation methods before proceeding any further. If anybody has any information or ideas about treating calcified coprolites I would be very pleased to know.

The large monolith from the sidewall of the excavation mentioned in the previous report is now in New Zealand with Prof. Higham and is being examined by a geologist as part of a PhD project. This is most fortunate as we did not have a geomorphologist with us as a member of the fieldwork team. I had intended to work on the phytoliths but a report by Pearsall (1986) based on phytolith analysis of samples from excavations in the Philippines, rice field soils and modern reference material of numerous locally collected plants, including rice, suggests that this technique is fraught with difficulties for South-East Asian work at least. Fujiwara is cited elsewhere (Rovner 1984, 3) as claiming that he can not only identify rice phytoliths from Japan but those of associated grass species so that comments on the type of cultivation can be made. Pearsall confirmed that rice produced distinctive phytoliths but those did not occur in the rice field soils which she studied or in samples from the excavation. She also discovered that some grasses have both the typical Panicoid and Chloridoid forms of phytolith present. So my work on phytoliths has, at least for the time being, been curtailed. Although the problems associated with pollen analysis are legion, it is a tried and tested technique capable of yielding useful results.

In all, four pollen profiles from the near environs of Khok Phanom Di are now available and research is progressing upon a fifth. Three of those already completed are from north of the site, as is the one (KL6) which I am currently working on. The one from south of the site (JB2) was prepared by Judith Brown. She has also analysed another two from areas west and south-west of the site and within a 10 km radius to provide some rudimentary perspective of regional variation in the lower Ban Pakong valley. Unfortunately she has now left The Queen's University of Belfast, deterred by the diminished employment prospects in the academic world, and might not write up her findings for a degree. This would be a great pity as she has put in considerable effort on the laboratory work. Nevertheless semi-detailed reports on core JB2 and my core KL2 have been prepared (Maloney and Brown in press), as well as on cores KL2 and BMR2 (Higham and Maloney in press). Nothing has been published on core FP3 yet but this does not differ greatly from BMR2, and core KL6 looks, from the first few pollen counts, as if it, too, is going to be similar, with Rhizophora and Bruguiera comp. dominating the spectra until late in the record when Ceriops sim.(possibly indicative of tree-dominated freshwater swamp or lowland dryland forest) increases, followed by an increase in grasses. JB2 differs in that it has a high Rhizophora content but very little Bruguiera in most samples.

Grass pollen rises earlier at KL2, which is located nearest to the site, and some consistency in the microfossil charcoal peaks of the various cores tends to suggest that the vegetation was burnt off before initial occupation of the site and in association with the increases of grass pollen. The lower 15-20 cm of the archaeological stratigraphy was very rich in charcoal and a sample from the 'natural' contained macro- and microfossil charcoal but no pollen or phytoliths. Some of the grass pollen has the right size and surface patterning to be from rice but it is impossible to be as sure as Tsukada et al. (1986) have recently been for material from Japan, where the number of grass species present in the local vegetation is likely to be lower and rice was growing on the site in question (Ubuka Bog in south-west Honshu). One thing that is almost certain is that, while rice macrofossils were present at our site from the very base of the archaeological record, the pollen evidence suggests that it could not have been grown around the site until later prehistory. This is not to preclude the possibility that it had actually been cultivated on a small scale on the mound itself or that it was present as a wild plant (and collected) or under cultivation further inland. A core from the south-west edge of the mound contains bands of inwashed charcoal and it is hoped to subject this to pollen analysis in due course so that the record from this side of the site can be elaborated upon.

Ken McKenzie (Riverina-Murray Institute of Higher Education, Wagga Wagga, Australia) has kindly examined the sponge spicules, foraminifera and ostracods contained in some KL2 samples, and he reports that most taxa associated with the period of mangrove pollen dominance are of nearshore marine affinity but all those present can also be found in deltas and protected embayments. This at least confirms that the site was near the sea (it is now c. 20 km inland), if not surrounded by it. Cores BMR2, FP3 and KL6 have a high percentage of extremely corroded pollen which may indicate that the mangrove was not growing nearby but some distance inland from the site, which may have been an island in a shallow sea, although a similar pattern might be expected if it was a levée.

Amphan Kijngam, who has been working on the fish remains from the site, found that large grouper (Fam. Serranidae) were very frequent until Zone C. Groupers come into the estuaries at the start of the wet season and so are only available seasonally. Coastal species such as shark, ray and squid also occurred but a significant quantity of freshwater fish, of which small catfish were most common, were present throughout the

several other places under aliases). Farm livestock remain anonymous. Gilbert White tells of a sagacious sow, incredibly multiparous, whose figure was such that she was unable to proceed to the boar on her own feet, but could summon the wheelbarrow in which she normally travelled on these occasions; however no name is mentioned. Perhaps if she had had one, her heartless owners would not have fattened her for slaughter when she finally became infertile in her mid-teens, and pronounced her very good bacon. True, there was a sow with a name, Slut, a highly skilled truffle hunter who was presumably required to come when she was called, and those medieval pigs that were employed as pointers in the King's Forests where dogs were outlawed must have had names. The members of a plough-team must have had names also, if only to swear at them properly - simple names usually based on some point of their appearance like the Somerset farm horses of my childhood acquaintance, Ginger, Whitefoot and the handsome, idle, " 'ave to get a braanch to 'ee" Boxer.

Blossom was an entirely different proposition. She made medical history. She was the cow who gave the cowpox to the milkmaid whose immunity to smallpox suggested the possibility of vaccination to Dr Jenner of Berkley. Her portrait was painted and adorns one of the walls in Dr Jenner's house, now an excellent little museum. Though portrayed in a pleasant rural background, the awkward stance of the beast suggests that she had been stuffed. She was an ordinary cow of the Gloucester breed, of modest milk yield but a regular calver. She seems to have been allowed to die of old age, and the only peculiarity about her (not borne out by the portrait) was that souvenir hunters managed to collect 3 pairs of horns from her. Those preserved in the museum are not those in the portrait.

Barbara Noddle

Following a semi-serious piece in the last issue of Circaea concerning the recognition of modern contaminants such as cigarette filters in archaeological deposits, Dr Michael Ryder has written to remind us that he published an article in Antiquity in 1974 (Vol. **48**, p. 6) with a similar sentiment; we reproduce it here, with the permission of the author and of the Editor of Antiquity:

Belgic cotton, or don't dig and smoke - a cautionary tale

Some time ago, I received from a Belgic excavation that shall be nameless some fibres from what had appeared to be some wool with two cut ends suggesting a "double-cut" made while the fleece was being shorn. It was thought that this might throw light on the introduction of a white, fine-woolled sheep into Britain.

My first reaction to the white colour with the naked eye was that the fibres appeared to be flax, since even non-pigmented animal fibres usually have yellow discoloration. Also the fibre length was too regular to represent a "double-cut" from a fleece.

Under the microscope the fibres appeared twisted like cotton, but had the pigment that is added to de-lustre synthetics. Also the diameter distribution was too uniform for wool. Another expert I enlisted thought the fibres might be silk, and at this stage since the sample clearly was not wool (my main interest) I withdrew from the investigation through lack of time.

The fibres were then sent to a textile testing laboratory which confirmed my suspicion that material was a modern synthetic, and identified the mass (which I had not seen in its entirety) as a cigarette filter.

Amusing as this may be, it wasted an appreciable amount of several experts' time, and strikes at the very roots of archaeology. If such a large object as a cigarette end can creep into an excavation un-noticed, what hope have we that really small finds such as insect parts are not modern intrusions?

It appears that archaeological excavation needs a form of hygiene akin to that in food preparation if not that of the surgical operation. Is it too fanciful to suggest that the archaeologist will one day, like the surgeon, work through a "drape" so that only that part actually being excavated is exposed?

Dr Ryder also informs us that he has moved to Southampton; his new address is 4 Osprey Close, Southampton SO1 8EX, U.K.

Archaeozoologia - A new scientific journal

Archaeozoologia, a new periodical whose first number has recently appeared, has been established in response to the need for an international journal for archaeozoology. Entirely devoted to this subject, it will be of interest not only to archaeozoologists, but also to other archaeological scientists, to archaeologists and to zoologists.

The first number (two will be published each year) is devoted to the publication of the papers given at the Fifth International Congress of Archaeozoology, which took place in Bordeaux last August. These papers, more than one hundred in number, cover a wide range of topics, including taphonomy, seasonality, domestication, etc., and provide an invaluable survey of current research in the field.

Hereafter, Archaeozoologia will become an international forum for zooarchaeology, publishing papers, notes and reviews. Most of the papers and other contributions will be in English, the remainder in French with detailed English summaries.

The following papers and (English) summaries (rendered exactly as in the original) appeared in the first issue of Archaeozoologia:

A revision of the faunal remains from two Central Sudanese sites: Khartoum Hospital and Esh Shaheinab

Joris Peters

Comparison of the fauna from two Central Sudanese sites: Khartoum Hospital (KH; 8 000 - 7 000 B.P.) and Esh Shaheinab (ES; 6 000 - 5 000 B.P.). Hunter-gatherers from KH are compared with pastoralists from ES with large and small livestock (goat sheep) and dog.

The faunal remains of Paso in Northern Sulawesi, Indonesia

Aneke T. Clason

A study of bone remains of a shell-mound of approximately 7500 B.P. occupied during 3 to 500 years. The principal species are Sus celebensis and Anoa depressicornis. A description of the bone remains and comments on the diet of the human group.

Vizcacha (Lagidium viscacia) and Taruca (Hippocamelus sp.) in early southandean economies

Guillermo L. Mengoni-Gonalons

The bone remains from a cave of northern Argentina (9 900 to 9 200 B.P.) are described and the subsistence strategies on both sides of Andes are compared.

Buffer resources and animal domestication in prehistoric northern Chile

Brian Hesse

The author, referring to Wilkinson's definitions, attempts to join the frequency of buffer resources with the domestication process using data from of 11 sites in the region of the salar Lake de Atacama (Northern Chile, 11 000 to 2 500 B.P.).

The incidence of these resources is low in the sites of hunters and high in the sites of breeders. Their exploitaton is a sign of an evolution toward domestication.

Variations of tooth size of moose (Alces alces L.) during six millenia in Northern Sweden

Elisabeth Iregren

An example of how a mammalian species may vary biometrically during different climatic conditions

The dimensions of the teeth of todays' moose are compared with those of prehistoric moose (4 500 to 2 000 B.C.). The decreasing size of the moose since the climatic optimum is confirmed.

The Prejlerup Aurochs - an Archaeozoological Discovery from Boreal Denmark

Kim Aaris-Sørensen and Erik Brinch Petersen

Discovery of an Auroch Skeleton at Prejlerup (North West Zealand, Denmark) in 1983, dating from 8410±90 B.P., associated with 15 microlithes. It concerns a very large male of 18-20 years of age. Nine to twelve arrows hit the animal, none of which were fatal.

New dates for old animals: the reindeer, the aurochs, and the wild horse in prehistoric Britain

Juliet Clutton-Brock

Summary of progress in a dating study of the Reindeer, the Aurochs and the Wild Horse with the goal to determinate the time of extinction of these species in Great Britain (7800 B.C. for the Reindeer and the Horse, Bronze Age for the Aurochs).

Remarques préliminaires sur les chevilles osseuses des boeufs de l'Italie nord-orientale

Alfredo Riedel

The preliminary results of a study of the variation of horn-cores from the sites of Veneto, Friouli, Trentino and South Tyrol, dating from recent neolithic to the middle ages, are presented. The size at the withers decreases from the Neolithic (116 cm) to recent Bronze (106 cm) and increases again during the Iron Age.

Its maximum size is reached during the Roman epoch and decreases again in the Middle Ages. The size increase is less marked in the mountain zones of Tyrol.

The caracters of different horn-core ensembles are described. The differences at the same site, between the ox and the bull are extremely variable. The differences become important from the beginning of the Iron Age.

The form and dimension of horn-cores seems to be a good racial character. The relation between the horn-core dimensions and the size at the withers is not shown, nor the existence of different races in the same region, at the same time.

Introduction de l'Ane (Equus Asinus) au pays basque

Jesus Altuna et Koro Mariezkurrena

The history of the introduction of the donkey on the Iberic Peninsula is not well known

The oldest presence in Andalousie comes from sites in the region of Malaga (Uerpmann); in the site of Cerro de la Tortuga, there was 130 remains discovered dating, with certainty, to the Phoenician epoch. Recently, nine donkeys rests were found at the level of Celtiberiques de la Hoyo (in Basque country). The donkey had thus spread rapidly to all parts of the Iberic Peninsula.

It is possible that the donkey's appearance is even older if the discovery of its remains unfortunately unmeasurable, at the level of Iron Age I on Castillar de Mendavia (Navarre), were confirmed.

Between Andalousia and the Basque country, we can, whatsmore cite the donkey remains of Barchin del Hoyo (Cuenca) from the IV century before Christ.

Archaeozoology in Australia: the tendency to regionalization

David Horton

Archaeozoology in Australia has a number of unique qualities which have resulted from the combination of it's archaeology and it's fauna, both of which have a number of unusual features. Solutions which have been developed for the problems encountered may prove useful to archaeologists in other parts of the world and, conversely, work done elsewhere may prove useful in Australia if adapted to suit the particular conditions in this Continent.

The contents of the first regular number (Vol. 1: 1) will be:

1. Methods: **Wietske Prummel** Atlas for the identification of foetal skeletal elements of cattle, horse, sheep and pig. Part I.; **Jane C. Wheeler and Elisabeth J. Reitz** Allometric prediction of live weight in the Alpaca (Lama Pacos L.).; **Laszlo Bartosiewicz** Cattle metapodials revised: A brief review.; **Philippe Morel** The fragmentation of bone material: A definable mathematical process.; **Douglas V. Campana and Pam J. Crabtree** A language computer program for the analysis of faunal remains from the response of Archaeozoology.

2. Animal Species: **Manfred Teichert** Brachymel Dogs.; **Louis Chaix and Annie Grant** A study of prehistoric populations of sheep (Ovis aries L.) from Kerma (Sudan).

3. Man's role in assemblage formation: **Marylène Patou** Les marmottes, animaux intrusifs ou gibier des préhistoriques du Paléolithique.

4. Environment: **Iain Davidson** Size, climate and exploitation: size changes in the Eastern Spanish late Pleistocene fauna.

5. Strategies: **Alice M. Choyke** The exploitation of red deer in the Hungarian Bronze Age.; **Ina Plug** Iron Age subsistence strategies in the Kruger National Park (KNP), South Africa.; **Elisabeth Wing** Integration of floral and faunal data from Hontoon Island, Florida.

6. Seasonality: **Richard W. Yerkes** Seasonal patterns in the late prehistoric fishing practices in the North American Midwest.

7. Domestication: **Elisabeth A. Voigt** The dispersion of domestic stock into Southern Africa. **Sandor Bokonyi** Domestication and variation.

8. Traces and butchery techniques: **Sandra L. Olsen** Magdalenian reindeer exploitation at the grotte des Eyzies, Southwest France.

9. Social life: **Gillian Clark** Faunal remains and economic complexity.

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