

EXCHANGE AT KHOK PHANOM DI AND SOCIAL ORGANISATION

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Khok Phanom Di was situated at the estuary of the Bang Pakong River and was occupied between about 2000-1500 BC. This river is one of the major distributaries which runs across the Central Plain of Thailand and the site's estuarine location would have been one of the richest in the biosphere (Odum 1971; Russel-Hunter 1970; Whitten *et al.* 1984). Like many such sites located in the alluvial lowlands of a major river, it had easy access to naturally regenerating food species but was poor in terms of certain important raw materials.

The occupants of the estuary consumed large quantities of anadromous fish. Over 100 species of shellfish have been identified, dominated by the mudflat species *Anadara granosa* but including many from the mangrove forest. The remains of crustacea and turtles and the rarity of land mammals confirm a marine-orientated subsistence pattern. Rice was also abundant, but the remains are under analysis and whether it was collected from wild stands, cultivated or a combination of each has to be determined. There was also an abundance of some local raw materials. The site commands deposits of clay suitable for making pottery vessels and many artefacts were fashioned from clay, shell, bone and turtle carapace. There was, however, a rarity of virtually all types of stone and probably of high quality shell used in the manufacture of jewellery.

Although this site is only 10 km south of a copper source, no metal objects were found during any of the excavations there (Suchitta 1984; Noksakul 1984; Pisonpong 1984; Higham 1989). This absence of copper-based implements is puzzling since Pigott has identified clear evidence of copper working at Non Pa Wai in association with radiocarbon dates in the second half of the third millennium BC.

During seven months in 1985 a 10x10 m square located in the central area of Khok Phanom Di was excavated to a depth of 6.8 m, when the natural substrate was reached. It is evident that the area excavated witnessed changing activities. The lowest context, layer 11, contains numerous shell and ash middens, the latter being interpreted as the remains of firing pottery vessels on a wooden raft. The number of clay potter's anvils and burnishing pebbles supports this view.

Not long after the site was first settled the first half-dozen burials were placed scattered across the square with very few grave goods. The mortuary ritual, however, remained basically the same for the ensuing 20 generations. The corpse was sprinkled with powdered red ochre, wrapped with some grave goods in a beaten cloth shroud and laid on a wooden bier with the head directed to the rising sun.

There are seven mortuary phases, each revealing modifications to this burial rite. The variety and quantity of grave goods also changed with time and included shell bead necklaces, bangles and anklets, strings of beads sewn to clothing, shell head ornaments and discs worn on the body, pottery vessels, stone adze heads, carved turtle carapace ornaments, potter's anvils and stone pebbles used for burnishing pottery vessels. The graves from mortuary phases 2-4 were disposed in clusters thought to have been located in wooden tomb structures ringed by the remains of feasting. Each such cluster contains the remains of adult males and females, children and infants. Mortuary phase 5 saw a break with tradition in that only four very rich interments were encountered, a male, a female and two infants. From the following phase, however, two further groups were found, one very rich and the other equally poor. It has been argued that these successive phases can be linked into two enduring and four less successful descent groups.

Over the twenty generations represented, there is no evidence that any one of the descent groups became consistently richer than the others in terms of grave wealth. Rather, we find that certain individuals were interred with unusually large assemblages of jewellery and pottery vessels. Under these circumstances, infants interred alongside rich adults were also likely to be wealthy and the goods were often similar in style and placed with the body in the same manner. This we see as reflecting successful parents displaying their personal rank through provisioning their dead offspring with impressive grave goods.

The clearest example of this is seen during mortuary phase 5, when an adult woman was buried with a most impressive assemblage of grave goods, including 120,787 shell disc beads, 8-10 pottery vessels, a shell bracelet, headdress and two horned shell discs on the shoulders. Her body was placed in a very large grave under a heap of clay cylinders thought to represent stored clay destined for conversion into pots. The adjacent grave of a 15-month-old infant mirrors in most respects that of the adult. Again, the grave is bigger than would have been necessary to house the corpse. The infant was accompanied by a similar shell bracelet placed over the left wrist, 12,247 shell disc beads, 4 pottery vessels and a similar heap of clay cylinders. Of particular significance is the presence of a clay anvil and two burnishing stones beside the adult's right ankle, and a matching miniature anvil with a burnishing stone in the corresponding position in the infant's grave.

Indeed, it is important to stress that only females and infants were found with pottery anvils used for shaping pots at Khok Phanom Di. Adults of both sexes, infants and children were found with burnishing stones. Just as we find that women became numerically dominant in the two surviving genealogies during mortuary phase 4, we also find that the males were accompanied by large, ornately-carved turtle carapace ornaments thought to have been either breast plates or codpieces. Despite the extreme wealth of burials 15 and 16 described above, however, we find that their descendants were

poorly equipped with grave goods, while their contemporaries in the other surviving descent group became wealthy. Indeed, the latter were interred under an impressive rectangular mortuary structure. This again leads us to believe that rank and status were attained through personal success rather than being ascribed from birth.

Before returning to the social organisation represented by the mortuary remains it is necessary to consider in rather more detail the evidence for exchange, for it is held that each is explicable only in terms of the other. There were no local sources of stone. In his analysis of the stone artefacts from Khok Phanom Di, Pisnupong (1988) has identified a range of artefacts and their most probable sources. Foremost were the adzes. From the initial occupation of the site, when two caches containing adze heads were laid down, the occupants obtained a wide variety of adze types made mainly from fine volcanic sandstone, andesitic tuff and volcanic siltstone. These were constantly resharpened and reshaped on fracture until only the stumps of the former artefact were left. It seems likely that such adzes were in short supply. The sources for these stones all lie in the surrounding uplands drained by tributaries of the Bang Pakong River 60-100 km to the east and northeast of Khok Phanom Di.

Sandstone abraders and grinding stones were used for a range of functions, including resharpening adze blades and grinding ochre. The sources lie just over 100 km to the north and north east, again in the uplands drained by the Bang Pakong River. Quartzite and quartz-mica schist used for pounders and burnishing stones have been sourced to the uplands 50 km to the southeast of the site. A series of leucogranite hoes were encountered, the source being in the Chonburi area 50 km to the south. The same area also supplied the shale used to powder bodies as part of the mortuary rite. Biotite granite and rhyolitic tuff were also found at the site and, once again, the sources lie in the uplands to the east. Vincent (1989) has also noted that the sand used as a clay temper during his ceramic period 1 is exotic, probably coming from the same granitic source which supplied the hoes.

Vincent's analysis of the clay used in pottery vessels has shown that, while most were made from local raw materials, a significant proportion of the clays were exotic. He has pointed to a wide range of sources from within a radius of at least 100 km (Vincent 1989). One pot in twenty from earlier burial contexts was exotic, a figure rising to 16% during the later mortuary phases.

We are on less certain ground when turning to the shell jewellery. The immediate environment of the site was dominated by a muddy estuary and mangrove shore. This is not conducive to the formation of the coral reefs which harbour the species of *Tridacna*, *Conus* and cowries used for ornamental purposes at the site. Indeed the corals found at Khok Phanom Di come from *Porites*, *Goniopora* and a member of the Faviidae, all of which, as Anuwat (pers. comm.) has pointed out, tolerate turbid water as found near the mouth of mangrove distributaries and form non-reef individual colonies. This does not rule out access to coral reef communities, particularly by sailing boat. There are, for example, coral reefs off the island of Kho Si Chang located about 50 km to the southwest across the upper Gulf of Siam. It is also clear that some shell jewellery was manufactured

at Khok Phanom Di since wasters and cut shell have been found. At present, it is considered at least possible that shell, being obtained by boat from the site, may be counted as a local resource. So, too, was the turtle carapace used in the manufacture of bracelets and breast plates.

Khok Phanom Di occupied a most advantageous position, giving access by boat not only to the resources of the hinterland but also to those of the coast. It was also, from first to last, a centre of pottery production and Vincent (1987) has stressed that the vessels used in mortuary ritual can be classed as masterpieces. If we also view some of the shell jewellery as being locally manufactured it is possible to see the site as being a central node in an exchange network which stretched at least 100 km to the east and across open water to the west. The occupants were able to feed into this system a number of prestige goods the manufacture of which would have called on a high degree of specialisation. Foremost among these were the ceramic masterpieces, but it is also considered likely that more utilitarian wares were also exchanged.

The association of only women and infants with ceramic anvils used in the shaping of pottery vessels has been noted. It was also the case during mortuary phases 4-6 that women dominated numerically and attained considerable, in one case outstanding, wealth. These rich women and some infants were interred with anvils which bear owners' marks according to Vincent (1989). The inference from this situation is clear. Women fashioned the pots, and possessed the necessary skill to produce superb objects. When all the available evidence is taken into account, it has been concluded that the community was increasingly organised on matrilineal principles. This is entirely logical, given the imperative to retain in the community those most able to produce objects for prestige exchange. This situation recalls more recent, ethnographically-documented instances of what we have termed a "Big Woman" system.

While it is usually males who bid for status through exchange in the traditional Melanesian Big Man societies, females are not excluded. Thus, the women of Sudest Island in the Louisiade Archipelago can aspire to prestige and power through success in ceremonial gift exchange (Lepowski 1983). The women of Sabari Island in the eastern Calvados chain of islands mount their own expeditions and seek high rank in the exchange system (Battaglia 1983). One objective of such transactions is to achieve esteem in the provision of mortuary feasting. Central to the system are access to water transport, exploitation of localised valuables and conspicuous consumption.

As far as archaeological evidence permits these conditions are met at Khok Phanom Di. There is no doubting water transport or conversion of local materials into desirable objects. The mortuary record discloses considerable mortuary ritual, not only through the richness of the accompanying goods but also through the associated evidence of consumption of food in the vicinity of the collective wooden tomb structures. The size of the site is matched by only one other in the Bang Pakong Survey Area, that of Khok Karieng. Significantly perhaps, this second site also commanded an estuarine location. The site survey undertaken in 1984 also revealed a series of much smaller and lower mounds which contained burials. These are set either in the hinterland behind the coast

or in coastal rather than estuarine locations. At present, we hypothesise that the settlement pattern comprised large sites which dominated the nodal estuarine positions with smaller and poorer settlements in their respective hinterlands. This hypothesis is currently being tested, but the likelihood that location and control of exchange resulted in a concentration of high status in a central location, even by 2000-1500 BC, is sustained by Irwin's review of location, social dominance and settlement size in the Trobriand Islands (Irwin 1983).

The particular conditions of a natural food abundance and female expertise in pottery making are seen as factors which contributed to the development of a matrilineal social system. In such a system, the survival of females to the next generation is crucial. Despite their resource abundance, central location and success in a prestige exchange network, the occupants of Khok Phanom Di struggled for survival due to endemic disease (Tayles and Houghton, pers. comm.). Some descent lines seem to have failed. The community itself also abandoned the site not long after the silting of the estuary and/or a slight fall in sea level which removed easy access to marine food sources. We are, therefore, afforded a glimpse of a community which prospered against adversity during its five centuries at this site. The clarity of the social, technological and environmental data provides those working in Mainland Southeast Asia with some intriguing possibilities for further research.

Firstly, we can identify what we might call the Khok Phanom Di exchange sphere. It incorporated the Bang Pakong Valley to its headwaters, as well as coasts and possibly islands of the upper Gulf of Siam. If historic information on exchange is any guide, the importance of riverine transport cannot be overemphasised. Emphasis of the matri-pole was, it is argued, influenced strongly by the craft specialisation that developed at the site. It would be wrong to see the males as purely ornamental, however. They could well have attempted to manipulate or control their sisters or daughters. Even if they did, however, the women remained of critical importance for group survival both socially and biologically and no males in any descent line achieved hereditary rank.

When we turn to the wider scene in the Bangkok Plain we find that the communities which controlled the copper sources in the Khao Wong Prachan valley were already familiar with copper casting even a few centuries before the settlement of Khok Phanom Di, although this anticipates that the radiocarbon dates from basal Non Pa Wai are confirmed by further determinations. This situation can be expected to illuminate the pace and nature of the diffusion of copper from its foci of innovation. Given the wide extent of the Khok Phanom Di exchange sphere, for example, it is most intriguing that not one copper artefact has been found in any of the four excavations which have been undertaken. A further avenue for research lies in the social organisation during the period between 2500 and 500 BC in Central Thailand. Hitherto, rather simple models involving varying degrees of ranking have been advanced (Higham and Kijngam 1984; Bayard 1984). The situation now seems to have been much more complex and variable, for if we find a tendency towards a matrilineal "Big Woman" organisation at a nodal estuarine

potting centre, what might one expect at an inland community of specialist copper workers?

ACKNOWLEDGEMENTS

I wish to acknowledge the assistance of all those contributing to the final report on Khok Phanom Di, and to the Ford Foundation, Earthwatch and its Research Corps, the Wenner Gren Foundation, Shell Company of Thailand, Universities of Cambridge and Otago and the New Zealand University Grants Committee for financial support. My thanks are due to my co-director, Rachanie Bannanurag, who represents the plural in the "we" employed in the text above. The staff of the Fine Arts Department and National Research Council of Thailand are thanked for all their support and help, particularly Taweesak Sennanarong, Pisit Charoenwongsa, Amphan Kijngam, Pirapon Pisnupong, Anat Bamrungwongse, Metha Wichakana and Praphid Choosiri.

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