

THE DA BUT CULTURE: EVIDENCE FOR CULTURAL DEVELOPMENT IN VIETNAM DURING THE MIDDLE HOLOCENE

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ABSTRACT

Due to its differences from the Hoabinhian and Bacsonian cultures, the “Da But culture” has been generally accepted as a separate entity by most researchers. Through June 2002, a total of eight Dabutian sites were known. These include a series of sites with similar cultural components, including Go Trung, Con Co Ngua, Ban Thuy and Lang Cong, as well as Da But itself. Researchers can recognize a Dabutian site through its distinctive pottery, polished stone tools, and a unique adaptation to coastal swamp and lake areas. These distinctions separate the Da But culture from the earlier Hoabinhian and Bacsonian cultures.

A BRIEF DEFINITION OF THE DA BUT CULTURE

The “Da But Culture” draws its name from the Vietnamese archaeological site of Da But, first excavated in 1926-7 by the French geologist E. Patte (1932). Dabutian sites include Da But, Con Co Ngua, Ban Thuy, Lang Cong and Go Trung in Thanh Hoa Province, as well as Hang Sao, Dong Vuon and Hang Co in Ninh Binh Province. Most recently, in July 2002, more Dabutian sites in Ninh Binh Province have been recovered by a new expedition of the Institute of Archaeology in Hanoi (Bui Vinh, pers. comm.).

Compared with the Quynh Van culture, the Cai Beo group and the Bau Du group, the Da But culture provides the best evidence for human adaptation in Vietnam during the high level sea stand of the Middle Holocene. The Da But culture is considered unique due to its divergence from an inland Hoabinhian-type subsistence strategy towards a new, complex coastal strategy occurring in varied environmental niches: swamps and lakes at the bases of mountains, and deltas with levees extending to the sea. Based on present knowledge, the distribution of the Da But culture is limited to the northern and southern sides of the Tam Diep limestone massif in Thanh Hoa and Ninh Binh Provinces, although I have recently suggested that Dabutian settlement might also have occurred northwards in Hoa Binh, Ha Nam and Ha Tay Provinces, where limestone formations were also flanked by early Holocene deltas. Several discoveries of Dabutian

ceramics have been reported to the south at Xom Tham in Quang Binh Province (e.g., sherd 32-94-214 in the Musée de l’Homme, perhaps a Dabutian potsherd, excavated by Colani in the cave of Xom Tham, Quang Binh Province). Even in some “Neolithic” sites of southern Guangdong (China), Dabutian potsherds have been documented. However, we can only confirm the real identity of such sherds with Dabutian examples after compositional analysis has been undertaken. In the evolution of Dabutian ceramic types, Bui Vinh has established two phases. The first has impressions of parallel unspun fibres, and only in the later phases does real cord marking occur, for instance in the upper layer of Go Trung (4700 uncal. BP; Nguyen and Nguyen 1979; Nguyen 1989; Bui 1991). Cord marking also occurs in the Lang Cong site, dated to 4900 uncal. BP (Bui 1992, 1993).



Figure 1. Pottery from Da But

The Da But culture may be partially recognized by a presence of edge polished stone tools, as (to a lesser degree) in Hoabinhian and Bacsonian sites. In later stages of the Da But culture the stone tools become smaller and polished on all surfaces. This Da But technology resulted in some of the earliest complete, polished quadrangular tools in Vietnam, at c.5500–5000 BP.

Da But populations subsisted mainly by collecting plants and hunting. However, they were relatively sedentary; long-term, permanent residences were established as open air settlements. The best evidence for Da But sedentism is the presence of cemeteries. At Con

Co Ngua, for example, more than one hundred skeletons were found buried in cylindrical pits in an area of about 200 square meters. This may be the first time in Vietnam that deceased individuals were collectively buried in the villages in which they were living. The oldest burials at Con Co Ngua predate 6000 BP (Nguyen Viet et al. 2002b).

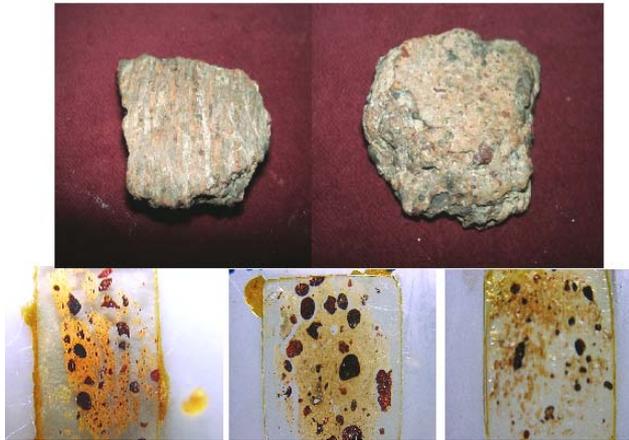


Figure 2. Top: pottery from Con Co Ngua. Bottom: sections to show coarse temper; left to right, Xom Trai Cave, Con Moong Cave and Da But.



Figure 3. Dabutian-type vessel, Man Bac, Ninh Binh Province

In terms of subsistence, there were three Dabutian food strategies - exploiting molluscs (mainly *Corbicula*) and mammals in swamp and lake environments (Da But, the lower layers of Con Co Ngua, Ban Thuy and maybe Dong Vuon); exploiting food resources in neighbouring mountainous environments (Lang Cong, Hang Sao, Hang Co); and fishing with nets and stone weights (Go Trung and the upper layers of Con Co Ngua). The second strategy was probably used on a seasonal basis only, at times when the food resources of swamps and lakes were minimal. In terms of the third strategy, the stone weights recovered from Go Trung and Con Co Ngua are the oldest in Vietnam. Several Hoabinhian sites yield fish bones

(e.g. Dong Cang cave, where they accounted for 30% of animal bones), but no Hoabinhian net weights have ever been recovered. It appears that Hoabinhians were fishing with direct tools, perhaps spears, and not nets.

At the Dabutian site of Go Trung, thousands of large fish bones of marine species were found, accounting for more than 80% of the animal bone total. Almost 200 stone weights were also recovered, of sandstone or other soft stone. They are egg-shaped and have transverse grooves for fastening. The introduction of net weights thus appears to have been a Dabutian technological achievement.

DABUTIAN CHRONOLOGY

At present, there are 12 radiocarbon samples, from four Dabutian sites, measured in different laboratories (Table 1). The samples are mainly *Corbicula* freshwater/estuarine bivalves, and one study (Thong et al. 1989) suggests that such shells tend to give ages that are 300–500 years older than same-layer samples of charcoal or land snails (*Cyclophorus*). The 1986 *Corbicula* samples from Da But (DB86) were measured twice for the inner and outer layers of shell, and the dates quoted here are from the inner samples. The two AMS dates were provided by Dr. Chen Chung-yu of Academia Sinica in Taipei, from his excavation at Lang Cong in 1998.

According to Patte's (1932) report, the cultural layers at Da But were up to 6 to 8 meters thick. But even now, despite three expeditions (1932 by Patte, 1974 by Luu Tran Tieu, and 1986 by Ngo The Phong), archaeologists have not yet reached the earliest occupation layers, due to the high water table. The radiocarbon samples taken in 1974 and 1986 came from upper layers of shell midden. Dabutian potsherds occur in the upper Hoabinhian layers in Con Moong cave, at a date close to 8500 BP, so I have suggested that Da But itself could have been occupied before 8000 BP (Nguyen Viet 1989, 2002a). However, I accept that that the Da But culture flourished mainly during the Holocene sea transgression at about 6000 BP, as indicated by the main concentration of C14 ages.

Overall, the Da But culture reveals three stages of development:

1. It was characterized initially by the exploitation of food resources in swamps and lakes adjacent to mountains. Biological evidence includes *Corbicula* shell middens, associated with bones of water buffalo and cattle. Pottery is simple, and impressed with fibres, but not spun cords. Stone axes are only edge-ground. The sites of Da But and Ban Thuy typify this early phase.
2. During the mid-Holocene phase of high sea level (c.6000-5500 BP), marine mollusc exploitation continued apace, as at Con Co Ngua. The upper layers of Da But, the lower levels of Con Co Ngua, and the site of Hang Co (Ninh Binh province) represent this phase. There was no change in the ceramics, but stone axes became more extensively polished, and smaller. The oldest quadrangular- sectioned adzes occur during this phase.

Table 1. Radiocarbon dates for Da But sites.

Sites	Lab. No.	Context	Material	14C age uncal. BP
Da But	Bln-1047	DB 71(70)	<i>Corbicula</i>	6095±60*
Da But	Bln-3507 II	DB 86 (40)	<i>Cyclophorus</i>	5810±50*
Da But	Bln-3508 II	DB 86 (80)	<i>Corbicula</i>	6400±60 *
Da But	Bln-3509 II	DB 86 (100)	<i>Corbicula</i>	6540±60*
Da But	Bln-3510 II	DB 86 (120)	<i>Corbicula</i>	6460±60*
Con Co Ngua	HNK-88	CCN01(70-80)	<i>Corbicula</i>	5520±95*
Ban Thuy	HNK-90	BT01(100)	<i>Corbicula</i>	5560±95*
Ban Thuy	HNK-89	BT01(40)	<i>Corbicula</i>	5000±95*
Lang Cong	HCM V02/93	LCg91(70-80)	<i>Angulyagra</i>	4850±70*
Lang Cong	HCM V01/93	LCg91(100)	<i>Angulyagra</i>	4900±85*
Lang Cong	unknown**	LCg98	Charcoal AMS	3960-3710 Cal. BC
Lang Cong	unknown**	LCg98	Charcoal AMS	4460-4320 Cal. BC
Go Trung	Bln-2090*	GT77H1(60)	Charcoal	4790±70*

* uncalibrated ** Chen Chung-yu, pers. comm.

3. The final phase is marked by a shift back towards freshwater shellfish, and the first sherds with true cord-marking. Stone spindle whorls and fully polished axes make an appearance, as do stone net weights for fishing. Go Trung, Con Co Ngua (upper levels) and Lang Cong are typical sites for this phase.

EVIDENCE OF PALEOENVIRONMENTAL CHANGE DURING THE DA BUT PERIOD

Recently, Tiep (1998) and Thuan (2001) have attempted to reconstruct Holocene sea level changes for Vietnam. Sea level reached its current level around 7000 years ago, then rose to between 4 and 6 m above the present level about 6000 years ago (see also Nishimura, this issue). Da But, located at the base of a hill directly fronting a freshwater swamp (now under rice fields), contained mostly freshwater shells (*Corbicula*) at the base, c.8000 BP. In the same swamp system, at Con Co Ngua, there was a change in subsistence strategy as the population went from collecting both fresh water and marine molluscs in the lower layer, to marine fishing with weighted nets in the upper layer, at c.6000 cal. BP. By 5500 cal. BP, it appears that the sea level had retreated slightly and freshwater shellfish became more common again. But at Go Trung, on a levee only two kilometers from the modern coastline, the sea seems to have been still close to the site at 5500 cal. BP, to judge from the presence of net weights, but retreated soon thereafter.

Thus, the first occurrence of marine food in the Da But culture was in the uppermost layers of the Da But site (from research in 1986), dated to about 6000 – 6500 cal. BP. At Lang Cong and Ban Thuy, non-marine foods appeared again after 5700 BP (Bui Vinh, pers. comm.), and marine foods correspondingly disappeared.

Palaeoclimate: Rainfall and Temperature

Many pollen studies in southern China and some Southeast Asian countries (e.g. Malaysia, Indonesia) evidence very moist weather between 8000 and 6000 BP

(Flenley 1985; Maloney 1995; Morley 1982). It is estimated that rainfall then was 30% more frequent and concentrated than today. The increasing presence of the freshwater bivalve *Angulyagra* in the diet of Hoabinhian groups from 10,000 to 8000 BP supports an enlargement of aquatic surfaces, particularly on the younger flood plains where they are bordered by mountains. This climatic amelioration may have promoted the development of a new orientation in Hoabinhian subsistence strategy that ultimately led into the Dabutian. Some Hoabinhian groups moved to occupy areas near swamps and lakes, and their shell middens reveal increasing numbers of freshwater shells, as at Da Phuc, Sung Sam, Hang Chua, Cao Ram and Hang Sao.

Temperatures also rose at this time. Tsukada (1966) estimated that temperatures were 2-3°C higher than present at 6000 BP in Taiwan. In Sumatra, mean temperature was 2°C above now between 10,000 and 8600 BP (Morley 1982). In a study of size changes in *Cyclophorus* land snails, a strong reduction occurred 6000 to 7000 years ago at the Ha Lung and Da But sites (Nguyen Viet 1990a). This reduction could have been caused by one of two main factors: human overexploitation, or an adversely warm climate. It is my opinion that the warmer temperatures were the major reason for size reduction in *Cyclophorus*.

DABUTIAN CULTURAL ADAPTATIONS DURING THE MIDDLE HOLOCENE

I find it difficult to accept that Hoabinhian cave dwellers were the first in Vietnam to utilise ceramic technologies. Natural forest products such as bamboo, leaves, hard fruit shells and wood products would have served them just as well. The first groups to produce ceramics were those mid-Holocene Hoabinhians who oriented their subsistence strategy towards swampy lowland environments. This strategy induced them to occupy open air settlements on higher terrain directly adjacent to the swamps - hence the origin of the Dabutian culture, with

its apparent sedentism that would have been conducive to pottery manufacture. The very small quantity of potsherds dated to the Hoabinhian in cave sites (e.g. Con Moong: Nguyen Viet 1989) indicates that the first pottery could have appeared up to 9000 years ago, but there is no evidence to suggest where it was produced. It is argued here that the real homeland of the Dabutian ceramic industry was in the early Dabutian sites (e.g. Da But itself).

Establishing the Advantages of the Polishing Technique: the Stone Industry

Polishing on the edges of stone and bone tools has occurred with varying frequency from more than 30,000 years ago in Vietnam (Nguyen Viet 1989, 1990b). During Hoabinhian and Bacsonian times, this technique increased during later phases, particular at Bacsonian sites. But it is my estimation that edge polishing was not a significant characteristic of the Hoabinhian, and throughout a time span of about twenty thousand years this technique developed slowly. The Hoabinhian economy did not require the use of polished stone tools. However, during Dabutian times, stone technology changed. More than 70% of stone tool edges now became polished. In the Dabutian early period, polishing was limited to tool edges and stone tool sizes were rather large. During later periods, tools sizes were reduced while polishing enlarged to cover the total tool body. During the late Neolithic–early Bronze age, stone tools were almost all found to be small in size. These later period tools were a direct evolution from the Da But culture.

The almost sudden development of polished stone tools in the Da But culture could be explained by the enlarged role of wood or bamboo working for house construction, as well as the manufacture of implements for fishing and mollusc collecting. However, there is still one question in the case of the Dabutian site of Lang Cong, where cord-marked ceramics of the late Dabutian occurred only with flaked and no polished stone tools. Lang Cong is also an open air settlement. It is possible that different stages in the evolution of Dabutian culture are represented at different sites.

Occupation of Open Air Settlements: Burial Evidence

The only known open air settlement during Hoabinhian times in Vietnam is Sap Viet, but this site has not been dated, except by relative means based on its lithic toolkit. The most notable change from Hoabinhian to Dabutian was the move into open air settlements with associated cemeteries - the first examples of the latter to appear in Vietnam. Proper cemeteries have never been identified in Vietnam Hoabinhian sites. More than one hundred burials placed squatting in cylindrical pits were unearthed within a 200 square meter area at Con Co Ngua (Nguyen Viet 2002b).

Fishing with Nets and Stone Weights: Technological Advances

Fishing was a traditional Hoabinhian food acquisition strategy. The best evidence for fishing comes from Dong Cang cave (c.11,000 BP), where fish bone accounted for more than 15% of the total food remains recovered. However, no evidence of fishing equipment was recovered. The first evidence for net fishing is Dabutian, from Go Trung and Con Co Ngua. From an excavation area of 210 sq. m at the Dabutian site of Go Trung, researchers found more than 200 egg-shaped stone sinkers, and almost all the food remains were fish bones. Many stone net weights were also found in the upper layers at Con Co Ngua.

Evidence of Twining Techniques for Making Nets, Clothes, and Ceramics

At Go Trung, fishing net weights occurred in association with the first impressions of spun cord marks on pottery. Spinning also developed during the later phases of the Dabutian. At Go Trung, archaeologists have found the earliest stone spindle whorl in Vietnam. Together with the stone net weights, a new technological package of equipment was established by the Dabutian population. Additional evidence to support all these hypotheses is being sought.

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