

# THE HOABINHIAN SITE OF HUAI HIN (NORTHERN THAILAND)

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**Abstract:** Based on the field work undertaken by the Thai-French Paleosurvey on the eastern bank of the Salween river we describe the stone tools from the site of Huai Hin. The technological study of this material brings evidence to describe the Hoabinhian as a techno-functional complex with its regional particularities.

**Keywords:** Thailand, Hoabinhian, Lithic, Technology.

## Introduction

The Thai-French Palaeosurvey is a field-survey that includes scientists from several institutions. The team's goal was to survey new sites of human settlement in northern Thailand from the prehistoric period. We discovered the Huai Hin open-field archaeological site where 181 hoabinhian stone tools were collected in two locations (Forestier *et al.* 2005b). In this paper, we briefly present the context of this discovery and discuss the technological approach used to make the tools and its interest in a wider Asian perspective. Indeed, the industrial facies determined to belong to prehistoric «*industries*» in South-East Asia: *Anyathian*, *Lamellar*, *Negomian*, *Somvian*, etc. have no real regional value and do not have a strong techno-technological justification. Due to their uncertain and fuzzy terminologies these facies have been disregarded with time. The Hoabinhian industry is the only one to remain under consideration even if its chrono-stratigraphy is still unclear. Despite the Hoabinhian definition developed by Madeline Colani based on stone-tools discovered in the caves of northern Vietnam (Colani 1927 and 1929) and the several regional syntheses and monographies undertaken (Matthews 1964; Reynolds 1993; Wasser 2001), the Hoabinhian still lacks a definition as a lithic techno-complex. From this point of view, this study provided us with the opportunity to propose an appraisal of its technological definition.

## The Salween Wildlife Sanctuary

The sedimentary cover of northern Thailand mainly consists of hilly formations from north to south due to the tectonic movement between the Thai-Shan plate and the Sino-Indochinese plate. The limestone formations are high plateau

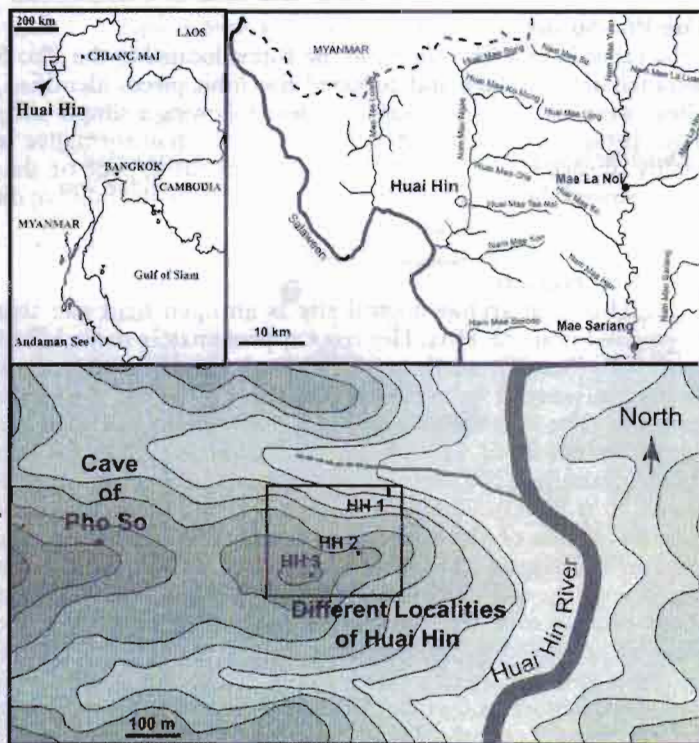


Figure 1: Location Map of the site of Huai Hin.

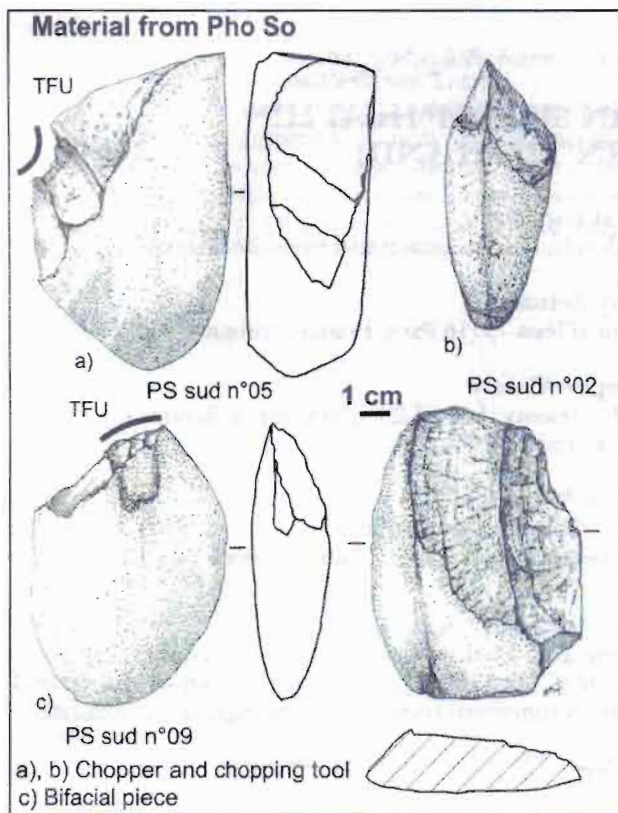


Figure 2: Lithic material from Pho So area.

### The Pho So site

We carried out a first survey in the forest located in the Pho So neighbourhood, at the south-western entrance of the village and collected five lithic pieces identified as choppers or chopping-tools (Fig. 2). These were made using a *chaîne opératoire* following a simple shaping method on thick pebble. The sharp edges present a fine retouch and some precise transformative techno-functional units (TFU) which are mostly situated on the lateral, rather than the distal, edge of the tool. During a systematic survey of the forest around the bank of the river and on top of the hills we discovered the Huai Hin site near the Pho So cave.

### The Huai Hin site

The Huai Hin archaeological site is an open-field site that was discovered near the Huai Hin river approximately three kilometres from Pho So. We made a methodical survey in this area and discovered several stone tools on the ground in two different locations. The first site was on a 200 metres high platform near the river at the mouth of a brook (Locus Huai Hin 1). The other site was at an elevation of 240 metres, approximately 200 metres to the west (locus Huai Hin 3). The archaeological material was uncovered by specific erosion of the soil caused by the current farming practices used in the region. These involve cycles of vegetation burning which leave the soil bare during the rainy season. Following a splash creep process only fine deposits were carried away with the rain while the coarse material remained in position (Fig. 3). Depending on the slope, this mechanism leads to the creeping movement of the material more or less far. Three test-pits were made to establish the stratigraphy of the initial position of the material with the goal of obtaining some information allowing us to date the sites. The lithic artefacts collected clearly indicate human activity in this area. Eleven lithic pieces were collected on the soil at HH1 and 137 pieces at HH3. The HH2 site only provided information concerning pedogenesis in the area.

In the HH1 test-pit, 30 additional pieces were discovered. In the HH3 test-pit three lithic artefacts were found. One small adze lay in the top of a layer that included ceramic sherds. Two other lithic pieces were found at the bottom of the sequence. At this time, this lithic assemblage is one of the most complete series to have been studied from a technological point of view in this region of Asia. It is a reference series on which a qualitative study of the tools made on pebble may be undertaken in order to evaluate the variability of the knapping methods used by the Hoabinhian.



Figure 3: Position of unifacial stone tool on the soil due to splash creep process.

with polygonal karsts (Dunkley 1995). Due to its physiography, there is good potential in northern Thailand for preservation of archaeological remains. Several caves exist in the hills and low limestone formed mountains (Sidisunthorn *et al.* 2006). This region is divided by rivers generally flowing from north to south. These natural pass-ways are potential roads followed by people migrating into this area during the Holocene and probably also before, during the Pleistocene.

We undertook a survey in the *Salween Wildlife Sanctuary* near the bank of the Salween River and around the village of Pho So where Permian calcareous formations are reported on geological maps. The *Salween Wildlife Sanctuary* is 30 kilometres west of Mae Sariang at the southern extremity of the valley of the Nam Mae Yuan that flows into the Salween River (Fig. 1). Due to the junction of the two rivers this area forms a corridor that could have potentially been a good place for human settlement. During our survey we discovered several caves containing long boat coffins (Pa Pao area) and an open-field site near the bank of the Salween River (Pha Daeng). Among these discoveries the Huai Hin open-field site was the most informative for shedding light on Asian lithic techno-complexes.

### The HH1 locality

#### Artefacts from the surface at Huai Hin 1:

The series of tools found at HH1 included 11 pieces made from basalt, andesitic rock and sandstone (Fig. 4). With the exception of a few flakes and pieces of flake (N=4) and one half-disk in sandstone, the tools are Hoabinhian pebbles. They were unifacially made on half-pebbles but a detailed examination of the *chaîne opératoire* suggests that these are different from previously described Hoabinhian pebbles found in Thailand up until now: which were « sumatralith » made on long or thick pebbles to produce tools such as choppers or chopping-tools (Forestier 2000 ; Moser 2001). The support-tools we found, however, are techno-type noted « A1 » produced by a *chaîne opératoire* that included two methods: debitage (*débitage*) and shaping (*façonnage*) (Fig. 5).

#### Artefacts from the test-pit at Huai Hin 1:

Among the 30 lithic pieces discovered in the test pit at HH1, it appears that the classic *chaîne opératoire*: the so-called unifacial *façonnage* or sumatralith (Fig. 6) and the other type of *chaîne opératoire* on ovoid pebble (chopper) found in the open site are absent. Instead, a *chaîne opératoire* on flat pebble that leads to a half-pebble was followed. The sumatralith is an elongated pebble that is shaped on only one face. For a long time it was used as an indicator for the sites of the end of the Pleistocene and the beginning of the Holocene in continental South-East Asia (Vietnam) but also in northern Sumatra.

The Huai Hin lithic pieces made on half-pebble supports belonging to the techno-type A1/A were made into a tool by the systematic shaping of their lateral and working edges (transversal and/or lateral sharpened edge). This *chaîne opératoire* was applied on relatively flat and short pebbles. Two hard hammers in basalt and sandstone, and also three pebbles have negative removals. It is difficult to interpret whether these pieces are actually tools. They may be broken hammers or tested pebbles.

### The HH3 locality

#### Artefacts from the surface at Huai Hin 3

Our methodical collection on top of the hill resulted in 137 pieces among which 80 were diagnosed as uniface or part of a unifacial piece. The raw material used is mainly basalt, andesite, quartzite, shale and sandstone, which are all found in the beds of the local rivers.

There is a kind of standardisation of the tools. A mixed shaping and debitage method on half-pebble was used (Fig. 7). Most of the tools fall into the classification A/A1 (with 40% for type A).

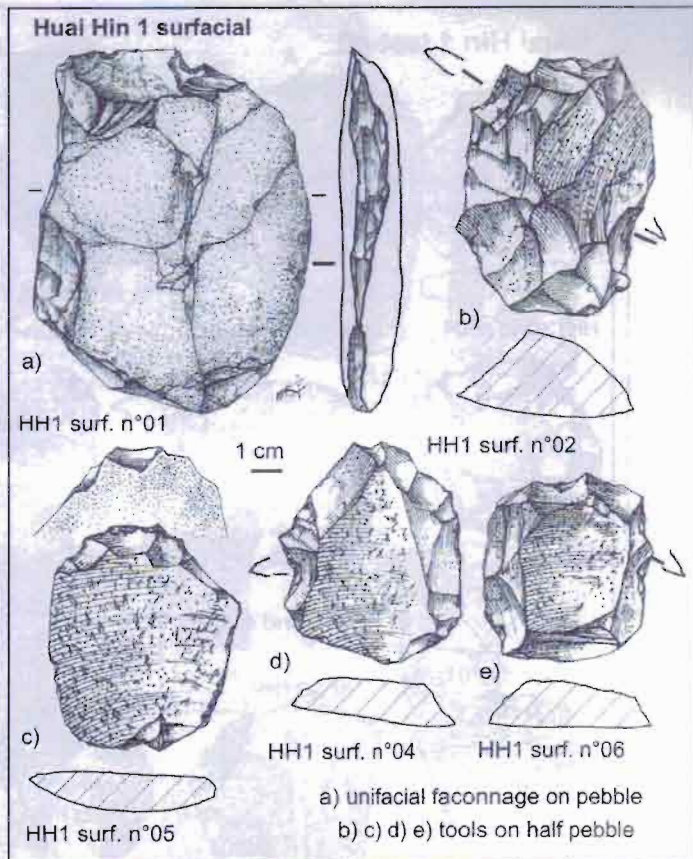


Figure 4: Stone tools collected at Huai Hin 1 locality.

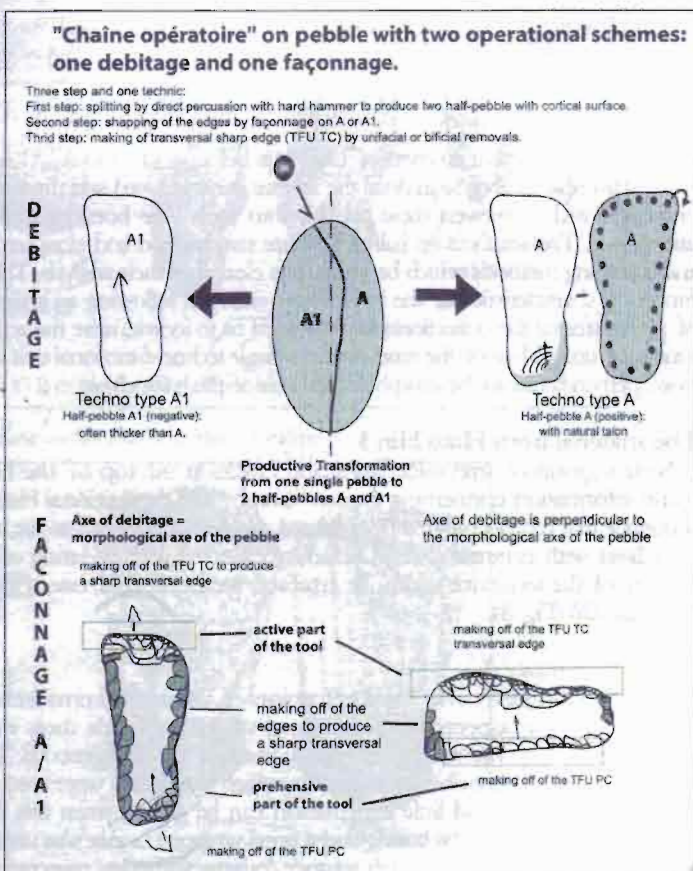


Figure 5: Explanation plate of a new technological complex definition for Hoabinhian.

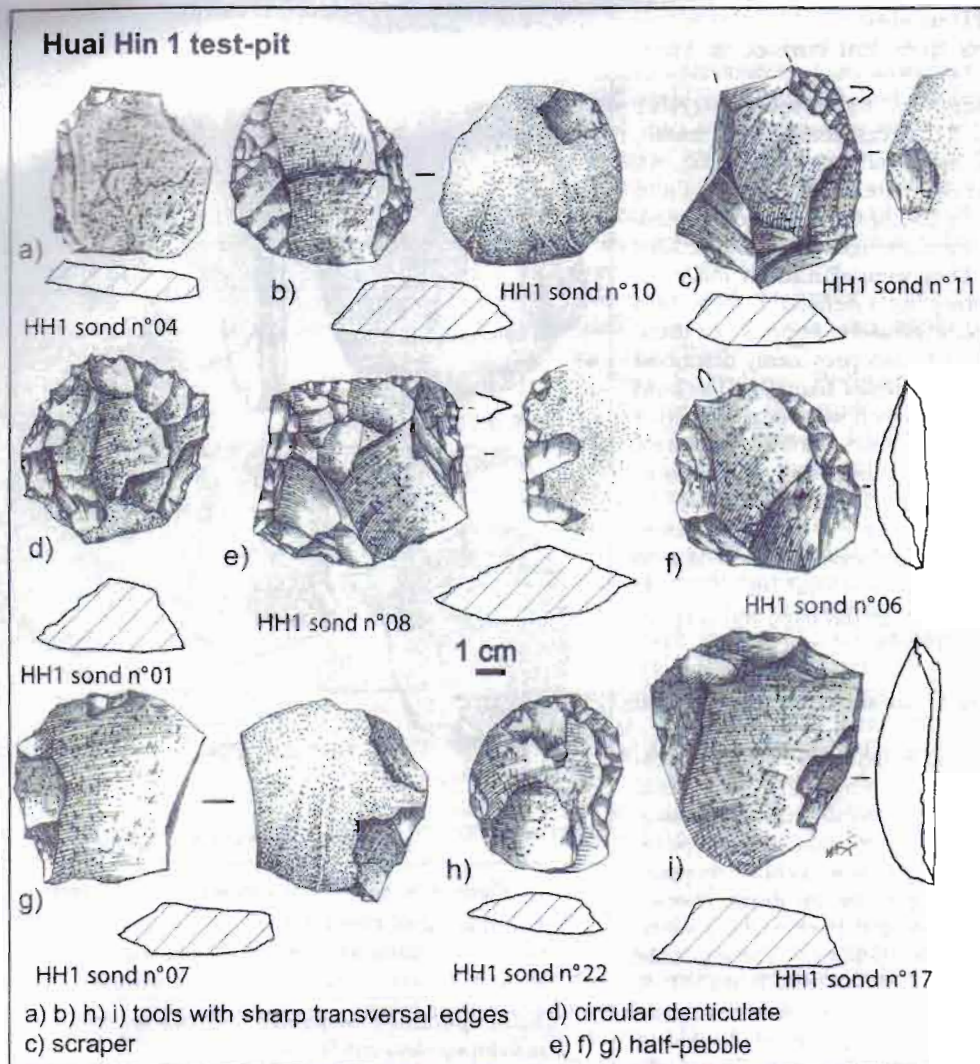


Figure 6: Lithic artefacts from Huai Hin 1 test-pit.

The strong representativeness of elements belonging to the A/A1 techno-type, with A1 the most common type, made it possible to analyse in detail the *schemas opératoires* used and the techno-functional meaning of the transformative processes used to convert these pebbles into tools. The homogeneity of this material, collected on the ground, is unexpected. The artefacts on half-pebble are standardised and elongated following a *chaîne opératoire* including debitage and a shaping methods which became quite clear after their analysis. They have an original Hoabinhian character. The functional characteristics of the lithic pieces emerged following an analysis of the diacritic scheme for a large number of pieces among the collection which allowed us to individualise the active sharp edge and the transformative techno-functional units. Most of the time there is a single techno-functional unit at the transversal part of the cutting edge of the stone perpendicular to the morphological axis of the half-pebble.

### The material from Huai Hin 3

Near a group of grey-blue limestone blocks at the top of the hill we established a test-pit to try to obtain some information concerning the stratigraphy and depositional history of the artefacts. The test-pit followed a sequence that has been dated by charcoal. At the top of the test-pit, a little adze made of limestone was followed by a layer with ceramic sherds including charcoal with a dating of  $3700 \pm 30$  years BP (Poz-10063). At the bottom of the sequence two stone artefacts were collected: one is a pebble and the other one is a typical uniface (sumatralith) (Fig. 8).

### The ceramic material

Potsherds included necks, break off points of sloping and rims with a rounded lip, some of them showing traces of a beater. Some aspects (surface colours) of the potsherds show evidence of firing by oxidising or by reducing (Fig. 9). The preservation of this ceramic material is heterogeneous. The walls are often altered and roughened, in this case it was not possible to determine which treatments were used during their production. Overall the material is very fragmentary and little information can be gained from this material. The ceramic vessels were probably manufactured by hand, by coiling and a cord-wrapped beater was used to finish them off. The clay used contained a very high percentage of rough temper (quartz, feldspars, muscovite and others). The lack of a well-established reference for common ceramics in South-East Asia prevented precise categorisation of this data set. The starting pastes and fabrication methods of these types of ceramics have been described from Neolithic to Recent periods.

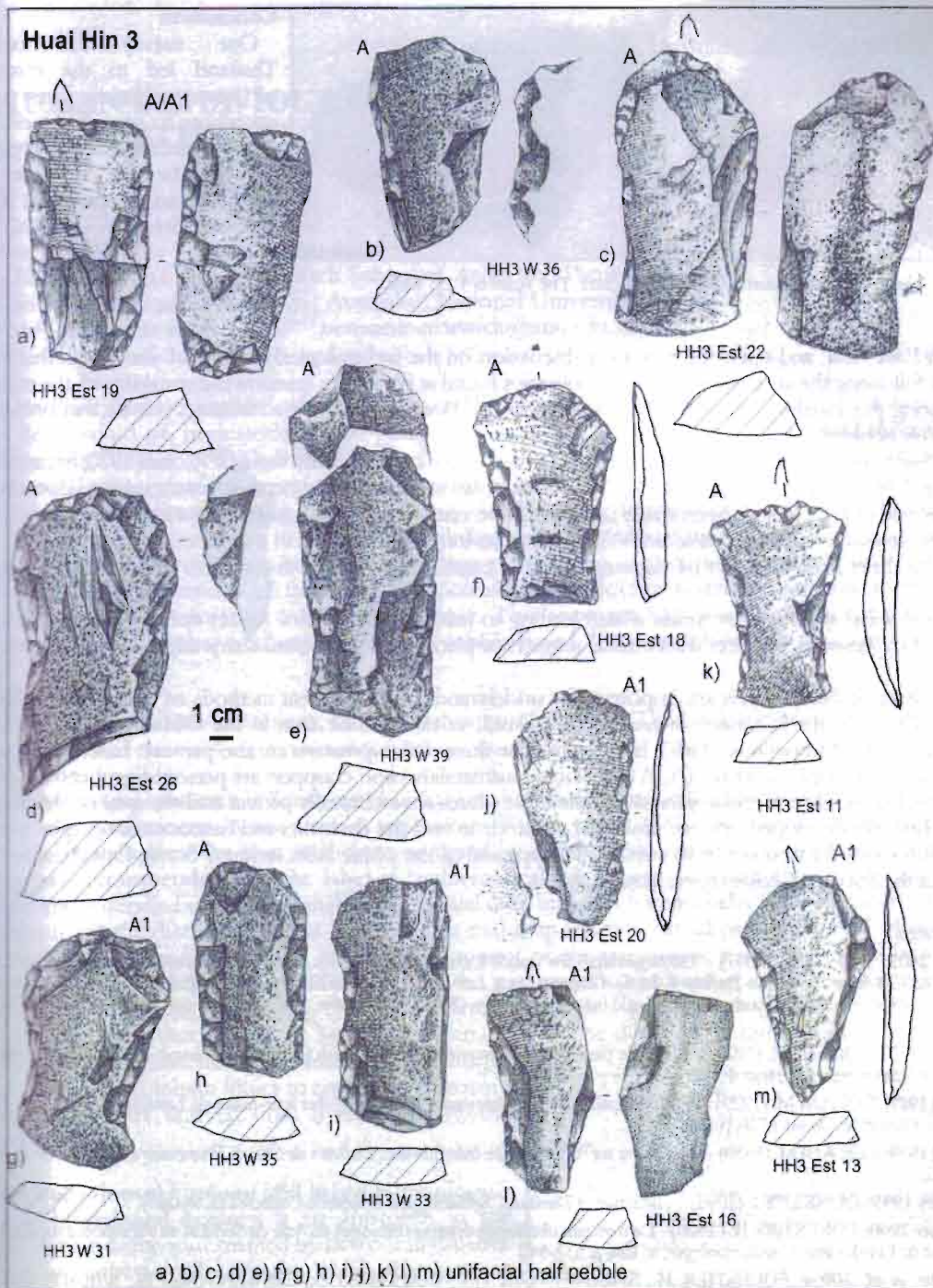


Figure 7: Stone tools from Huai Hin 3 locality.

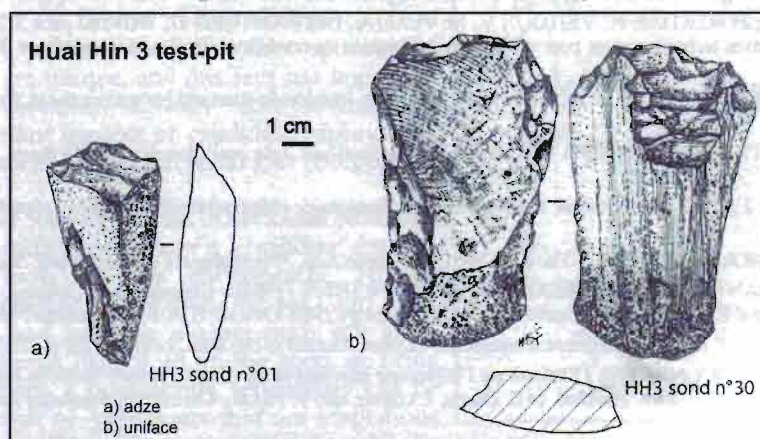


Figure 8: Lithic artefacts from Huai Hin 3 test-pit.

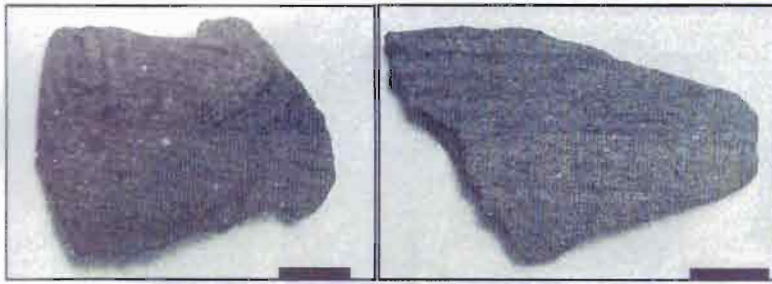


Figure 9: Sherds from Huai Hin 3 locality. The scale is 1 cm wide.

## Conclusion

Our survey in northern Thailand led to the discovery of new prehistoric sites which contribute to the existing richness of Hoabinhian sites mapped in this area, the oldest of which is at Tham Lot and is more than 30 000 years old (Schoonedej 2006). Our discoveries of tools and artefacts in caves and open-field sites complete the data known on stone tools from the Final Paleolithic

in South-East Asia, and open the way for a discussion on the technological identity of the Hoabinhian. Our findings, following the analysis of the stone tool series found at Huai Hin, question the variability of the methods used among the Hoabinhian techno-complex. Were the Hoabinhian really an isolated culture that only made unifaces on pebble?

Our results suggest that the situation is more complicated than previously thought (Colani 1930; Sarasin 1933; Pope *et al.* 1981; Higham, Kijngam 1982). The Hoabinhian tools described here show an increased diversity and variability and appear to have been made following three distinct *chaînes opératoires* using a hard hammer.

- a *chaîne opératoire* made of classic unifacial *façonnage* on long pebbles leads to a sumatralith,
- a quite short *chaîne opératoire* of *façonnage* on thick ovoid pebbles leads to tools like choppers or chopping-tools,
- a novel *chaîne opératoire* that mixes *débitage* leading to half-pebbles (« split » A/A1) that are then transformed into a tool by *façonnage*. Scrapers with bifacial retouch or pieces with transversal sharp edges on pebble are often present.

These three *chaînes opératoires* are important for understanding the different methods of knapping hoabinhian pebbles. These methods existed in northern Thailand, as can also be seen in the Obluang rock-shelter dug twenty years ago (Santoni *et al.* 1986). In this series the three *chaînes opératoires* are also present. Indeed tools with a transversal sharp edge on pebble (A/A1), unifaces (sumatraliths) and choppers are present together.

Whatever is the chosen *chaîne opératoire*, all the lithic pieces are technically perfect and the goal of the knapper was reached. We developed new technological methods to read the dynamics and functional biography of these hoabinhian tools, the next step is to conduct a reappraisal of the whole lithic series of South-East Asia including that from the Sumatran coast (Forestier *et al.* 2005).

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