

A TYPO-TECHNOLOGICAL DEFINITION OF TABONIAN INDUSTRIES

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ABSTRACT

Six flaked lithic assemblages from Tabon, Guri and Duyong caves on Palawan and from Musang and Laurente caves in the Cagayan valley on Luzon (Philippines), discovered during the 1970s and 1980s, have been reanalyzed. The results are presented here.

INTRODUCTION

In the Philippines, pre-Neolithic technology has been described from four different perspectives. Robert Fox distinguished two technological traditions in the Tabon Caves – the Tabonian flake assemblages and a small flake-and-blade assemblage (Fox, all refs from 1962 to 1979). The latter appeared about 4000 years ago in Guri cave and Duyong rockshelter. For Fox, the existence of these two traditions meant that

the Tabonian Flake tradition and the small flake and blade industry co-existed and the basic difference in their method of manufacture and use would suggest that two distinct peoples and cultures were represented (Fox 1970:59).

Almost at the same time, Bevacqua and Hutterer worked on the Sohoton cave assemblage from Samar and proposed the block-on-block concept. They defined it as a “primitive variation of the direct percussion technique” (Hutterer 1972:73):

The low incidence of cores, the lack of production paraphernalia, and the high variability of the lithics suggest that the primary method of production was the block-on-block technique.....smashing a lump of chert against a larger rock, effectively shattering the chert.

In the 1980s, the Australian researchers Coutts and Wesson, who analyzed all the industries discovered until this period in the Philippines, coined the term “smash and grab”. They favoured a single stone-tool technology throughout Philippine pre-Neolithic prehistory (Coutts and Wesson 1980).

Lastly, Peter Bellwood used David Clarke’s techno-complex idea for the period between the Middle Pleistocene and the Early Holocene. He distinguished in particular “a pebble and flake technocomplex”, in which he put the Tabonian, from the younger “flake and blade techno-

complex” that contained the Guri and Duyong assemblages (Bellwood 1980, 1985, 1987, 1992, 1997).

All of these theories suggest a homogeneity of technique deduced from morphology, and a lack of knapping control. But to get products, method and knowledge are necessary (Leroi-Gourhan 1943, 1945). Since all the theories are based only on morphological analysis of cores and products, it was not possible to determine the techniques used in the production process.

One of our objectives was to identify the different knapping techniques between the raw material selection and the product utilisation stages. We tried to understand how the knapper sharpened his tools and why he did it this way. With this approach, it is possible then to study the technological evolutions in time and spaces.

METHOD AND SITES PRESENTATION

Method

The production sequence, called in French *chaîne opératoire*, is divided into three parts: the plan, the approach and the production. The plan is the mental concept which corresponds to the cultural heritage associated with the knapping technique. The approach is divided in two parts; the technical knowledge of the knapper which it can be deduced from the analysis of the cores’ and products’ structures, that is to say, the organisation of negatives removals; and the knapper behaviour or how the knapper physically made the artefacts. The production is studied through the microwear analysis or/and morphological typology. Typology is only an element of the method to understand technological process and it’s not enough.

For the Philippines, several industries discovered during the 1970s and 1980s in Palawan and Cagayan were addressed by the previous four theories. Thus, the aim of this study is their re-analyse in order to propose a new point of view. The interest in these two areas, west coast of Palawan and Cagayan valley, was also because of the differences between the environments. It will be interesting to understand human behaviour with respect to their individual environments.

Sites (Fig. 1)

Six assemblages were chosen from the Late Pleistocene to the Middle Holocene to observe if evolution existed. They come from five sites. In Palawan, three assemblages were



Figure 1. Palaeolithic sites in the Philippines.

analysed from Tabon cave, Guri cave and Duyong rock-shelter.

Tabon cave

The great site of Tabon situated in the Lipuun Point gave hominid fragments and many stone tools but very few were stored until now. Out of five excavated levels, the industry analysed comes from the level IA and IB along the right wall in the middle of the cave. The C14 dates were 8500-9500 BP for level IA and 9250±250 and 21,000 BP for level IB (Fox 1970).

Guri cave

Lipuun point was occupied a second time 4000 years ago. For Fox (1970a: 45) this cave was “perhaps the most attractive cave on Lipuun Point”. The main entrance facing northeast is 75 meters above the present sea level. It opens into chamber A. During excavation by the National Museum in the 1960s, the main trench revealed several artefacts. Unfortunately, only a very small part of the assemblage was retained. The results of the analysis are based on the industry kept by Fox in 1962 (Fox 1970).

Duyong rockshelter

Identified first as Puu't Bato Pildas, Duyong was also discovered in 1962 by Fox. It is located in the Iwaig area now called Isugod, Lasyap, near Quezon, 11 km from Lipuun Point. In fact, two rockshelters lie under a huge limestone boulder - Bising on the east and Duyong facing

inland. Bising was not excavated in the 1960s but some squares were opened in 1999 by the National Museum and the French CNRS, in which a Neolithic assemblage (shell disc, potsherds and beads) was discovered (Chazine et al. 1999; Chazine 1999).

Thirty-nine squares were opened in Duyong during the 1960s. The stratigraphy revealed a continuous human occupation between an aceramic period and the Metal Age. The recent excavation in 1999 by the National Museum and the French CNRS, however, allows a new interpretation of the stratigraphy. Only two levels were identified: a deeper level where stone tools were mixed with shell midden, and an upper level with some metal artefacts (Chazine et al. 1999). Two C14 determinations for the site are 7000 and 4600 BP.

From the Cagayan valley, three assemblages were analysed from two sites: Musang cave and Laurente cave.

Musang cave

Among several sites recorded in Peñablanca municipality, Musang cave is in a huge limestone hill above the Pinacanan River near Tuguegarao. This cave was excavated by the National Museum, B. Thiel and A. Barbosa during the 1970s. Two levels were identified. The older one, dating between 10500 and 4900 BP, contained a shell midden of gastropods. In the younger one, dating between 4900 and 4100 years BP, stone tools were mixed with sherds (Thiel 1978a, 1978b, 1984, 1990; Barbosa 1979).

Laurente cave

Laurente cave is located at the foot of the Sierra Madre mountains in Nannarian hamlet. It belongs, along with 93 other caves and rockshelters, to the Callao limestone formation, which stretches from the northeast of Isabela province to the southeast of Cagayan province. The mouth of the cave is 160 metres above sea level and overlooks the Pinacanan River. The first evidence of human occupation goes back to the between 8170 and 6300 years ago, with Metal Age above (Henson 1977, 1978).

CHARACTERISTICS OF THE LITHICS (Figs 2 to 6)

Used blanks

These are the most common tools, making up 15.8 to 36.7% of each assemblage. They are elongated or laminar flakes, and sometimes blades. In Tabon cave and Duyong rockshelter 20% of the lithic finds are blades. These blanks are thin, except in the Tabon cave assemblage and in level II of Musang cave. The majority have no cortex, and use-wear is located either on the sides or on the distal end. The edges are either straight or convex, and edge angles average 40 to 49 degrees.

Blanks with retouch

These comprise between 2 and 5% of the assemblages except for that from Tabon cave, where they make up 14%, mostly as burins. Different types were recognised: scrapers, notched, denticulate, end-scrapers, burins and tools with several functions (burin/scrapper for example).

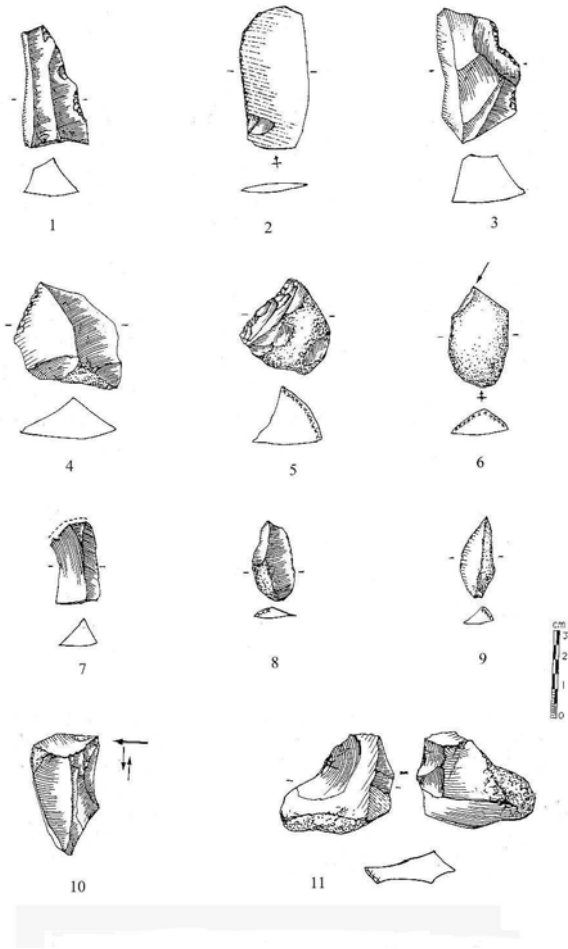


Figure 2. Stone tools from Tabon Cave. 10 and 11 are cores (H. Forestier).

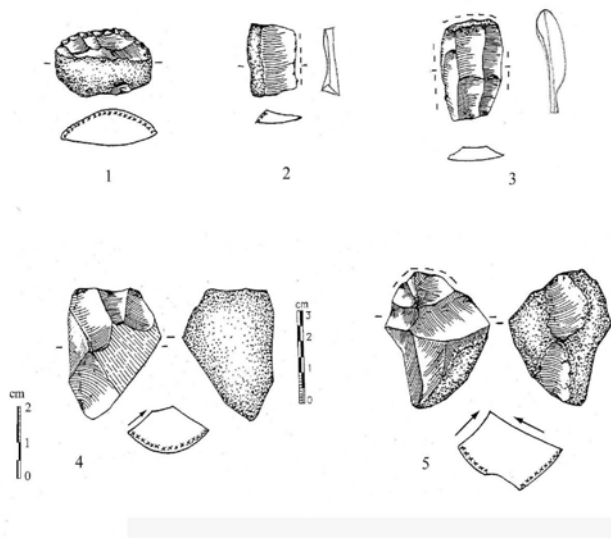


Figure 3. Stone tools from Guri Cave. 4 and 5 are cores (H. Forestier).

These tools have the same metrical characteristics as the used blanks. For the scrapers, the objective of the knapper

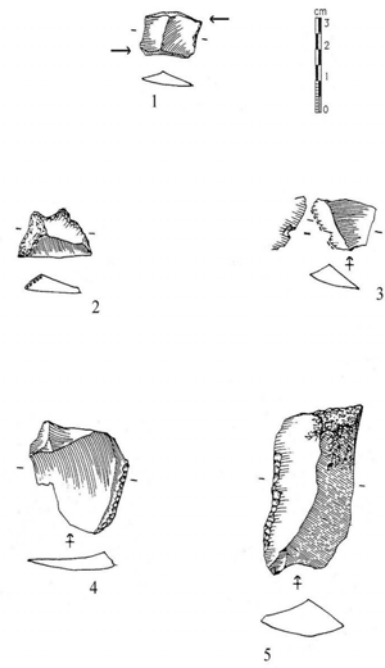


Figure 4. Stone tools from Duyong shelter (H. Forestier)

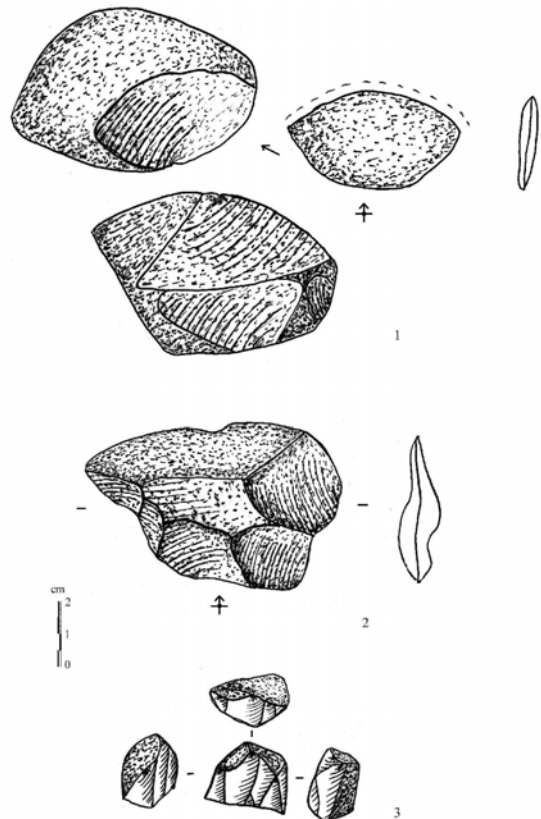


Figure 5. Cores from Musang Cave, level II.

layer was to increase the natural edge angle, possibly for use on a specific contact material.

Core tools

These are few in the assemblages, between 0.2 and 1.5%. They are sometimes used, depending on the quality of one or two edges.

IDENTIFICATION OF THE KNAPPING PROCESS

Two kinds of raw materials were selected: andesite and chert. In Palawan, chert (jasper and chalcedony in particular) was locally available in the river bed next to Lipuun Point.

In the Cagayan valley, andesite can be collected from nearby river beds, but chert comes from some distance away, five kilometres from Musang cave for example. These raw materials were brought back to the site and stored, but sometimes the first phase of the sequence was near the extraction site, as in Tabon.

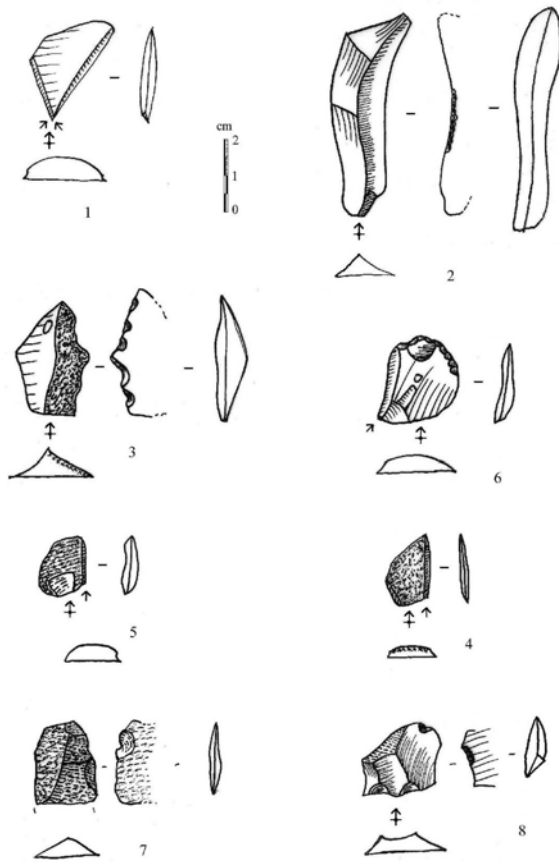


Figure 6. Stone tools from Laurente Cave.

From the analysis of core structure, a diverse morphology has been identified (block, flake-core, prismatic, discoid), although the structure is homogeneous. The organisation of negative removals is always the same. From a striking platform, flakes were removed from one or two perpendicular surfaces. Each surface flaked became in turn the striking platform for the next sequence of removals. Sometimes a new striking platform was opposed to the first one. The end of the process is linked with the exhaustion of suitable knapping angles, when the core is too small to produce flakes that are long enough.

This process is identified in lithic technology literature as orthogonal unipolar or bipolar algorithmic (Boeda 1997; Forestier 2000). The term *algorithmic* pertains to a sequence of operations and is different from Levallois or laminar systems in which there is a preparation sequence before production. The surface is always perpendicular to the striking platform.

This process gives standard technical products, which we will call techno-types. Nine similar techno-types were discovered for the six assemblages. They show unipolar, bipolar and sometimes centripetal negative removals, which designate different stages of the process. Thanks to this process, the knapper got blanks with available straight and convex edges and with specific edge angles.

This process uses direct percussion with a hard hammerstone (and in some cases in the Tabon assemblage with a soft one). It is a short process because the “*chaîne opératoire*” has no more than four sequences, and only eight flakes can be removed from one or two surfaces on each core. The knapper controls surfaces rather than volume and his objective is not to maintain a correct volume (as in Levallois, discoid or laminar processes), but a good surface.

We can say that the production was expedient because for each sequence, the knapper evaluated and adapted his technique to get a specific edge. He may have also kept a lot of small raw materials or cores for immediate use. Thus, the knapper may have also been the user. Production was also pragmatic. The technique was elementary in contrast with complex systems (Levallois, discoid, laminar), and production may have been entirely domestic (Patole-Edoumba 2002).

THE TABONIAN : THE LATE PLEISTOCENE TO MID HOLOCENE FACIES.

In view of these technical characteristics, we propose the Tabonian as the technical facies for the Late Pleistocene to mid Holocene for the Philippines. In addition, however, we including some extra technological elements beyond those defined by Fox. All the industries studied belong to this facies. Their observed differences can be viewed, in our opinion, as “*styles*”, or variations in time and space.

The Duyong assemblage is one such style. The lithic industry from Duyong is not a laminar industry as was previously thought. The occurrence of elongated and laminar flakes (which are not technologically blades) is the result of a bipolar orientation of the knapping process. On this site, the blanks are smaller than in other sites and the production process took longer, nevertheless it still belongs to the Tabonian facies because the reduction sequences were orthogonal algorithmic.

CONCLUSION

So the technique used by prehistoric knappers was not a haphazard one but was designed to get specific blanks with adequate edges. A real technique of control existed. In the Philippines, this process continued until later periods. In the Mamangko rockshelter in Palawan, excavated in 1998-1999 by the National Museum and the French

CNRS, we found the same technology in a layer dated between 1500 and 800 BP (Patole-Edoumba 2000). At the same time, other technical systems also existed in the Philippines, like for example the laminar process discovered on Buad island (Cherry 1978).

In Southeast Asia, besides the well known traditions such as the Hoabinhian, the bifacial flaking in Tingkayu or the discoid flaking in Sulawesi (at Leang Burung cave), a lot of flake industries may be found which will belong to the system identified for the Philippines (Forestier 2000; Forestier and Patole-Edoumba 2000). A new evaluation of these industries with a technological approach will be interesting.

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