

# MISSING TYPES: OVERCOMING THE TYPOLOGY DILEMMA OF LITHIC ARCHAEOLOGY IN SOUTHEAST ASIA.

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In Europe as well as in the Americas, typology of at least some key forms was and still is the basis of relative chronology. For Southeast Asian prehistory, attempts to classify lithic assemblages morphologically and technologically in order to fit them into established stone tool typologies from other parts of the world have not proved to be very useful. Up to now, the formation of a specific regional typology system has failed. Session 1C of the 18<sup>th</sup> Congress of the Indo-Pacific Prehistory Association at Manila (Fig. 1) wanted to explore the “missing types”-problem and adjacent questions. Is the typological approach not appropriate to the special characteristics and circumstances of lithic industries in Southeast Asia? Why do we know of only a few formal “Asian” types and how did the availability and acquisition of raw material influence lithic technology? Are morphological features of lithic artefacts significant enough at all to establish an acceptable chronology system of lithic periods? How can morphological features of lithic artefacts be linked to geostratigraphy in Southeast Asia? Can non-stratified surface finds contribute to Palaeolithic and Neolithic chronologies in that region? And if we dismiss the typological approach, what are the alternatives?

Mirroring the state of discussion in lithic analysis in Southeast Asian archaeology, the contributions of the session covered a broad range of subjects. With his talk titled “River basin archaeology” Israel B. Cabanilla (University of the Philippines) reviewed aspects of early Philippine prehistory and site formation. Palaeolithic sites in the Philippines seemingly date back to 400-500,000 years. While most of the investigated Palaeolithic sites are situated in Northern Luzon and on Palawan Island, Cabanilla focused in his talk on the river basins of the Manila area. In his examination of the vast collection of H. Otley Beyer (1947), a pioneer in Philippine archaeology, and of various surveys of the National Museum conducted since the 1960s by Robert Fox and others, Cabanilla revealed that a major share of lithic artefacts originate from the Manila region and are associated with the tributaries of Manila Bay and Laguna de Bay like Marilao, Pasig and Santa Mesa.

In her presentation on “Pleistocene stone tools of New Guinea: a new analysis from the Far East of the Far East”,

Susan Bulmer (Auckland, New Zealand) mooted artefacts from New Guinea which have long been ignored. Stone tool assemblages from five excavations in the Central Highlands of Papua New Guinea were restudied: four rockshelters in and near the Wahgi Valley, and one open-air site, a natural swamp that was first cultivated at around 10,000 BP. Bulmer focused mainly on Pleistocene axes and axe-like tools and compared the evidence of the Highlands with two other Pleistocene sites, Bobongara and Kosipe, the former found on the former coastline and the latter found high on the edge of the upper mountain forest. The types defined are based on empirical attributes such as size, shape, the position and nature of their working edges, and the wear they exhibit. A provisional chronology of the stone tools has been suggested.



*Fig. 1: Contributors and participants in Session 1 C “Missing Types” at the 18<sup>th</sup> IPPA Conference in Manila: Sue Bulmer, Helen Selimiotis, Claire Gaillard, Eusebio Dizon, Miriam Haidle, Johan Kamminga, Tessa Boer-Mah, Elise Patol-Edoumba, Ben Marwick, Nishimura Masanari, Jean-Michel Chazine, Israel Cabanilla, Alfred Pawlik (not in the photo: Sharon Teodosio)*

South East Asian core tool industries were in the centre of the paper of Sharon F. Teodosio (University of the Philippines). Twenty-one open-air localities in Northern Luzon along the Cagayan River valley (Ronquillo 1982) formed the basis for her study

“Reassessment of the Cabalwanian industry”, which has been thought to be of Palaeolithic age because of the crude appearance of some of the tools and their association with a Middle-Pleistocene megafauna. This so-called Cabalwanian industry (Koenigswald 1958) consists mainly of flakes and a few large core tools made of chert and andesite cobbles. Within the category of heavy-duty core tools, Fox (1978) identified six different tool types, which Teodosio, however, has found hard to assess. On the basis of the material from the recently discovered open-air site of Arubo in Central Luzon, which includes a proto-handaxe and quite sophisticated core technology, she has argued for a technological and functional approach to be much more promising than a typological-chronological one, for which – up to now – adequate sites with well observed context are lacking.

With the diachronic approach of his talk on “Lithic assemblage problems in the Palaeolithic and Epipalaeolithic Age of Northern Vietnam and Guangxi-Guangdong” Nishimura Masanari (Center for Vietnamese and Inter-cultural Studies, Ha Noi National University) linked two chronological foci in his contribution to this session. He reviewed the development of lithic industries in North Vietnam from Lower Pleistocene to End-Pleistocene and compared the Lower Palaeolithic Son-Vian assemblages from Lang Vac to the Bose industry from South China. Stratified sites with flake and core tool industries characterized by a considerable amount of Hoabinhian tools were also emphasized.

An approach to the characterization of Hoabinhian assemblages themselves was given by Ben Marwick (Australian National University) in his talk “Beyond typologies: The reduction thesis and its implications for lithic assemblages in Southeast Asia” (Marwick 2008). Two different analytical systems have to be distinguished: a) essentialism, looking for discrete categories (typology), and b) nominalism, stating that there are no discrete types but only tendencies which can be abstracted (e.g. technological reduction approach). The reduction thesis is based on the assumption that artefacts are continuously reworked during their life cycles and that consequently observed shape variation is only a variation in the reduction pattern. Taking Hoabinhian assemblages as an example, Marwick showed how reduction can be measured and how the differential distribution of reduction stages can be used for behavioural modelling and the measurement of change differences.

The chronological and subsistence attribution of Hoabinhian complexes was discussed by Johan Kamminga (National Heritage Consultants, Canberra). He presented a reassessment of the “Hoabinhian stone technology at Sai Yok, Kanchanaburi Province, Central Thailand”, the first large-scale controlled excavation of a prehistoric site in Thailand realized by a Thai-Danish research group in the early 1960s. Classified by van Heekeren (1962) in the traditional Eurocentric framework established by Madeleine Colani (1927), the stone artefacts provided an account of a classic Hoabinhian assemblage with sumatraliths, short-axes, picks,

horsehoofs, side- and end-choppers and a new type called ‘flat-iron’. Classically, these tools were interpreted as part of a hunter-gatherer toolkit, yet the re-examination has indicated that the site was primarily a pebble adze workshop on the river terrace where the availability of waterworn stones made the location ideal as a raw material source. Kamminga saw no evidence that the adzes were made by hunter-gatherers and instead discussed an association with early horticulturalists since the tool type is functionally equivalent to the general category of East Asian and Pacific ground stone adzes that succeeded them.

Three papers of the session dealt with seemingly conservative lithic technology from late hunter-gatherer to early Neolithic groups. In his talk about “Recent discoveries and results from Kalimantan Timur, Indonesian Borneo (2003- 2005)”. Jean-Michel Chazine (Centre de Recherche et de Documentation sur l’Océanie) presented a series of cave sites in three different altitudes of the Marang conical karst in East Kalimantan. The group at the lowest altitude level revealed occupation sites with stratigraphies from at least the end of the Pleistocene through the Holocene. The stone tool workshops studied by Julien Espagne exhibited a Pleistocene knapping technology throughout the Epipalaeolithic until the early Neolithic sequences with a classical flake technology and the typical Kutai flakes. On large flakes the bulbar region was transversely detached with a secondary blow. The resulting Kutai flakes were then used either as blanks for tools or as micro-cores as a basis for a tertiary debitage stage.

Helen Selimiotis (Archaeology and Anthropology, Australian National University) studied the “Core technology at Bui Ceri Uato, East Timor”, a site with a cultural sequence beginning from more than 26,000 years BP. This period covers the replacement of endemic fauna (primarily murids) in aceramic lower deposits with exotic fauna (such as pig, dog, *Capra/Ovis*, *Bos*, *Macaca*) seemingly associated with pottery in upper levels. The faunal change has been interpreted as a transition from a hunter-gatherer subsistence economy to animal husbandry, presumably some sort of agricultural practices, and the establishment of village communities. At Bui Ceri Uato, Selimiotis examined the apparent continuity in East Timor lithic traditions described by Ian Glover (1986). She applied a technological analysis that focuses on the extent/length of core reduction and thermal fractures of cores as an indicator of fire/hearth use. Along with sedimentation rates and discard rates of flaked stone artefacts, these factors have been used to describe the intensity of occupation and landscape use.

In her talk about “A typo-technological definition of Tabonian industries”, Elise Patol-Edoumba (Natural History Museum, La Rochelle, France) summarized the analyses of six lithic assemblages from five sites on Palawan Island (Tabon Cave, Guri Cave and the Duyong rockshelter) and in the limestone formation of Penablanca in Cagayan, Northern Luzon (Laurente Cave and Musang Cave) dating between 12,000 and 4000 BP. The Tabonian

industry, with chert as its main raw material, can be characterized as a flake industry with around 14 % of tools and a high percentage of blades over 20%. No morpho-types could be identified, but a detailed analysis of the *chaînes opératoires* showed nine recurrent techno-types. Although the overall setting of the Tabonian industry remains the same bridging the late hunter-gatherer to early Neolithic transformation, chronological and geographical variations between Palawan and Northern Luzon have been identified.

Later chronological stages, namely the Neolithic and the early Metal Ages are touched on by two papers in this session, and both looking into ground stone artefacts. The first, by Tessa Boer-Mah (University of Sydney), follows a similar approach as Ben Marwick in questioning the traditional classification of “Ground stone adzes from Northeast Thailand” within a cultural-historical framework of human migration and the spread of the Neolithic (Boer-Mah 2008). Heine-Geldern (1932) and Duff (1970) proposed typologies and identified ‘cultures’ on the basis of inter-regional comparisons. In her study focusing on an adze assemblage from a single site, Ban Non Wat, Boer-Mah has demonstrated that factors like reduction, raw material and the systemic context of the tool have a significant impact on the form of each adze. These adze forms have not necessarily been static. The morphology may have changed throughout its life-history: four reduction sequences have been identified in the lithic assemblage from Ban Non Wat. Therefore, the variation within adze assemblages has to be seen as a technological outcome rather than a typological set.

An attempt to characterize assemblages from a different perspective was made by Miriam Noël Haidle (University of Tübingen) in her talk on “Bifaces, shouldered adzes, and chert prisms: the chronological potential of stone tool assemblages in Cambodian younger prehistory”. She refrained from focussing on one lithic artefact class – be it typological, technological or functional – because of the great diversity in several dimensions of the lithic assemblages from the late Neolithic to early Metal Age complex of the Mimotien circular earthwork sites. At least eight different stone raw materials have been identified as well as 13 broad artefact classes, seven modes of production, and nine probable modes of use. The presumable on-site application of a production mode was indicated by the presence of different production stages and waste. The combination of the different variables has yielded a specific pattern that can be used to detect differences between sites, regions and periods.

In the last talk of the session Alfred Pawlik (University of the Philippines) viewed the Southeast Asian lithic typology dilemma from “Typology, technology and function: A use-wear analyst’s perspective” and proposed a functional approach. Based on the examination of wear traces on artefact surfaces by using optical light microscopy, chemical analysis and SEM, micro-wear analysis can not only yield information about the use of artefacts, but result in a new form of

typology using the functional interpretation of lithic artefacts. The identification of functional types is possible even in those assemblages where morpho-types are few or missing. In addition to techno-types, the functional types would help to reassess such seemingly simple or “primitive” lithic assemblages. A more realistic characterization of stone tools should consider their actual uses and purposes, and would consequently be able to give more detailed information about the prehistoric life, technology, and subsistence of the people who produced and used them.

The present situation of lithic archaeology in Southeast Asia might not appear as promising as in other regions of the world. The number of lithic archaeologists is still few. The detection of well-preserved open-air sites is difficult in the humid tropical areas. They are either located on river terraces and prone to all problems of identification, or the artefacts are found in the waste heap of modern construction work like the proto-handaxe of Arubo in Northern Luzon. Few excavations, be it in caves or open-air sites, have been realized with techniques appropriate to allow the complete range of modern lithic analyses. In comparison with European (typological) data the Southeast Asian data set is small and not very promising. However, typology based on morphological classifications is only one – with limited explanatory potential – of several approaches to lithic assemblages. First of all, the raw material economy of a site can be explored by searching for resource locations and raw material procurement, by examining the exploitation of the original blanks and the curation of the tools using, for example, the reduction intensity approach. Different technological concepts or ‘techno-types’ can be traced by analysing the *chaînes opératoires* which were used to work on stone raw material. They are supported by functional analyses which are able to empirically distinguish functional parts of a tool. Microwear analyses can extend our knowledge by giving information on activities done with the lithic artefacts resulting in different classification systems of functional types. Technological analyses of the production debris, blanks, semi-finished products and dumped exhausted pieces, together with spatial analyses of the different activities at the site will yield a more detailed picture about the organisation of prehistoric way of life.

More or less basic to all these approaches are archaeological assemblages which have not been selected for apparent morpho-types but are accompanied by as much additional information as possible. Lithic studies can tell a lot about technical knowledge and skills, environmental perception, economic organisation, and cultural development, like the conservatism in lithic technology at the transition from the upper Palaeolithic to the early Neolithic. It would be desirable if the morpho-types could serve as clear-cut indicators in a straightforward chronological classification system, which, in the Palaeolithic, concentrated on clearly distinguishable stages and, in later periods, fitted to subdivisions by other artefact groups like ceramics or

subsistence patterns. Yet, like world and cultural history, the lithic element is not that simple and its technological development does not follow a straight line. A chronological classification needs to be based on faunal, stratigraphic, radiocarbon or other independent evidence, allowing a characterization of the sites as well as regional and subsequently defined chronological groups by several different typologies: morpho-types, techno-types, functional types, raw material management patterns etc. Despite all difficulties, the participants of Session 1C concluded that Southeast Asian lithic assemblages deserve appropriate analyses according to their individual potentials, as do lithic assemblages in the rest of the world.

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