

SUMMARY

Geographic, geomorphologic and climatologic review

This introducing section presents the physical world of this field of activity in "South East Asia" in present as well as in prehistoric times. Palaeogeography and palaeoclimate considerably influence reconstruction of the history of settlement in this area. Due to periodical changes in sea level the border of the coastline has been transformed repeatedly. The shelf in the regions of Sunda and Sahul, which were exposed during the Pleistocene, added increased space for the spread of population. Moreover, this seems to have affected a shift within the economic system, which has to be considered when the type and location of the sites are specified, while there is hardly any evidence of palaeoclimatic effects on vegetation and environmental factors. On the other hand archaeological excavations show that fossils match living animals.

Population

In South East Asia the following races can be distinguished: Mongolids with a range of distribution in East Asia and the northern parts of South East Asia and Australian Aborigines, Melanesians as well as Negroid natives all related to the Australoids from the Philippines, Thailand and Malaysia. The remnants of hunters and gatherers in the tropical forests are particularly significant for prehistoric research as they allow conclusions from analogy about the Upper Palaeolithic in South East Asia. Applied traditions and the material culture of the *Sakai Orang Asli*

in the South of Thailand and in Malaysia demonstrate a diversified set of tools, equipment and other requirements made of organic and perishable materials. This leads one to assume that people from lithic industries also highly depended on organic objects. Actually, the predominance of lithic artefacts in exposed materials originates from their durability.

Historical review and defining the Hoabinhian

The term "Hoabinhian" originates in the excavations of Madeleine Colani in the North Vietnamese province Hoa Binh, Southwest of Hanoi during the 20th and 30th. During the 1st *Congrès préhistorique d'Extrême-Orient* the "Hoabinhian" was defined for a Mesolithic culture in Hanoi 1932. Recent information about the Later Stone Age of South East Asia, which was acquired during the past decades, required a new determination of the "Hoabinhian". This chapter essentially illustrates the results achieved at the conference in Hanoi in 1993/94: *Le Hoabinhien 60 ans après Madeleine Colani. Conférence anniversaire - Hanoi*. The individual sites vary significantly with regard to their records which is insufficient for most of the sites which have been excavated before 1960. Only few sites display clear sequence of layers. Almost all the caves contain disturbed upper layers due to human actions from Neolithic periods until now. Meanwhile, more than 150 Hoabinhian sites have been identified in Southeast-Asia. Predominating sites are caves and rock shelters in the mattocks of Southeast-Asia. Only isolated Hoab-

inhian open-air sites have been recognized so far.

Characteristic types of Hoabinhian tools are 'Sumatraliths', oval boulders, that are facially and unilaterally retouched, and so called 'Short Axes' made of transversally fractured, tabular boulders also facially and unilaterally retouched. There are also plane pebbles, with partially abraded edges, called 'edge-ground tools' in Hoabinhian layers. Simple pebble tools such as 'Choppers' and 'Chopping Tools', as well as unmodified flakes are fixed components within the set of artefacts. Several pieces of flake display micro wear and polish most probably in connection with organic material such as wood or bamboo. Tools, made of bone and antler, have been rarely discovered in Hoabinhian sites; they are restricted to several points and awls. Classification of the Vietnamese 'Son Vi' pebble tool inventory is difficult. These were found in several caves underneath the Hoabinhian layers but seem to be co-existent in some cases. Possibly, the Son Vi inventory is the occurrence of an early local feature or variation of the Hoabinhian.

There is also a confusing evidence of corded ware and impressed pottery accompanied by Hoabinhian stone tools in the topmost layers, possibly resulting from disturbed layers. It is also possible that pottery and lithic remains are truly contemporaneous which then would indicate the final stage of the Hoabinhian. This would have been associated with a shift or change in economic structures and subsistence, also giving an indication for early domesticated plants. This does not tell us whether this involved hunters and gatherers or farming/planting organisations.

Chronological classification has to be established on radiocarbon dating from samples of charcoal and freshwater molluscs due to an inadequate assemblage of stone tools over a long period that doesn't allow any typological classification. Comparative early dates (> 16,000 B.P.) were

derived from Molluscs shells without exception. Compared to pure charcoal dating, mollusc-shells are unreliable. The chronological scope with imprecise extent of the Hoabinhian technological assemblage dates around 16,000 and 6000 years before present.

A critical look at stone tool assemblages, ornaments, burial rites, the geographical distribution, and different types of sites, as well as the chronology of the 'Hoabinhian' led to new interpretations. Southeast-Asian Upper Palaeolithic data displays almost exclusively remains of the technical-physical equipment of which mostly stone tools were preserved, therefore, the term 'Hoabinhian', so far characterising a cultural stage, was downgraded to 'Hoabinhian industry' or 'Hoabinhian technological assemblage'.

Various reasons set the frame to redefine the inventories of stone tools, ornamental art and burials, as well as the range of distribution, types of sites and chronology of the "Hoabinhian". Southeast-Asian Upper Palaeolithic data displays almost exclusively remains of the technical-physical equipment of which mostly stone tools were preserved, therefore, the term 'Hoabinhian', so far characterising a cultural stage, was downgraded to 'Hoabinhian industry' or 'Hoabinhian Technokomplex'.

Catalogue - Mainland South East Asia, the archipelago of South East Asia, the margins of the hoabinhoid industries

Principal topic of this project is the inventory of sites displaying a history of research, detailed data, condition of findings, and dating for each site. Southeast-Asian prehistoric research began 1874 with the discovery of Neolithic and Bronze Age settlements in today's Cambodia. In the first half of the 20th century, Hoabinhian research focused on the area of former Indochina (Cochin china, Tonguing, Annam, Cambodia and Laos) which is now divided into Vietnam, Laos and

Cambodia. At the end of the twenties of the last century archaeological surveys were concentrated both on Indochina and Sumatra and the Malaysian peninsula. It was only since 1960, that the Hoabinhian revealed itself in archaeological excavations in Thailand and Myanmar.

The range of distribution for the 'Hoabinhian-Industry' can be localized on the mainland of South East Asia, which seems to be the central territory, and in parts of the archipelago of South East Asia (North West of Sumatra). The seeming concentration of more than 120 Hoabinhian sites in Vietnam reflects intense research activities in this area, rather than verifying a centre of the Hoabinhian technological assemblage. Beyond these limits of the 'Hoabinhian' habitat there are isolated inventories of lithic artefacts displaying hoabinhoid elements in Nepal, South China, Taiwan and Australia. This means that unaccompanied artefacts can be compared to assemblages from the Hoabinhian phase due to their morphological similarities. In Nepal oval and long oval, uni-facially retouched pebble tools are concerned that resemble Sumatraliths. Besides uni-facially retouched tools there are also so-called 'edge-ground tools' in Australian sites from the same period as according assemblages in Vietnam. In general, it is doubtful whether at this moment they can be related to the 'Hoabinhian-Industry' established on limited samples and incoherent data.

Radiocarbon dating by means of specimens of charcoal and fresh water molluscs established a chronological classification for the records, and comparably earlier dates (> 16,000 B.P.) all originate from molluscs. The duration of the 'Hoabinhian-Industry' fluctuates between 16,000 and 6000 B.P., this includes still inaccurate limiting values.

Technology of the Hoabinhian lithic artefacts

An important issue for the reconstruction of Palaeolithic subsistence is the interpretation of the stone tool production. Stone tools are end products of a more or less complicated transformation action and therefore it is worthwhile to systematically dissect and reconstruct operational procedures and production stages of the percussion technique. Examination of the primary production seems to be adequate.

The lithic objects from Moh Khiew Cave in Southern Thailand and from the site Xom Trai in Northern Vietnam were analysed by classifying characteristic attributes. It is remarkable that besides chert also rather coarse-grained raw materials, such as flinty slate, basalt and andesite take a solid position within the whole group of raw materials. The inadequate percussion properties of this raw material do not appear to be of any significance for this comparatively plain production method.

The consistent result of the analysis of stone tools is the fact that both assemblages are almost without exception collections of flakes. Secondary modifications such as retouch are exceptional. Generally, 'Hoabinhian-Industry' of the Upper Palaeolithic in South East Asia employed a direct and hard percussion technique as scar marks on hammer stones confirm. Hoabinhian tool categories include cores, uni- and bi-facially retouched tools, pebble tools and edge-ground tools. Typology is only possible with uni- and bi-facially retouched pebble tools and flakes and does not offer a chronological sequence. This chapter concludes with an index and the description of the most common types of artefacts and tool categories of the 'Hoabinhian technological assemblage'.