

A Review of the 'Hoabinhian' in Indo-China

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ON 30 January 1932, a special committee set up by the First Congress of Prehistorians of the Far East, meeting in Hanoi, passed the following resolution (*Præhistorica Asiae Orientalis*, 1932):

'It is proposed to accept the following terminology and to recommend its use to the First Congress of Pre- and Protohistory:

"*Hoabinhian*: a culture composed of implements that are in general flaked with somewhat varied types of primitive workmanship. It is characterized by tools often worked only on one face, by hammerstones, by implements of sub-triangular section, by discs, short axes and almond-shaped artifacts, with an appreciable number of bone tools."

The *Hoabinhian* is divided into three sub-stages:

"Hoabinhian I: flaked implements only, rather large and crude.

Hoabinhian II: somewhat smaller implements of finer workmanship, associated with protoneoliths.

Hoabinhian III: yet smaller implements, flakes with secondary working; with rare exceptions no protoneoliths."

"Protoneoliths: simple artifacts fashioned from flaked stone or a pebble, with polish confined to the cutting edge."

This resolution had its origin in excavations made in 1929 by Mlle Madeleine Colani in Hoa Binh Province, southwest of Hanoi (Colani 1927). Deposits were excavated in open caves or rockshelters at nine sites: Sao Dong, Lang Neo, Lang Bay, X-Kham, M-Khang, Som Jo, Lang Vo, Trieng-Xen and Ha Bi. The archaeological deposits, described by Colani as kitchen middens, were composed of a mixture of calcareous cave earth and *Melania* shells. No reference was made to stratification within the archaeological deposits—with the exception of Sao Dong. Here the suggested stratification appeared to be purely archaeological, although the criterion by which the deposit was divided into layers is not clear. Unfortunately Mlle Colani did not describe the methods and techniques that were used during the excavations.

The main component of the assemblages was a flaked stone industry. This had been fashioned of rolled river pebbles, whose naturally polished cortex, retained in varying degrees on one or both surfaces of the artifacts, had been commonly incorporated into the cutting edge. Present also were a small number of edge-ground tools and sherds of simple earthenware.

A few bone artifacts were also found. Faunal remains were represented by gastropod shells and vertebrate bones. Human remains were also reported.

Colani distinguished, but did not formally define, several types among the flaked stone artifacts. The various categories included strikers, points, almond-shaped tools, *coup de poing* or clubs, scrapers, perfectly elliptical implements, small implements and short axes. The latter were flaked pebble artifacts that had been abruptly truncated at the butt so that the flat base was at right angles to the main axis. They were possibly broken remnants of other tools.

Many of the artifacts recovered were described and illustrated; others were either described, unillustrated, or illustrated but not described. Many tools were described in detail. Although the descriptions do contain facts relevant to a typology—e.g., measurements of maximum length—the other points were not stated with sufficient precision to be used in an objective classification. The imprecision caused by the absence of definitions is reflected in the number of names used by Mlle Colani. In a description of 82 tools from Sao Dong, 28 names were used.

A morphological sequence was reported from four of the sites: Sao Dong, X-Kham, Trieng-Xen and M-Khang. The coarsest, largest and most massive artifacts were reported from the bottom of the deposits, and the smallest and best-made from the top. Between the extreme sizes in the top and bottom levels there were intermediate types, demonstrating that a diminution in general size of the artifacts occurred gradually. It also seems probable that there were no bifacially flaked pebble tools in the lower parts of the deposits, since bifacially worked pebble tools were found only at the higher levels.

For the sake of clarity, Colani assembled the artifacts into three groups called Early, Intermediate and Late. It was a very general grouping, and no boundary between each period was distinguished. The refinement reported for the collections, progressing from the lowest part of the deposits towards the top, was deemed gradual and fairly continuous. Exceptions of 'early' types in high deposits and 'less ancient' types appearing prematurely at deeper levels were noted.

The general nature of the artifacts of the three categories was described. The lack of concise definition of types and description of objective and measurable characteristics diminishes the significance of Mlle Colani's classification. Colani has not established a typology for the collections from Sao Dong or from the other nine sites at Hoa Binh. This consideration in turn reflects on the threefold division described above, which is not derived from stratification within the deposits. Colani described only a small proportion of the artifacts from the nine sites. For example, only 82 artifacts from Sao Dong were described, yet over a thousand tools were found there. Neither did she state the principles by which the artifacts had been selected for description. The described sample may truly reflect the nature of the collection as a whole; on the other hand it may be seriously biased. The text of the report throws no light on this point.

It is quite possible that Colani has misunderstood the nature of the pebble tool collections by trying to formulate discrete types. It may be that these artifacts occur in a continuous range of shape and size. Thus it would be possible to select tools that are long and narrow and contrast them with those that are round and flat. However, in order that these may be archaeologically significant types, it is important to show that the rest of the collection does not fall into positions ranging continuously between these two extreme forms. It may be that the long and narrow forms and the round and flat forms are in fact quite unusual in the collections and

that the remaining artifacts fall into intermediate categories. There are some artifacts that might stand as distinct types, e.g. the short axe and the edge-ground tool. If the sequence could be divided in terms of the appearance or disappearance of such distinct forms, then it would carry conviction.

Unfortunately the text of the report does not throw light on this point. Twenty-nine short axes were described from the nine sites. Of these, two were placed in the early period, 12 in the intermediate period, and nine in the late period. The only conclusion possible is that short axes were represented throughout any sequence that may have been present in the deposits.

As the technique of applying polish to the cutting edge may be considered technologically more advanced than flaking, the edge-ground tools are particularly interesting. Colani described two kinds of edge-ground tools. One was an unflaked pebble that had been bifacially polished to produce a cutting edge. The other was a flaked pebble that had been bifacially or unifacially ground to form a cutting edge. Colani pointed out that the edge-ground tools formed only a very small proportion of the stone tools in the collections. At Sao Dong, only 11 out of more than 1,000 tools were edge-ground; at Lang Neo, 10 out of 600 tools (five of them made of short axes); at X-Kham, three out of over 170; at Trieng-Xen, three out of nearly 170; at M-Khang, two out of nearly 190; and at Lang Bay there was one edge-ground tool. Colani remarked that no edge-ground tools were found in the early period. Despite the unsatisfactory nature of the groups, this information indicates that edge-ground tools were never found in the lowest levels of the relevant deposits. Of the edge-ground tools that were described, 13 were placed in the intermediate period, and 12 in the late period. It would seem that edge-ground tools, although not present in the lowest levels of the deposits, were present in approximately equal numbers in the other levels.

Colani mentioned that small worked flakes were found in the late period, and illustrated two such flakes from Lang Neo as examples. It is not apparent from the illustrations, however, that these artifacts were flakes, or that any of the artifacts illustrated as flakes were indeed flakes. Moreover, as the text did not specify the small late-period artifacts that were regarded as worked flakes, it is not possible, from the report, to determine how many of these interesting tools were found, the sites at which they occurred, and their distribution in the deposits.

The conclusion must be that Colani has neither defined a satisfactory typology for the collections from Hoa Binh Province, nor has she isolated three chronological phases based on the stratification of the excavated deposits. However, it appears that the flaked artifacts, which presumably served as simple cutting and scraping tools, were larger in the lower parts of the deposits and that the diminution of size with decreasing depth was a gradual process.

Other components of the assemblages were described. Grinding stones and 'mortars' and 'pestles' were reported from six of the sites. Bone tools were described: these were either polished, or were simply splinters that may have been worked into tools. Only 15 bone implements were found. Shell tools were not common but there is some indication that shells were used as implements. Red ochre was reported from two sites: stone artifacts were stained with this substance at one site, and human bones and some stone tools at the other. Earthenware sherds were found at four of the sites. The nature of this pottery was not described. Colani suggested that pottery was confined to the later, upper levels, although sherds were found at Sao Dong in the lowest parts of the deposit. A few deformed copper vessels were found at Lang Neo; these were presumably elements of a later metal-using culture.

Although faunal remains were reported from five of the sites, only elephant and rhinoceros

were identified. Apparently such bone was confined to the upper parts of the deposits. Fragmentary human remains were found at six of the sites.

Other Sites in the Hoa Binh Region

Colani continued her work of archaeological exploration and excavation, excavating cave and shelter sites in Ninh-Binh Province during November 1927 (Colani 1928). Three sites were excavated: Tchong Doi (shelter), Yen Luong (shelter) and Nhan (cave). No plans or sections have been published for any of the sites, with the exception of a sketch section of the cave at Nhan. No mention was made of the method of excavation. The nature of the deposits was not described nor are any references to stratification made. There is no indication of the number of artifacts found.

Neither edge-ground tools nor pottery were found at Tchong Doi or Yen Luong. Colani stated that the tools from these two sites were either naturally flaked pebbles, or naturally flaked pebbles that had been modified with a minimum of retouch. However, photographs of a number of artifacts from the sites would indicate to the writer that Colani was incorrect in suggesting that *any* of the flaking on the tools could be ascribed to natural causes. The cave at Nhan produced three edge-ground axes.

From March until May 1929, Mlle Colani undertook the excavation of seven other sites in Hoa Binh Province: Lang Vanh, Da Phuc, Pan Ve, Phuc Luong, Hang Hao, Hang Oc and Dong Noi (Colani 1929). Again these are caves and rock-shelters. With the exception of Lang Vanh and Da Phuc, no separate mention was made of the collections from individual sites, although a brief general summary was given. There were no descriptions of individual artifacts for the two sites named above, nor was there any indication of the number of artifacts found. However, 54 edge-ground tools from Lang Vanh were said to comprise nine per cent of the stone artifacts, indicating a total of 600; and 37 edge-ground tools from Da Phuc were said to be three per cent of the total, or about 1,200 stone artifacts in all.

In 1930 Colani published an account of extensive investigations of cave and rock-shelter deposits in Thanh Hoa Province, geographically contiguous to those of Hoa Binh. Four other sites were also described from limestone formations farther south in the Qui Dat region. Seventeen sites were excavated in all. Colani described artifacts from four of these sites: Yen Lac, Kim Bang, Duc Thi and Lang Bon; for the rest only a general summary was given. No direct mention was made of the number of artifacts that were found, except for the site at Lang Bon. Only 50 artifacts were described from this site, yet it is said that 2,378 artifacts of bone, stone and shell were found. It may well be that similarly small samples were described from Yen Lac, Kim Bang and Duc Thi. Colani made no attempt to classify or categorize the artifacts from any of these sites. She used various names to refer to them—names used previously by her. But no definitions were given.

The depths in the deposits of the discovery of the artifacts were given, but not with precision. Colani states that depths could not be accurately measured in the loose and shifting deposits, so spits rather than exact points were indicated. This is not very exact information, she said, but the error is almost nil. However, even with plans and one longitudinal and one transverse section of the deposits given for each site, the information is not sufficiently precise for any stratigraphical inferences to be made. The diagrams indeed do little more than indicate the irregular nature of the deposits, which are in effect loose shell middens situated in caves and rock-shelters.

Perhaps the most significant feature of this report is that Colani did not mention the three

periods she previously postulated for the collections from Hoa Binh and to which she referred on subsequent occasions. As she made no attempt to place any part of the collections described in 1930 into the categories described in 1927, it must be supposed that by this time Colani had herself decided that these divisions were not supported by the facts of excavation.

Recent Excavations in Hoa Binh

Between January 1960 and January 1961, Dr. P. I. Boriskovsky spent ten days in Hoa Binh Province, examining caves and shelters (Boriskovsky 1962a, 1962b). A summary report of Boriskovsky's excavations has been given by Solheim (1962). Three sites were examined: a cave some hundred meters from the site of Trieng-Xen, excavated by Colani; a rock-shelter at Hang Dong; and a small cave at Sao Dong, near that excavated by Colani in 1926.

'The results of the test excavations are not given in detail, but Boriskovsky concluded:

Our excavations showed that Colani in her work in the Hoa Binh caves had collected thoroughly and completely cultural remains, and hence her publications give a relatively full and objective picture of the Hoabinh inventory. We are further convinced of this due to the total absence of any sign of fossilization of faunal remains recovered from these caves. This would be another argument in favour of the Hoabinh caves being of Mesolithic and Neolithic age, and not late Palaeolithic.'

The very general characterization of the Hoabinhian given by the Committee of the Congress of Prehistorians of the Far East, quoted at the beginning of this paper, may therefore be accepted. On the published evidence, which has been reviewed above, however, the division of the culture in three parts, Hoabinhian I, II and III, cannot be justified.

Excavations in Bac Son

In 1924 H. Mansuy, in collaboration with Mlle Colani, made a survey of the limestone caves and rock-shelters of Bac Son, north of Hanoi (Mansuy 1924, 1925a, 1925b; Mansuy and Colani 1925). In all, 27 sites were described, although the majority of the descriptions cannot be considered excavation reports. No information was given about the sedimentary or archaeological stratification at the majority of sites. However, at Keo Phay one meter of deposit was reported to rest on 40 cm of an archaeologically sterile clay. Horizontal layers of ash in the deposit were interpreted as indications that the site had not been disturbed. Horizontal layers of ash were noticed also at Dong Thuoc.

The archaeological deposits were said to have been disturbed at four sites, although the nature of this disturbance was not described: Binh Long, Minh Le, Con Ke rock-shelter, Con Ke cave. The stratigraphical relationships of the artifacts recovered were described from only six sites: Lang Cuom, Lang Rang, Han Moen, Dong Lay, Lang Loi, and Ha Moun. For each artifact from these sites, the absolute depth of discovery was noted. However, no sections or plans of the sites (except for a sketch plan of the cave at Dong Thuoc) was published. There was no description of the method and techniques used during the excavations. Thus the data on the absolute depths reported for the artifacts have little meaning.

Mansuy made slight attempt to establish a typology for the collections from these sites. Some artifacts were given names: axe, scraper, pestle, chisel, *coup de poing*, and point. The majority of the artifacts were merely called axes. No definitions were given for any of these categories. Often reference to individual artifacts was made in vague or general terms: for example, 'angular implements' or 'a very peculiar axe' or a 'long narrow thin axe which is a kind of chisel made from phanite.'

The collections fall into two main groups: edge-ground artifacts and those that are only flaked. The latter include both artifacts made from rolled river pebbles and flakes with secondary working. The great majority of the described artifacts are illustrated by photographs.

Elements of a more advanced technology, quadrangular polished adzes which may or may not be shouldered, were reported from nine of the sites: Pho Binh Gia, Khac Kiem, Dong Thuoc, San Xa, Suam Son, Lang Luc, Minh Le cave, Minh Le shelter, and Con Ke shelter. These artifacts were said to represent an upper neolithic stage.

The purely flaked tools were placed in a palaeolithic stage; between this stage and the upper neolithic, Mansuy first defined a lower neolithic, represented by the edge-ground tools with polish limited to the cutting edge; and next a middle neolithic, distinguished from the lower neolithic by an increased amount of polish on the edge-ground tools.

Patte (1936) has criticized Mansuy's division of the collections into three cultural stages, palaeolithic, lower neolithic and middle neolithic, on the grounds that there is no stratigraphical evidence that could be used to support the division. As the sequel will show, Patte's criticisms are well founded. Mansuy did not give any precise analysis of the collections from the sites that are supposed to illustrate the various stages. When it is noted that the 27 sites excavated in Bac Son produced only 207 stone artifacts between them; that only one site (Keo Phay) produced as many as 27 flaked and edge-ground tools; and that 24 sites produced 12 or less flaked and/or edge-ground artifacts, it seems doubtful that any of the sites provided samples adequate for the kind of synthesis that Mansuy attempted. Furthermore, as there was no satisfactory information about the stratigraphical distribution of the artifacts in the deposits, it is impossible even to begin to check on the plausibility of the conclusions. It is true that the absolute depths of the artifacts were recorded for six of the 27 sites, but none of these six sites was that to which Mansuy pointed as being representative of his various phases.

The First Congress of Prehistorians of the Far East was equally unimpressed by Mansuy's conclusions. A resolution was passed stating that although the collection discovered in Bac Son formed a facies separate from the Hoabinhian, further research would have to be carried out before this facies could be adequately defined. The basis of the objection is explained by van Stein Callenfels (1936) who was present at the Congress in Hanoi. He states that the Congress decided that 'the methods of excavation were not sufficiently systematic to allow of any detailed conclusions being drawn on this local facies.'

In essence the collections seem to differ little from those recovered in the Hoa Binh. Flaked tools were made from river pebbles; some retouched flakes were present. Simple edge-ground tools also occurred, as at the Hoa Binh sites. The proportion of edge-ground tools to flaked tools, taking the sites as a whole, appeared to be high. One hundred and nine flaked tools and 80 edge-ground tools were described in the reports. Whether these figures really reflect the nature of the assemblages present at these sites is a matter for conjecture.

Human remains were found at many of the sites. Mansuy himself (1924, 1925*a*) described in detail the human material from two caves, Dong Thuoc and Khac Kiem. Coon (1963) summarized the racial characteristics of these finds. He considered nine crania from Lang Cuom and one from Dong Thuoc to be modified Australoids. Without questioning the accuracy of the original diagnosis, Coon mentioned more or less Mongoloid skulls: six from Lang Cuom, two from Pho Binh Gia and one from Keo Phay. Mixed Negrito features have been attributed to two additional skulls from Lang Cuom.

Faunal identifications were made from the rather inadequate material excavated from the sites, mainly from a study of teeth (Mansuy 1925*b*): *Trionyx* sp. (fresh water turtle); *Rhinoceros*

sp.; *Cervus* sp. (deer); *Bos* sp. (cattle); *Hystrix subcristata* (porcupine); *Ursus tibetanus* (bear); *Macacus nemestrinus* (monkey); and *Hylobates* sp. (gibbon). There was no indication of domestication, and the species seemed to be randomly distributed among the sites.

The last Indo-Chinese site of interest in this context is at Da But, excavated by Patte in December 1926 and January 1927 (Patte 1932). The site is a shell mound, 3 m from a river of moderate size, the Song Ma Giang. The mound is composed of river shells, the majority being *Corbicula*. *Cyrena* and *Cyclophorus* are among the other species represented. The mound covered an area of 50 m × 30 m. The top was flat and stood 3 m, 30 cm above the level of the water flooding the adjacent rice fields at the time of the excavation.

In Patte's opinion the most interesting feature of this site was the burials it contained. However, none of them appeared to be complete or well preserved. The ethnic type present was reported to be Melanesian.

Patte stated that the archaeological material was homogeneous, there being no change with depth. No indication is given of the numbers of artifacts found, or the position in the deposit at which artifacts were discovered. The stone tools were identified with the collections found by Mansuy in Bac Son Province. No detailed description of the artifacts was given, but the hope was expressed that photographs illustrating some of the artifacts would give an impression of the industry.

Faunal remains were fragmentary and difficult to identify, but the species present indicated a hunting/food-gathering economy. Evidences of dog were reported. Twenty-one species of mollusc were identified and fish remains were present, pointing to the exploitation of a riverine environment.

Comparison of the Bac Son and Hoa Binh Assemblages

In both areas the sites were of the same general character. Colani mentioned that there were four principal belts of limestone in Indo-China, lying with their axes roughly in an east-west direction. It was in these areas of limestone that the cave and shelter sites were found. She also pointed out that south of Quang Binh Province, other sites could only be open habitation deposits, since there were no further areas of limestone. Vestiges of such sites have been found in the form of kitchen middens, although the likelihood of the survival of such archaeological sites in the open in such a climate is not high.

With the exception of two sites, all those from Hoa Binh were described as containing great numbers of *Melania* shells. Such deposits as described from Bac Son seem to have had the same general character. On the other hand, the three sites reported from Quang Binh do not seem to have contained as much shell. The open site at Da But was again a kitchen midden, the habitation deposit being mainly composed of shell.

Thus, the deposits all give evidence of a food-gathering economy supplemented by hunting. The species identified were all recent. Mansuy's list, having included monkey, gibbon, deer and fresh-water turtle, seems to require no further comment than that the materials represent food remains. Colani did not give detailed identifications of vertebrate types found in Hoa Binh, but she did mention that the faunal representation appears similar to that from Bac Son.

Grinding stones, 'mortars' and 'pestles' were reported from 10 out of 32 sites in Hoa Binh; from eight out of 22 sites in Bac Son; and two out of three sites in Quang Binh. The implements were quite well represented; the significance of their occurrence at some sites but not others is unclear. Evidence of grinding was provided by conspicuously flat and abraded surfaces on unworked pebbles. Large, flat, hollowed pebbles were mentioned, so both upper and

lower parts of the grinding apparatus were represented. Pounding and hammerstones were unworked pebbles bearing marks resulting from percussion. Some hammerstones bore opposed pits, one on each side. These could have been used for breaking bones and other culinary purposes, for flaking tools, or for grinding the red ochre that is reported from sites in both Hoa Binh and Bac Son.

Bone artifacts were reported from 13 out of 32 sites in Hoa Binh, from four sites in Bac Son, and from all three sites in Quang Binh. No more than two bone artifacts were reported from any one site in Bac Son, whereas as many as 150 were reported from Da Phuc, in Hoa Binh, a site also prolific in stone tools. The evidence presented in the reports threw little light on the significance of the variable distribution of the bone artifacts. Shell artifacts were less well represented. It may be noted that at only one site, Hang Co, in Hoa Binh, were shell artifacts present and bone artifacts absent.

The edge-ground artifacts are of particular interest. It has been suggested that they represent incipient agricultural activities. But in general these artifacts cannot be distinguished from the edge-ground artifacts commonly found in Australia, where they can only have been associated with hunters and food-gatherers. Typologically the edge-ground tools of Bac Son *appear* to be similar to those from Hoa Binh, which fall into two groups: edge-ground only, and flaked and edge-ground. However, there are significant differences in the reported proportion of edge-ground to flaked tools between Hoa Binh and Bac Son. Although it is impossible to discover, from the reports, the total number of artifacts found at many of the Hoa Binh sites, it does seem that only at Lang Vanh was the proportion of edge-ground tools as high as nine per cent of the total number of stone artifacts. At Da Phuc, for example, the edge-ground tools were three per cent of the total. Yet, taking the Bac Son sites as a whole, the edge-ground tools were reported to comprise some 70 per cent of the total. Not only do the proportions of edge-ground flaked tools differ, but also the total numbers of artifacts reported from the two sites are in marked contrast. Colani stated that Sao Dong, Lang Neo, X-Kham, Trieng-Xen, and M-Khang respectively produced over 1,000 tools, 600 tools, over 700 tools, nearly 170 tools and nearly 190 tools. It can be concluded that Lang Vanh produced 600 stone tools and Da Phuc 1,230. But the 32 sites that were excavated in Bac Son are reported to have produced a total of only 189 flaked and edge-ground tools, 207 stone tools in all.

This disparity may possibly be attributed to the reported difference in the depths of the cultural deposits in the two areas. In Hoa Binh, the maximum reported depth of deposits ranges from 10 cm to 3 m 30 cm; in Bac Son, from 50 cm to 2 m. Only two depths are reported from Quang Binh, 1 m 40 cm and 2 m 50 cm. Not only do the depths of the deposits from Hoa Binh cover a wider range than those from Bac Son, but also they tend in general to be deeper, being mostly between one and three m. Eight out of 15 reported depths from Bac Son are one meter or less. This general difference in the maximum reported depths of the archaeological deposits no doubt has much archaeological significance, assuming that the reported depths are accurate. It may be supposed that those for Hoa Binh are reasonably correct, but it would perhaps be unwise to make the same assumption for the Bac Son sites.

It is not to be expected that loose and shifting deposits, as these are generally described to be, which are less than a meter in depth, could give much stratigraphical information in the absence of rigorous and precise excavation techniques. This is why in the analysis of the shallow deposits reported from Bac Son, with their meagre content of artifactual material, little reliability can be placed on deduced sequences.

On the other hand, deposits of greater depth should throw considerable light on problems

of cultural stratigraphy. Some indications of this, although imprecisely defined, are to be found in the deeper deposits from Hoa Binh. It seems probable that the size of the pebble tools changes with their depth in the deposits, so that the earlier tools are larger than the later. Similarly, bifacial work seems to be confined to the upper levels. Also it seems possible that the later tools have been more elaborately flaked (in terms of less cortex remaining and more secondary flaking), so that the earlier tools have a final form that is more closely determined by the original pebble from which they were made. If these trends are present, then they adequately explain Colani's postulated types, which would then merely be individuals selected from continuous ranges.

Furthermore there is some evidence that new elements appear at later stages in the Hoa Binh sequence. Thus it seems that edge-ground tools are confined to the upper parts of the deposits in Hoa Binh. It would be interesting in this regard to know the stratigraphic distribution of edge-ground tools in Bac Son, but no reliable information is available.

A small number of flakes with secondary working is reported from the Hoa Binh sites; these too seem to be confined to the upper levels of the deposits. No conclusions can be drawn about the distribution of similar artifacts in the Bac Son sites.

Earthenware sherds are mentioned from several sites in Hoa Binh and also seem to be confined to the upper levels of the deposits. Of the nine sites described by Colani in 1927, four contained sherds which are said to be found in the upper levels, although sherds were in fact found at Sao Dong in the lower levels where (Colani suggests) they may have migrated through the loose deposits. It is possible that all the pottery found in the deposits is the result of subsequent sporadic occupation by neolithic peoples. On the other hand, it is possible that components of the Hoabinhian culture do include pottery.

The description of pottery in the texts of the reports on Hoa Binh are notable mainly for their brevity. Often no mention is made of the kinds of ware represented; the criteria said to differentiate more recent from older pottery are not clear. The reports for Bac Son are even less satisfactory. No descriptions of the ware are given, and no conclusions can be drawn from the inadequate stratigraphical information. The quadrangular polished axes would appear to be elements from a later Neolithic culture.

It is very difficult to reach any conclusion about the relationships between the Bac Son and Hoa Binh sites relying on published data. The inadequacies of Colani's published reports have been discussed. An examination of Mansuy's descriptions of the Bac Son sites and their excavation only serves to endorse the verdict of the First Congress of Prehistorians of the Far East: there is a need for further work to define the nature and status of the Bac Sonian. Only after careful examination of sites in Bac Son (if suitable sites still remain unexplored) will it be possible to assess their relationships to the sites in Hoa Binh.

Despite the unsatisfactory nature of the published material, the excavations in Indo-China have sketched the outlines of a distinctive culture, based on a hunting and food-gathering economy, with flaked stone artifacts made primarily of pebbles. It was a mesolithic culture in that it exhibited no evidence of agriculture. The rather inadequate faunal data would seem to indicate a post-Pleistocene date. It is commonly called the Hoabinhian, a name that is acceptable in a general way on the basis of the Indo-Chinese evidence, although even in Indo-China the status of related collections like those of Bac Son cannot be defined.

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