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Introduction

The study of prehistory

The subject of this study is prehistory. Its ultimate objectives are threefold: first, to reconstruct a holistic picture of the development of Philippine society and culture during prehistoric times; second, to re-evaluate critically some of the earlier interpretations of prehistoric events in the country in the light of new scientific thinking, in order to put in proper perspective what have been obscured by the advent of Western colonization and scholarship; and third, to present this study as an introduction to Philippine prehistory.

The third purpose is given more emphasis throughout this work. It is hoped that by this presentation certain ingrained value judgements and biases about the origin, development, and nature of prehistoric Filipino society and culture are rectified. To many foreigners acquainted only with recent history, Filipino cultural heritage appears to be nothing but congeries of external elements. Sadly, many Filipinos themselves have accepted this view. They have come to regard their society as a passive recipient of outside influence and their culture a reflection of the glories of other civilizations.

As we shall document in this study, this assumption is not true. The Filipino is essentially rooted to the tradition of his land — the same tradition that has abstracted, reworked and elaborated the different external influences to suit local needs and developments. This knowledge, however, has not yet become part of our national pride because historical scholarship has misled us into believing that we have nothing to be proud of as a people. That

is why there is a need to go back to prehistory in order to rediscover the basic components of our cultural heritage. For it is only in rediscovering these components that we can learn more about ourselves as a people, understand our tradition, recover from the cultural alienation as a result of foreign domination, and once more return to Filipino grounds.

The term Filipino

The term *Filipino*, as used in this study, needs clarification. Many questions have been raised in the past as to its *preciseness* when used to refer to our prehistoric ancestors and culture. This is understandable because the term is of recent origin. In fact, there is even a need for an alternative term which will properly characterize our identity as a people and remove whatever vestiges of colonialism are associated with it. But for the moment, we have very little choice. Filipino has officially been accepted as the identity label for the citizens of the Republic of the Philippines. It is a politico-legal definition, embodied in the Constitution of the country, which has been adapted to encompass the ethnic identification of the people.

Early Spanish explorers called the natives of the archipelago *Indios*. However, in 1543, Ruy Lopez de Villalobos used the word *Felipinas* initially to refer to Leyte and Samar but later to include the entire archipelago. This was done in honor of Felipe, son of Don Carlos I of Spain, the heir apparent (and later successor) to the throne at the time of the expedition. In 1600, Fr. Pedro Chirino used the term *Filipinos* to refer to the natives in the places where he worked. Later, the term was used by other chroniclers to refer only to Spaniards born in the islands. But as it became popular, its usage was extended to identify all the inhabitants and subjects of the Spanish crown in the archipelago. The patriots of the Philippine Revolution of 1896 used the term *Filipinos* to refer only to the native population which took arms against the Spaniards. When the Americans came at the turn of the century, they accepted the word *Filipino* as the official ethnic name for the people but anglicized *Felipinas* into *Philippines*.

This explanatory note is necessary to make explicit our point of reference when we talk about *the Filipino*. The term is used here to refer to prehistoric peoples from whom the present group has descended physically, culturally and socially. The choice is arbitrary. Should there be changes in the politico-legal definition and in the name given to citizens of this

country, we shall adjust our usage accordingly. At present, it is important to keep in mind that we are dealing with the development of the social and cultural history of a group of people known as Filipinos, who inhabit a specific territory known as the Philippines. Certainly, these terms are Western labels but so are most territorial and ethnic terminologies in other parts of the world. Western history has set the process of socio-political change in motion and we can alter it only by shifting our historical perspective in the context of local developments.

Limitation of the study

A word of caution is necessary at the outset. The present study is a tentative reconstruction of Philippine prehistoric society and culture. Two reasons account for this. First, archaeological materials, although comparatively more than what we have in the past, are still by academic standards inadequate for making a rigorous analysis and detailed description of our ancient lifeways. We need to do more research — more systematic excavations. Second, much of what happened in the past can only be partially known. This view is basic to our study. Many important events which occurred in the lives of ancient Filipinos cannot be accounted for at the moment; perhaps, they never will be. Archaeological studies can penetrate the temporal dimensions of the past *only* to the time when prehistoric men fashioned tools and other objects out of non-perishable materials. Beyond this is not known.

But these limitations need not deter us from attempting a reconstruction of our prehistoric culture, even in its very general outline. The important thing is we have accumulated archaeological materials which need to be put together, analyzed, and synthesized in one volume. Certainly, there will always be gaps in our data; otherwise, there is no need for research. Few studies in prehistory are ever written on the basis of satisfactory troves of empirical evidence. New data always emerge as archaeologists continue to excavate in different places where human beings have lived.

Even history cannot be written with precision. There are events in the course of nation-building which by their very nature are not or cannot be documented. Among these are the so-called "behind-the-scenes" planning, bargaining, maneuvering, diplomacy and decision-making. For information, the historian has to rely mainly on memoirs written by leaders after they have retired from public office. Other documentation may be derived from correspondences, newspaper accounts of what took place, and

testimonies of those involved in historical events. Beyond this is historical inference.

This is also true with respect to prehistory. Even if the prehistorian has enough data on hand, he is still faced with the problem of probabilities in his reconstruction. Relationships between data or sets of data are made explicit and relevant to prehistory *only* when the artifacts are examined in the light of their cultural attributes. Attributes are recognized through perceptive deduction from the way artifacts were manufactured, used, and finally discarded (e.g. either as grave furniture or as kitchen refuse).

Properly studied, therefore, archaeological materials, often the only existing record of prehistoric activities, can document what happened in the past. However, before we can use them for this purpose, we have to visualize how these artifacts were related to non-material aspects of group life such as religion, kinship, social status, and the like. It is here where we have to fall back on interpretative analysis. After all, artifacts were made by and for people. They were not manufactured without a purpose. Motives, values, and behavior are non-material but powerful elements of group life. These are learned through imitation or instruction from adult members of the community. They are, however, made manifest in material objects people make and use as part of their adaptive approach to their environment. To show relationship between behavior and material objects, therefore, requires hypothesis-building.

Hypotheses are developed because we want to show the level of relationship between the data or sets of data that we are studying. The test of a hypothesis is its fruitfulness in eliciting logical inferences from what may be considered the intrinsic attributes of the evidence on hand. What is not desirable, in this connection, is the translation into, and uncritical acceptance of, hypotheses as facts. This happened to Philippine prehistoric writings in the past particularly in textbooks. But for as long as a hypothesis is taken as a working tool or as a heuristic device for achieving unity and direction in scholarship, it is the most useful instrument in advancing knowledge. Most of our current scientific knowledge began as hypotheses which stimulated the scientists to verify empirically; if they waited until they had all the data, they would not have made the scientific progress that we know today.

In this study we have presented a number of hypotheses as alternative ways of organizing the data and of interpreting the development of Philippine prehistoric society and culture.

The approach

Our approach to the present reconstruction of Philippine prehistory is that of a social anthropologist, using the tools of the archaeologists and the prehistorians. That is, our description of prehistoric events is developmental but our analytical interpretations of available artifacts are *functional*. Instead of dealing largely with the problem of typology or *how* the artifacts were manufactured, we have sought, through deductive analysis, to discover the reason *why* these artifacts were made, and how these were used.

Certainly, the makers of these artifacts were once-upon-a-time living men, dynamic persons in flesh and blood who were able to mold dirt into jars and pots; metal ores into implements for protection, war, hunting, and agriculture; varicolored stones into jewelry and other objects for personal adornment. These are the things we value so much in our culture today. There is no reason to believe that prehistoric men did not do the same. Seen in this way, it is safe to infer that the characteristic feature of each artifact was done according to the culturally-conditioned choice of the maker. A good reason must have backed up the preference of ancient artisans for one method of manufacture over all others.

Similarly, a series of decisions must have taken place before a burial site was chosen or items for grave furniture were selected to befit the station in life of the dead man. No doubt, ancient men were also rational in their approach to community life. Their achievements in material culture show this intellectual maturity. What motivated and influenced much of their behavior, desires, and "instinctual" drives were their values and beliefs as these were learned, shaped, and changed by cultural traditions. In other words, it is in looking at cultural artifacts as concrete expressions of the ancient Filipinos' ability to deal with the problem of adaptation to their environment that we can understand why these objects were made; that we can appreciate the relationship between the cultural milieu and the implements they manufactured.

Sources of data

The basic source of data for this study is archaeology, a subdiscipline of anthropology. Technically, archaeology has been defined as the study of past cultures, of the remains of man's material equipment — tools, pottery, jewelry, and so forth — which have survived the time and the society which manufactured and used them. These materials have been excavated in places where ancient men lived and died.

Unfortunately, archaeological records will always be incomplete. Only the implements, personal ornaments, burial objects, and the like can survive the ravages of decay. Other materials like wood, barks, leaves, clothing, and so forth are irretrievably lost because they decompose very easily, especially in humid, tropical climate such as ours. Thus, in spite of our bold attempt at a reconstruction of Philippine prehistory, we can describe only its general features.

Archaeology in the Philippines. — What is at present known about Philippine prehistory is primarily due to the painstaking efforts of the archaeologists. As a discipline, archaeology is very young in the Philippines. As a career, it has not been attractive either. Until recently, there have been relatively few students drawn to it and, as a consequence, little systematic work done in various parts of the country. Needless to say, it is from archaeological excavations that we can derive most of our solid documentation of the development of Philippine prehistoric society and culture.

Before 1926, there were only two important archaeological undertakings in the Philippines. The first one was by Alfred Marche, a Frenchman, in 1881. Marche worked in the island of Marinduque and explored other sites in central Philippines. Most of his collections were surface finds and are now with the *Musee de l'homme* in Paris; some found their way to Madrid. Of course, even earlier, sporadic finds and pot-hunting activities had been going on in various parts of the country. The German traveler Feodor Jagor reported having encountered a priest in Naga, Camarines Sur who collected artifacts from ancient graveyards.

Even during the Spanish times, several chroniclers reported "archaeological" discoveries. In fact, Morga in his *Sucesos*, described the ancient artifacts which were recovered by farmers in Luzon, particularly in Ilocos, Pangasinan, Pampanga, and Manila. They were, he noted, "clay vessels of a dark brown color found by the natives, a sorry appearance; some of a middling size, and others smaller; marked with characters and stamps. They were unable to say either when or where they obtained them; but they are no longer to be acquired nor are they manufactured in the islands."¹

Morga suspected that these vessels were purchased by the people from the Japanese traders. He also noted further that the local residents acquired these items "at a very high rate and took much pains in the search for them on account of their value, though but few are now found on account of the eagerness with which they have been sought for."²

The second systematic work in prehistoric archaeology conducted in the archipelago took place in the period between 1922 and 1925. It was carried out by Carl Guthe of the University of Michigan. The purpose of the Michigan archaeological expedition was to collect Chinese ceramics exported to the Philippines from China "that would aid in the reconstruction of Philippine-Chinese relationship."³ In addition, however, Guthe collected locally-made earthenwares and other artifacts. His team likewise conducted several test-digs in Palawan, Bohol, northern Mindanao and other places in central Philippines. The collection, resulting from the trip, consisted of more than 30 cubic tons of prehistoric artifacts. These are now kept at the University of Michigan in the United States.

From 1926 to the outbreak of the Second World War, much of what was archaeologically known was the result of the pioneering work of the late H. O. Beyer. In fact, it can be said that early Philippine prehistoric research was largely built upon his works. Other workers during this time included Olav R. T. Janse, a Swedish-American archaeologist, who conducted a survey of porcelain sites in Calatagan in 1940, and Larry Wilson, a mining prospector, who assisted Beyer in the exploration of numerous Pleistocene sites in northern Luzon.

The years following the Second World War were characterized by an increased interest in the prehistoric beginnings of Philippine society and culture. As such, systematic archaeology was later on introduced as part of the curriculum at the University of the Philippines.

The first post-war excavations were conducted by Wilhelm Solheim II in Masbate island from 1951 to 1953. He was assisted by Alfredo Evangelista and E. Arsenio Manuel. In 1956, Robert B. Fox and Alfredo Evangelista, both working for the National Museum of the Philippines, undertook a series of excavations in the caves of Cagraray, Albay, and Bato, Sorsogon. Also in 1956, M. Sullivan explored several sites and reported on the status of archaeological research in the country. The first extensive post-war archaeological work to be undertaken, however, was the Calatagan diggings conducted by the archaeologists of the National Museum from 1958 to 1962. E. Arsenio Manuel of the University of the Philippines likewise conducted excavations in Marinduque and other parts of the country during the middle of the 1950's. Results of these diggings, however, are not yet available in print as of 1974.

Other minor diggings and explorations followed in the 1960's especially in the southern regions of the Bisayas and Mindanao. These were led by

the anthropologists of the University of San Carlos and Silliman University. In 1963-64, for example, Marcelino Maceda of San Carlos University, technically assisted by the National Museum, conducted excavations in Kulaman Plateau and recovered a number of limestone burial jars. North of this place, Samuel Briones, then a graduate student at Silliman University, reported the presence of limestone burial jars in several caves he visited in 1966 while doing ethnographic work. This led to an organization of a team in 1967, headed by Edward B. Kurjak and Craig T. Sheldon, also graduate students, who excavated the area and recovered a number of artifacts.

Also in 1967, Alexander Spoehr of the University of Pittsburgh carried out an archaeological research in Sanga-Sanga in Tawi-tawi, Sulu archipelago. In Cebu, Karl Hutterer and Rosa Tenazas of San Carlos University did salvage archaeology right in the middle of Cebu City and recovered prehistoric artifacts. Tenazas also dug in the Laguna area and recovered valuable materials, mostly 10th and 14th century artifacts in 1968-69. In Palawan, Jonathan Kress of Yale University worked in the Tabon cave for his doctoral dissertation. Also in the same year, Warren and Jean Peterson carried out extensive work in northern Luzon for their doctoral dissertations. Warren did excavations in Pintu Rock Shelter, Nueva Ecija with the assistance of Israel Cabanilla, while Jean did ethnographic work among the Agta in Isabela province. In Lemery, Batangas a team of students from Ateneo de Manila carried out archaeological excavations from 1968 to 1970. The group was composed of Cecilia Y. Locsin, Maria-Isabel Ongpin, and Socorro P. Paterno. The year 1970 saw two things: the shifting of the National Museum of its archaeological research in Cagayan Valley and a preliminary reconnaissance work in Panay and Guimaras Island for possible pleistocene sites by a team from the University of the Philippines.

In 1971, Karl Hutterer returned to the site he previously discovered in Basey River in southern Samar. In conjunction with his project, the University of Hawaii conducted a summer field school in the area headed by David Tuggle. The result of this fieldwork has already been published in a local journal. The following year, Wilhelm Solheim II and Avelino Legaspi conducted a series of excavations in Davao del Sur. They found a shell-using culture which made tools from large shells through a flaking technique similar to that used in making stone tools.

In 1973, Robert Maher of the University of Western Michigan at Kalamazoo returned to Ifugao and did further archaeological work. The pur-

pose of his work was to document the dates the scholars gave to the rice terraces. Radiocarbon-14 tests performed on the site revealed a date between 800 to 1000±250 BP. Felix Keesing's suggestion that the peoples of Central Cordillera moved into the interior as a result of Spanish pressure is challenged by Maher's data as untenable; this also challenges Bayer's conclusion that the rice terraces were constructed about 3000 B.C.

Perhaps the most dramatic among these archaeological diggings were the ones done by the archaeologists of the National Museum in Tabon and other caves in Palawan. It was in one of the trenches in Tabon cave, in a disturbed section, that fragments of fossilized human bones, including the frontal piece of a skull, were recovered. Also recovered were fossilized bones of small animals. Charcoal materials analyzed by carbon-14 technique revealed the presence of man in the areas between 22,000 to 30,000 years ago.

Other than Tabon cave, the most promising archaeological sites today are those found in Cagayan Valley. As of 1971 fifty-four sites have been reported to be relatively rich in terms of additional information concerning the complex problem of Philippine prehistory. Data from three sites excavated indicate, at least tentatively, close association of fossil remains of ancient animals (like elephants and stegodons) and stone tools fashioned by prehistoric men. This suggests the possibility, though not definitely, that ancient men and animals were present in the area, perhaps contemporaneously, with the former hunting the latter for food or vice-versa. The term "contemporaneous" does not mean "occurring precisely at the same time." Rather, the occurrence could possibly have been within a given time horizon — a chronological span perhaps of hundreds of years. There are places where animal fossils are found in strata which predate the appearance of man in the archipelago. It is hoped that one day the fossil bones of prehistoric men will be found in any of the Cagayan Valley sites. When such an event happens, much of what took place in our country during prehistoric times will be clarified and our understanding of the past will be broader than what we know today.

This optimism is reinforced by the preliminary findings of the Ateneo de Manila University group in the Lemery-Taal sites. In a report, released for publication in a local newspaper by Fr. Frank Lynch S.J., field supervisor of the team, it appears that the group has "uncovered a series of stratified sites, each representing at least four cultural periods in Philippine prehistory."⁴ These periods span a development of culture in the area over

at least 40,000 years. So far no carbon-14 dating is available for this site. The progression of the Lemery-Taal cultural development through time, as reconstructed, has been summarized below.

CHART I

LEMERY-TAAL CULTURAL DEVELOPMENT THROUGH TIME

Approximate stratigraphic layer (from top to bottom)	Basic cultural features
Phase I	"Fifteenth-Sixteenth Chinese porcelain sherd immediately below the pumice layer indicate a period of peripheral occupation by fisher folk who directly or indirectly participated in the rice maritime trade of the time. Their habitation site and burial grounds are situated a few hundred meters to the northwest.
Phase II	<p>"The second phase, determinable at two to three meters below the present surface, iron age pottery, beads, ochre concentrates, primary extended burials and primary or secondary burials in large urns.</p> <p>"The assemblage from a middle site located on a nearby promontory is being studied for probable corrections with that of the iron age burial site. Present dates of the Philippine iron age are 190 to 900 AD.</p> <p>"The iron age burials in the sites investigated are intrusive into an undoubtedly more ancient site used over a long period of time by a culture dependent at least in part on an obsidian flake tool technology.</p>
Phase III	<p>"The third phase is presented here by several thousands of flake tools recovered from a depth of 2 to 4.5 meters and in association with animal bones.</p> <p>"Immediately following the eighth stratum are two alternating layers of tuffaceous chunks and pebbly lateritic soil which yielded no cultural materials.</p>
Phase IV	"A depth of five to six meters from the surface, paleolithic tools, including hand-axes, scrappers, core tools, and other chopping tools were found in gray sandy remains of an old stream bed which constitutes the 11th stratum and to which fourth and oldest phase has been assigned."

Source: *The Manila Times* (February 16, 1971), pp. 1;20.

Other sources. — To supplement archaeological materials, we turn to historical documents, particularly the accounts of early Spanish chroniclers who came during the 16th century. These documents are relied upon heavily for information on the changes, continuity, and stability of our traditional beliefs and practices up to the 16th century A. D. To be able to recreate the past, the prehistorian must have a sense of social history. His major work is to find out ways by which archaeological data can be placed in broader historical perspective. For whichever way a prehistorian may look at society he would be faced with the keenest challenge of historical writing which involves documentation and analysis.

Indeed, there is much to learn about Filipino society and culture by combining the two approaches of archaeology and history. History is not merely a series of events; it is the relationship between them. For events are meaningless by themselves; they have to be seen in relation to other events and in the context of the prehistoric social system. Artifacts are also meaningless by themselves. They have to be interpreted deductively in the light of events occurring even during historic times. It is here where documents become important to prehistoric studies and, also, where history and archaeology complement each other. As archaeologists excavate artifacts from sites where prehistoric peoples lived, they are automatically providing historians with data to document past achievements of society. In turn, as historians analyze the significance of these artifacts to historical events, they provide the archaeologists with deeper historical perspective.

To achieve a wider perspective in this study, we have drawn additional materials from the works of other scientists. The works of the botanists, zoologists, geologists, paleontologists, physical anthropologists, and chemists have also been consulted for corroborative evidences on ecology and adaptation.

Dating techniques

It needs to be stressed that comparative analysis of artifacts is possible only when these are properly excavated and dated. The dates assigned by scholars to cultural complexes or to a particular horizon are influenced by the types of artifacts recovered, the chronological position of each cluster of artifacts in the stratigraphic layer of the earth, and by the recognizable imprint of human use. In the Philippines, the dating techniques so far used may be categorized into two: the *traditional technique* which establishes dates on the basis of historical records, nature of artifacts, and geolo-

gical layers where the artifacts are found; and the *modern technique* which employs carbon-14 determinations of organic samples recovered in archaeological sites.

Traditional technique. — Until the post-Second World War, the dating of various phases of Philippine prehistory was indirect and relative, although many scholars uncritically accepted the dates as absolute temporal sequences of events. By relative is meant that the dates are merely approximations, arrived at by inference from studies made of artifacts that bear signs of human use and of the geologically-identified layers of the earth in which these artifacts are found.

By correlating information derived from these two sources with those obtained from other studies like soil chemistry, pollen-grain analysis (when-ever available) and paleontology, scholars are able to reconstruct patterns of settlements, concentration of population, and the period during which the sites were inhabited. As of May 1974, prehistoric studies in the Philippines have not yet involved determination through soil chemistry, flourine tests (on bones recovered), dendrochronology, or pollen analysis. The technique of dating sites has been limited mainly to artifactual, stratigraphic and paleontological correlations.

Within proto-historic times — especially between the 10th and the 16th centuries — the dating technique employed by the archaeologists to assess the cultural significance of excavated artifacts for these periods is what has been described as *associational*. That is, the chronology of cultural events in the Philippines is done by relating artifacts, especially ceramics, recovered from various archaeological sites with those trade items imported from neighboring countries like China, Thailand, and Indo-China where approximate dates of manufacture are historically known. While still accepted as one of the techniques for dating ancient habitation and burial site, the associational method has, for the Philippines, given rise to the complex problem of chronological dates in the reconstruction of prehistoric events.⁵

One of the weaknesses of artifactual dating, especially of materials which are not manufactured locally, like porcelain, is its inability to exercise control over what might be termed "historical time." That is, a considerable period of time had taken place from the day the porcelain was kilned in China or Indo-China, for example, to the time it was transported, exchanged, used, buried as a grave furniture and excavated as a cultural artifact. This time gap is often obscured by the analyses mainly of the diagnostic features

of the artifacts or the iconographic characteristics of dynastic manufactures. This handicap, however, can be remedied by carbon-14 dating and by corroborative evidence from historical records.

It is safe, therefore, to infer that much of what has been said about proto-historic sites in the country are, at most, inferences based on the presence of a quantity of porcelain and other ceramic artifacts. The weakness can be easily overcome by tighter control of associated materials in grave sites and through the use of ethnographic data in the interpretation of the possible functions of artifacts in actual life.

Modern dating technique. — Recently, a more dependable method of dating has been introduced to the study of Filipino prehistory and culture. This is the radiocarbon-14 method. The technique was first devised by Dr. Willard Libby, a University of Chicago nuclear scientist. After a long series of experiments, Dr. Libby discovered that certain radioactive elements taken in by plants and animals when alive disintegrate at a constant rate when they die.⁶ One of these elements is radiocarbon which has an atomic weight of 14; hence, the name radiocarbon-14.

Radioactivity, in simple terms, is formed when ordinary inorganic substances, like carbon, are exposed to cosmic-ray bombardment in the upper atmosphere. Neutrons, one of the smallest atomic units, are thus produced by this cosmic radiation which, by reacting with nitrogen, are converted into carbon dioxide. As these new elements are dispersed in the air, they are taken in by plants through the process of photosynthesis. When animals, including man, feed on these plants, they, in turn, absorb a limited amount of carbon-14 into their system.

Disintegration of carbon necessary to maintain life in living organism is 15.6 per minute. As long as "an organism lives, this level would remain constant because carbon-14 is constantly being replenished from carbon dioxide in the atmosphere but as soon as it dies, the proportion would begin to decrease as carbon-14 disintegrates via beta decay, forming nitrogen-14."⁷ The rate of disintegration of carbon-14 in dead matter is 7.8 per minute per gram in proportion to the remaining half-life span of the atom, which will disintegrate in the next 5,568 years. Thus, with "the knowledge of the rate of decay or half-life (present accepted value varies between 5,568 to 5,720 years), the original concentration, and concentration of carbon-14 in dead tissues, the time elapsed since death of the organism could be found."⁸

Knowing the half-life and the rate of disintegration of carbon-14, the original concentration can next be calculated in terms of one atom of car-

bon-14 to 0.8×10^{12} atoms of carbon-12. This "proportion, present in the carbon content of a living organism or one which has just died, would produce an average of 13 disintegration or counts (opm) per gram of carbon."⁹ After 11,136 years only one-fourth of the radiocarbon atoms will remain; and by 16,704 years later, only one-eighth will remain and so on. All of these radioactive carbon will disappear within the span of about 70,000 years, thus limiting the time at which the carbon-14 technique can be useful. The temporal range which contemporary laboratory equipment are capable of measuring effectively reaches only to 40,000 years. Perhaps as soon as the technique becomes more refined, accurate measurements of dates beyond 40,000 years are possible.¹⁰

The sample materials that yield to carbon-14 tests are charcoal, flesh, wood, and other organic materials. The reliability of the test depends upon the type, quantity and preservation of the sample, as well as the interpretation of the archaeological context in which the same were recovered. As previously suggested, carbon-14 dating may still be considered "potentially absolute." This caution is noted because carbon samples are subject to contamination which may cause errors in laboratory analysis. To safeguard against this possibility it is necessary to make several test-runs of the sample. The greater the number of tests, the smaller the plus-or-minus error becomes.

In the Philippines, several carbon-14 dates have already been obtained from various archaeological sites since after the Second World War. This technique has given us better and more accurate dates for prehistoric events which took place in the country. Chart II shows some of the dated sites in various parts of the archipelago as of 1974. These dates provide us with deeper insights and more information about the development of Filipino prehistoric society and culture than those established by indirect dating techniques.

The use of carbon-14 technique for dating archaeological sites has revolutionized our approach to Philippine prehistory. It has given scholars adequate tools to establish time horizons for the cultural development of prehistoric life in this archipelago with a relative degree of accuracy and confidence. In addition to cultural materials, recovered *in situ* (although not exactly side by side) with fossil animal bones, this dating technique reinforces the position of the archaeologists concerning the presence of man in our country for a long period of time; these scientifically-derived dates also enable them to reconstruct the past with certainty and direction.

CHART II

SOME MAJOR PHILIPPINE PREHISTORIC SITES DATED BY CARBON-14

<i>Sites (place)</i>	<i>Fieldworkers</i>	<i>Dating agencies</i>	<i>Dates</i>
Tabon Caves, Palawan, Lipuun Pt., 1966	Robert Fox, Innocentes Paniza, et al	UCLA-958. Institute of Geophysics, R. Berger and W. Libby	30,500 \pm 110 BP
Tabon Caves, Palawan 1966	Robert Fox, Innocentes Paniza, et al	UCLA-699. Institute of Geophysics and Planetary Physics, R. Berger and W. Libby	23,200 \pm 100 BP
Tabon Caves, Palawan 1963	Robert Fox, et al	UCLA-288. Institute of Geophysics and Planetary Physics, G. Ferguson, et al	22,000 BP
Tabon Caves, Palawan 1963	Robert Fox, et al	UCLA-283. Institute of Geophysics and Planetary Physics, G. Ferguson, et al	22,000 BP
Tabon Caves, Palawan 1963	Robert Fox, et al	UCLA-285. Institute of Geophysics and Planetary Physics, G. Ferguson, et al	21,000 BP
Tabon Caves, Palawan 1963	Robert Fox, et al	UCLA-284. Institute of Geophysics and Planetary Physics, R. Berger and W. Libby	9,250 \pm 250 BP
Duyung Cave, Iwahig, Palawan 1966	Robert Fox, et al	UCLA-286. Institute of Geophysics and Planetary Physics, R. Berger and W. Libby	7,000 \pm 250 BP
Guri Cave, Palawan 1966	Robert Fox, et al	UCLA-698. Institute of Geophysics and Planetary Physics, R. Berger and W. Libby	4,070 BP
Bato Cave, No. 2, Bacom, Sorsogon, Bicol, 1956	Robert Fox, Fred Evangelista	M-728. University of Michigan Radiocarbon Laboratory, H. R. Crane and J. Griffin	2,550 \pm 250 BP

Sites (place)	Fieldworkers	Dating agencies	Dates
Manunggul Cave, Palawan 1966	Robert Fox, et al	UCLA-992A. Institute of Geophysics and Planetary Physics, R. Berger and W. Libby	890 BP
Batungan, Mt. Masbate 1952-55	W. Solheim II. submitted by Harold Conklin	L-274. Lamont Natural Radiocarbon measurement, Lamont Geological Observatory (Columbia University)	756 \pm 100 BP
Pintu Rock Shelter ¹¹	Warren Peterson	Gakushuin University Laboratory, Tokyo GAK No. 2941	2,328 \pm 150 BP
		GAK No. 2941	1,442 \pm 100 BP
		GAK No. 2937	4,017 \pm 140 BP
		GAK No. 2938	5,274 \pm 220 BP
		GAK No. 2939	3,378 \pm 110 BP
		GAK No. 2942	3,389 \pm 230 BP
Rock Shelter, Talkod Island, Davao, 1974	Wilhelm Solheim II and Avelino Legaspi	Sydney University Radiocarbon Laboratory SUA 256 NM 256 NM 72-Q-2	7,320 \pm 100 BP
		SUA No. 257 NM 72-Q-3	7,620 \pm 120 BP
		SUA No. 253 NM 72-Q-3	3,765 \pm 85 BP

Persisting problems

Even with these additional historical and natural science materials, the picture of Philippine prehistory is still very sketchy. More researches have to be done. This problem has been compounded by the advent and proliferation of antique collectors and pothunters whose collection of prehistoric materials for sale (abroad and/or locally) has caused irreparable damage to archaeological sites. Even tektites are gathered for sale.

Pothunting is the term used for unsystematic diggings of prehistoric sites by private collectors and untrained persons. Such an activity amounts to destruction of the only source of evidence about man's early lifeways in our country. Pothunters do not keep records of important artifacts associated with the objects they want to keep as collection items. In the process, the recovered materials become meaningless in terms of historical value. Once disturbed, the site also becomes useless for further study or future systematic archaeology — its value as a repository of records of our past obliterated forever. The outstanding contribution of archaeology to our understanding of the past rests on its methods of establishing valid generalization about prehistoric events on the basis of systematic excavation and study of recovered artifacts.

In addition to the illegal activities of pothunters, the other persisting problem faced by prehistoric research in the country today is lack of financial support for systematic excavations of important archaeological sites before these are destroyed. Affluent private citizens and civic organizations had, in the past, attempted to underwrite the expenses of some excavations. However, many of the donors expected a share of the recovered materials either for their private collections or for sale. When the diggings failed to uncover a *bonanza* of attractive artifacts, the supports were withdrawn and the archaeologists were even suspected of "hiding" the materials from the sponsor. This attitude had dampened much of the enthusiasm of scholars to turn to private individuals and organizations for support.

Government funding for archaeology is also inadequate. Prehistoric research is viewed by many technocrats as not directly related to contemporary problems like economic development and is, therefore, given the lowest priority in government projects. Even universities, supposedly the center of learning, are not enthusiastic in supporting archaeological excavations. Of course this is understandable. Systematic fieldwork takes time and is often very expensive. Again, in terms of program priorities archaeological research takes the hindmost in university budgets.

This lack of adequate support discourages many young Filipinos from pursuing prehistoric research. This again is a problem for there is a dearth today of trained personnel to do systematic work. Thus, most excavations are done either by untrained antique collectors who destroy the site or by less competent students who misinterpret our cultural heritage. Unless systematic work in prehistoric archaeology is supported, our knowledge of our past heritage will continue to be unknown, buried in the ground. It needs to be stressed that a knowledge of the past is significant in making us proud of the present. It is this pride that enables us to meet the challenge of nation-building — the challenge of building a New Society. □

PART ONE

THE NATURAL SETTING

In this part of the study the natural setting of Philippine prehistoric society will be described. Society, by its very nature, does not exist in a vacuum. It is anchored on a specific natural setting, defined in terms of geographical location, floral cover, faunal resources, and human inhabitants. These are the linkages through which man is able to "order" nature to suit his social, intellectual, ritual, and material needs. Through the same avenues he is able to make himself "fit" his environment. That is, he develops technology to insure his economic survival; organizes social institutions to facilitate interpersonal and group relations; formulates philosophies to provide logic to his actions; and performs rituals to assuage his fear of the unknown. As this is true today, so it was in the past.

To understand prehistoric society, therefore, one has to begin with the basic linkages which facilitated and shaped it. The geological foundation of the archipelago is described in Chapter I. This is intended primarily to characterize the geographical location and the ecological niche where ancient Filipinos lived.

Ecology includes the parameters of geography, climate, flora and fauna. These elements of the surrounding world are described in Chapter II. The most important part of this environment are the human inhabitants. The distribution of the fossil human in Island Southeast Asia is presented in Chapter III. This is done in order to put in proper regional context the peopling of the archipelago.

Prehistoric scholarship in the country at present is in a "confused" state. This is mainly because fossil evidences of early man have not been properly examined in the context of the adaptive development of society and culture. Neither have been the existing ecological realities of life in the archipelago, as well as in the region, considered in the analysis. It is hoped that the presentation of fossil evidences of early man in the area can help resolve some of these persisting problems. □