MITHSONIAN MISCELLANEOUS COLLECTIONS
VOLUME 146, NUMBER 1

ABORIGINAL CULTURAL DEVELOPMENT IN LATIN AMERICA: AN INTERPRETATIVE REVIEW

Edited by
BETTY J. MEGGERS and CLIFFORD EVANS

(PUBLICATION 4517)

CITY OF WASHINGTON
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PREFACE

The papers comprising this volume had their inception in a conversation between several archeologists in a Vienna coffee house in August of 1960. We had been attending sessions of the 34th International Congress of Americanists, and had independently come to the same conclusion, namely, that the international forum provided by the Congress was being wasted by the presentation of papers dealing principally with local archeological problems of limited interest to anthropologists and nonspecialists. We agreed that it would be appropriate to organize for the following Congress to be held in Mexico City a session devoted to interpretative regional summaries of Latin American prehistory.

Preparations for the session began during the winter of 1960–61 with the selection of participants. A schedule of deadlines was established that would lead to the submission of final papers to the organizing committee 6 weeks prior to the date of the Congress. Detailed instructions were circulated in order to produce as much uniformity as possible in the organization and content of the papers. In addition to a manuscript, each participant was requested to supply the detailed information included in the Appendix.

The goal of the symposium was to provide interpretative summaries of Latin American aboriginal cultural development rather than factual descriptions of archeological sequences. The participants were requested to keep data to a minimum and to present reconstructions that seem feasible, although they cannot always be completely demonstrated at the existing state of our knowledge. Each author is a specialist in the area he describes, being familiar not only with published sources but with sites and fieldwork that is not yet completely studied and published. His reconstruction draws upon this background and weaves together the facts that seem to form a pattern of cultural development through time and space. It should not be assumed that the authors take credit for all the interpretations they propose; they have followed instructions in providing a synthesis of what they believe to be the most acceptable conclusions about their area. Limitations placed on length of the papers do not allow discussion of alternative interpretations or contradictory evidence. References include literature cited and in some cases additional material of background interest, but do not pretend to be complete bibliographies for the area. The well-informed reader will be aware of the

many gaps in our knowledge, the filling of which may change some of the ideas we now have. Should this volume fall into the hands of an interested layman, we hope he may derive from it a better understanding of what archeologists are striving for when they dig into the earth.

The papers are revisions of those delivered on August 22, 1962, at the 35th International Congress of Americanists in Mexico City. We wish to express the gratitude of all the participants to Dr. Ignacio Bernal, President of the Congress, for his interest and support, and for serving as chairman of the session. Thanks are due the Wenner-Gren Foundation for Anthropological Research of New York City for making possible the attendance of four of the South American participants at the Mexico City meeting, the fellowship section of the Pan American Union of Washington, D.C., for generously allowing one participant to accept his foreign study in the United States via the Congress, and the Institute of Andean Research, Inc., of New York for subsidizing the purchase of extra volumes for distribution to Latin American institutions and scholars. For the numerous typings of various versions of the manuscripts always with pressing deadlines, we wish to express our appreciation for their cooperation and efforts to Miss Judith Hill and Mrs. Jeraldine Whitmore. Thanks are also due George Robert Lewis for drafting most of the charts and maps.

As the organizers of the symposium and editors of the present volume, we wish to record the pleasure that it has been to work with our colleagues over the past two years. Their cooperation in following instructions and meeting deadlines has achieved a result that no single archeologist could have produced. Whether the interpretations survive the test of time is less important than the fact that archeologists from nine countries have been able to collaborate in the solution of the problem that is our common goal—the reconstruction of cultural development in the New World.

B. J. M.
C. E.

November 1, 1962

CULTURAL DEVELOPMENT IN NORTHERN MEXICO

By CHARLES C. DI PESO

The Amerind Foundation Inc., Dragoon, Arizona

Northern Mexico, known in the past as the Gran Chichemeca, is a vast and puzzling archeological zone which lies, for the most part, north of the Tropic of Cancer (fig. 1). It is bounded on the west by the Pacific Ocean and on the east by the Gulf of Mexico. The northern line may be equated with the international border separating the United States of America and the Republic of Mexico. It is important to note that there are no natural barriers on either the north or the south.

This area includes over 1,050,000 square kilometers, more than one-half of the Republic; yet, this land of the 'Sons of the Dog" today supports only one-fifth of the population. In the north there are 6 persons per square kilometer as compared to 25 in the south.

The north country includes at least four geographical subareas (Lopez de Llergo, 1959), each having varying climatic aspects. These range from the coastal eastern forest lands of Tamaulipas up to the dry mountains of the Sierra Madre Oriental and into the mesquite grasslands of the central plains (fig. 1). The country continues to rise westward to the Sierra Madre Occidental, which includes a belt of mountainside oak country as well as high pine forests with pleasant "top-of-the-mountain" meadows. The west scarp of the Sierra drops sharply through a series of wild, craggy mountain ranges into the Sonoran-Sinaloa coastal plain. Most geographers separate the peninsula of Baja California from the latter climatic zone, primarily because of its geographical location. Within this area the mountain valleys as well as the coastal river systems tend to run north and south, with a few major rivers, such as the Aros, cross-cutting the main watershed flow in an east-west direction. Contrary to popular opinion, the Sierra Madre Occidentales are not a major barrier to foot travel.

The Sierra Zacatecas, located along the southern border, does not act as a wall against north and south communication, as the Central Basin and Range Province is tilted downward from south to north. If there are no natural barriers between the north and south, why then is

there such a noticeable difference in the physical and cultural patterns of the two areas?

A climatic barrier can be traced along the line of the Tropic of Cancer. The area north of this line was, for the most part, ignored by the sedentary valley peoples. Recently, the Aftosa Commission used this same climatic boundary as a determinant between the southern area of hoof and mouth disease contamination and the uncontaminated north.

Anthropologists have not thought of this area as the hearth of any great culture. It has been portrayed as that area through which the higher cultures of Mesoamerica traveled while making contact with the North American southeast and southwest. In both time and space it is thought of as the homeland of primitive groups, who on occasion were inspired by certain valley cultures, late in their historical continuums, particularly in both coastal zones. At best it has been considered as peripheral to the culture of both Mesoamerica and the North American southwest.

Swadesh (1959) recognizes two major language groups of considerable time depth in northern Mexico. Throughout the western portion of the Chichemec country, as well as in Tamaulipas, he notes the presence of the old Macro-Nawan group. Scattered islands of the Macro-Yuman group are charted in Coahuila as well as along the Sonoran coastal plains and in upper Baja California. Taylor (1961, pp. 71–81) suggested that this latter group may be a linguistic remnant of a very old Yuma desert cultural pattern that once covered the entire northern zone. A third block of languages, located in the central plains, may be part of a late Athapascan infiltration, as it includes such languages as the Toboso tongue.

The following description of the historical continuum is framed in terms of a series of events which may have had trigger effects upon the inhabitants in the archeological zone. Unfortunately, the lack of detailed studies does not permit one to speculate on causal factors. One can only offer suggestions based on scant evidence and comparative factors drawn from the surrounding cultural areas. The proposed historical outline is by no means definitive, but perhaps it will be stimulating.

MAN AS A SOIL MEMBER

THE PRECERAMIC HUNTERS AND GATHERERS OF PLEISTOCENE FAUNA AND FLORA

Throughout the length and breadth of northern Mexico have come bits of evidence indicating that man once roamed the area in the

shadow of certain Pleistocene megafauna. He is thought to have existed as a simple soil member like any other animal or plant in its natural state (Jones, 1954).

In the western half of the zone, Clovis fluted points have been reported from the Sonoran area (Roberts, 1944, p. 417, Di Peso, 1955) and in south-central Durango (Lorenzo, 1953, pp. 394–395). These can be compared to the culture of the Llano man who left the remains of a "kill" near Naco, Ariz. (Haury et al., 1953, pp. 1–24).

In the eastern section a Plainview point has been reported from northern Tamaulipas near the city of Guerrero (Arguedas and Aveleyra, 1953, pp. 392–393). This evidence suggests that Paleo-Indian hunters may have come from the high plains of North America and penetrated the northern portion of northern Mexico at sometime in the late Pleistocene.

There is no specific evidence in northern Mexico that would permit one to say that the first man who walked on the soils of this land was a hunter, and that he evolved with time into a seed gatherer and finally became a farmer. The rare evidence of fluted points may indicate (1) an occasional penetration of Paleo-Indian hunters into the homeland of an older desert culture (Jennings et al., 1956, p. 72) or (2) that both cultures, the Folsom-Clovis hunters and the Desert-Cochise gatherers, sprang from a still older and yet undefined culture (Taylor, 1956, pp. 215–234) and that the hunting and gathering emphasis of these two segments was determined by both temporal and environmental causes rather than a result of historical growth, or (3) that the Paleo-Indian hunter culture actually predates the desert culture in northern Mexico (Haury et al., 1953, pp. 12–14).

Most authorities associate certain Paleo-Indian chipping industries with the bones of Pleistocene animals and place these associations as prior to 10,000 B.C. Geologic evidence suggests that this was a time of alluviation and of arroyo cutting (Martin et al., 1961) caused by drastic climatic shifts from humid to arid. Yet there is no proof that this action was associated with either increased or decreased precipitation. Recent studies of pollen columns in northern Mexico and the southern portions of the North American southwest do not support the climatic shift hypothesis, as there is no apparent shift in flora associated with the geologic evidence of arroyo cutting. It would appear as though plant life in this area shifted very little and that consequently the extinction of certain Pleistocene fauna may not have been due to climatic changes, but rather to man himself (op. cit., pp. 84–86).

The suggestion has been made that it was possible for Pleistocene

forms such as elephant and horse to have lived under climatic conditions that were much the same as they are today. If this be true, and it is a startling thought, how does the lack of Pleistocene fauna from Frightful Cave (fig. 3) in Coahuila (Taylor, 1956) fit into the picture? Had the elephant and other Pleistocene megafauna disappeared from north and central Coahuila earlier than in northwestern Chihuahua, where both horse and bison have recently been found? (Martin et al., 1961, pp. 60–61.)

It would appear as though the culture of the desert dwellers was widespread throughout northern Mexico in both time and space. This manifestation of nonsedentary seasonal gatherers appears to be related to the Cochise desert culture and is recognized as existing from the northwestern corner of the United States to the valley of Mexico, and from the Rockies to the Pacific Ocean (Jennings et al., 1956).

These ancient nomads lived in the open or on occasion in caves or shelters. Their economy was one that permitted maximum use of the environment without causing permanent injury to the ecological balance. Pottery has not been associated with this horizon; however, basketry, netting, matting, fur cloth, tumplines, fiber sandals, as well as the atlatl, hardwood foreshafts and milling stones, cobble manos, percussion chipped tools, and numerous other artifacts have been found.

It is difficult to date the inception of the desert culture because many of the indigenes were living at this level when first visited by the Spanish. In northern Coahuila a cultural sequence containing much of the same material culture appears to run from 6000 B.C. to Spanish contact times. However, where dating controls are present it can be said that the old desert culture was found in Baja California (Massey and Osborne, 1961), along the northern Sonora coast (Fay, 1959), where it was termed the Peralta Complex and was thought to be comparable to the San Pedro stage of the Cochise continuum, as well as in the Mayo River drainage of southern Sonora (Ekholm, 1940). The Los Caracoles Culture of Durango (Lister, 1955, p. 54; Kelley and Winters, 1960, pp. 547–561) appears to be part of the desert complex. Similar manifestations are reported from the caves of northwestern Chihuahua (Lister et al., 1958, p. 112; Ascher and Clune, 1960, pp. 270–274), as well as from the lake regions of Bolson de Mapimi in southern Chihuahua (Marrs, 1948).

In the Coahuila lake country the caves of La Paila and Candelaria have produced abundant evidence of the desert culture (Aveleyra et

al., 1956), as have caves in northern Coahuila (Taylor, 1956, pp. 215–234). Perhaps the most significant data have been forthcoming from Tamaulipas where MacNeish, working with early desert culture material, uncovered evidence of certain food plants which apparently were domesticated very early. This would mark the beginning of an economic shift where some men in northern Mexico left the natural state as soil members and took upon themselves the role of soil parasites and began an agricultural existence. This interval of change must have been long and arduous, lasting perhaps 5,000 to 6,000 years.

The introduction of gourds and squashes into the area of northern Mexico may first have been regarded by the indigenes as a supplement to their wild-plant food sources. The southern Tamaulipas caves in the Ocampo district have recently provided data suggesting that the bottle gourd (*Lagenaria siceraria*) appeared probably as a camp follower plant around 7000 B.C. (MacNeish, 1958; Cutler and Whitaker, 1961, p. 483). This plant, as well as members of the squash family (*Cucurbita pepo*), which became a primary food source, were domesticated in the Ocampo area perhaps by 6000 B.C., as both have been associated with the Infiernillo Culture of southern Tamaulipas. It has been proposed that both plants disseminated through northern Mexico and into the Mogollon desert cultures of New Mexico and Texas by 3000 B.C. (MacNeish, 1960).

The desert cultures were apparently slow in accepting *Zea mays,* which followed in the wake of the gourd-squash group about 3000 B.C. Primitive pod corn has been identified in Tamaulipas in the La Perra Horizon and found to be similar to the Bat Cave maize (Dick, 1954, p. 141), the latter associated with the Chiricahua Horizon of the desert culture continuum.

It may be suggested that beans (*Phaseolus vulgaris*) reached northern Mexico by 1000 B.C. (op. cit., p. 143). After this date, and only when a cluster of these plants had been accepted by the people, does a recognizable revolution occur in the northern Mexican cultures. Certain architectural innovations appear, such as the making of pit houses and storage bins. Finally, with the appearance of pottery the cultures become more independent of one another and take on individual area characteristics. Routes of acceptance through north Mexico remain in question, although several have been suggested for transmission of pod corns (Jones, V., 1949, p. 246). The Sierra Madre Occidentales are thought to be the way by which the Hohokam-Basketmaker corn complex traveled; the Mexican complex spreading

by way of the central plateau into the Anasazi area, and the eastern complex moving out of Guatemala along the east coast and into the Caddo area.

Northern Mexico was apparently on the receiving end in matters pertaining to the acceptance and development of domesticated plants, which were derived from various places and at different times in the historical continuum of the zone. One thing we are fairly certain of is that in northern Mexico, as in the rest of the New World, the shift from food gathering to food production, wherein man changed from living with his environment to living off of his environment, was a long, slow process. Many of the indigenes of the area never did achieve or accept a state of stable food production, save in some of the lusher river valleys, and then not until comparatively late in time. There are many impressive questions which remain to be answered. One is, whether roots and other tubers or seed plants were the first to catch the eye of the food gatherer.

MAN AS A SOIL PARASITE

NUCLEAR FAMILY FORMATIVE VILLAGE FARMING COMMUNITIES BEARING PLAINWARE POTTERY (A.D. 1–500)

Villages similar in form and content to the earlier desert culture save for the addition of simple brown-and-red wares have been described as forming the ceramic base of the Mogollon Culture (Martin et al., 1952). The Pinelawn Phase of the Mogollon; the Peñasco Phase of the Ootam at the San Simon Village (Sayles, 1945, pp. 5–15), and the Vahki Phase of the Snaketown chronology (Gladwin et al., 1937) imply that sometime after agriculture became a set economic pattern, ceramics were introduced into the widespread desert cultures. This cultural trait probably originated somewhere in Mesoamerica.

One of the difficulties in carrying on a search for old plainware sites in northern Mexico is that although a number of ruins bearing only brown-and-red wares in association with crude house structures have been reported (Amsden, 1928), they cannot be placed in time because such ruins can appear at both ends of the ceramic continuum. Sites of this type were probably occupied through Sonora and parts of Sinaloa, as well as Coahuila and Durango when the Spanish made their initial contacts. It is believed that such an early ceramic phase did exist in Chihuahua (Lister et al., 1958, p. 110) and Durango, as well as along the Conchos River (Kelley, 1954, pp. 172–179). If the Valley of Mexico was the original source for ceramics, as suggested by a similarity between the first known Mogollon ce-

ramics of the North American southwest and the Mesoamerican middle culture "bay wares" in both manufacture and color if not in form, then northern Mexico may have received this inspiration at about the same time as did the northern fringes of the culture in the Mogollon mountain area of the southwest (fig. 2).

A significant innovation is the formation of small nuclear villages around the beginning of the Christian era. Soon thereafter, ceramic art traditions appeared and took on provincial techniques of a type that permit the ceramic student to categorize the subsequent cultural growth of the entire area in terms of ceramics.

KIN-GROUP FORMATIVE VILLAGE FARMING COMMUNITIES BEARING PAINTED POTTERY (A.D. 500–900)

This phase in the general history of northern Mexico is marked by (1) the appearance of decorated ceramics, (2) increased population as reflected in the growth pattern of settlements, (3) increasing provincialism, and (4) a division of the indigenous population into farmers and nomads. Along the south-central border of the area, local settlements may have been influenced by the Chupicuaro Culture to the south in the Lerma River drainage. In the area of Durango-Zacatecas, the Alta Vista Phase has come into clearer focus with Kelley's recent work on the Chalchihuites pattern. Elements of this culture have been found in restricted concentration in the Suchil and Graceros drainages, where both hilltop ceremonial centers and valley occupation sites have been found to contain elements similar to the Chalchihuites Culture of the Alta Vista Phase (Kelley, 1962). It is thought that sometime during this time component, elements of this culture found their way northward into Durango and Sinaloa (Kelley and Winters, 1960, pp. 549–551). In this southwest corner of northern Mexico, certain influences from Central America may have been moving up the Pacific coast through the Amapa Culture of Nayarit and hence into Sinaloa (Kelly, 1938, p. 43), including pottery drums, four-footed metates, and clay figures (Grosscup, 1961, pp. 404–405). Some of these influences may have traveled as far north as Snaketown in Arizona.

Along the eastern section of this zone, the indigenes retained their old nomadic way of life. This apparently was true also of a great deal of the central and western section of northern Mexico. In Chihuahua, culture was developing along lines similar to the more northerly Mogollon Culture. A broad-lined, and later a thin-lined, red-on-brown pottery associated with a great deal of brown textured wares were being made by village farmers who lived in pit houses. There is a

correlation between material culture traits of the early Casas Grandes Convento and Pilon Phases and the Dos Cabezas-Pinaleño Phases in the San Simon village, the Georgetown-San Lorenzo Phases of Mogollon mountain culture and the Estrella-Sweetwater Phases of the Snaketown group.

It was in this time block that the northern Mexican people, in the Casas Grandes area at least, are known to have drawn together in undefended villages located on high terraces near farmland. The simple houses generally surrounded a large ceremonial structure, with deep pits and inhumations scattered at random round the village premises. The lithic complement grew out of that of the previous phase. It would appear that these people, located along the southern border of northern Mexico, were culturally in advance of the more northerly societies owing to their proximity to the higher Mesoamerican hearth. Strong divergences between the north and the south become apparent in the material trait composition. Apparently, the population throughout the area was on the increase. Throughout this phase, more and more farmland was taken up by groups who decided to follow the soil-parasite trail, while an unknown percentage of the original stock retained their older nomadic desert-culture way of life. The latter left very little material residue to mark their existence, but may have figured as a social element in the play of the balance of power that must have been developing throughout northern Mexico at this time.

URBAN AND CEREMONIAL CENTERS (A.D. 900–1200)

The period from A.D. 900 to 1200 is one of the most intriguing phases of historical study in northern Mexico. The cultural picture remains much the same as in the preceding period, but along the eastern and western sections of the Sierra Madre Occidental several large populations came into being. It should be noted that these centers are in the area of the Macro-Nawan language group. Students have generally concluded that somehow these urban and ceremonial centers were inspired by the Tula-Mazapan Culture of Mesoamerica, believed to have had great control over all of Mexico at this time. It is assumed that merchants of the Tula-Mazapan Culture were establishing trade relations in northern Mexico, as well as in southern Mexico, and that these contacts in the main were economically determined. Spinden (1928, p. 251) correlated this event in the historical continuum of northern Mexico with the Toltec trade items that appeared in the North American southwest in early Pueblo III times, around A.D. 1000 to 1200. Brand (1939, p. 105) postulated

that the Toltec-Tarascan Cultures from the Michoacan-Jalisco area made an impression on the culture of northern Durango at this time. Lister (1955, p. 2) concluded that this was a Toltec horizon in western Mexico, marked by the appearance of such items as the bow and arrow, new calendar systems, metal, and new gods.

A recent seminar study of the prehistory of the North American southwest (Jennings et al., 1956, pp. 91–98) noted strong Tula-Mazapan ties in the material culture residue found at the Hohokam center of Snaketown, as well as in Anasazi Chaco Canyon ruins such as Pueblo Bonito. Several scholars have commented on possible connections between the northern Mexican Rio Tunal Phase of the Chalchihuites Culture of Durango and the Colonial and Sedentary Periods of the Hohokam Culture at Snaketown, Ariz. (Johnson, A. S., 1958, pp. 126–130). Recently, the Late Amapa Culture materials from Nayarit, located south of the southwest corner of northern Mexico, have been compared with certain Hohokam material traits believed to have been traded northward some 1,200 airline kilometers in the Tula-Mazapan Period (Meighan, 1959, pp. 1–7; 1960).

It would appear that at this time some of the inhabitants of northern Mexico were introduced to the Quetzalcoatl cult and such items as copper bells, shell trumpets, ball courts, and certain types of cloisonne decoration. Centers of population such as Zape, Casas Grandes, Boquillas, and other sites located in the southwest corner of the area began to grow.

Archeological information from these centers suggests that northern Mexico, as well as southwestern and southeastern portions of the United States, formed a northern frontier to which trading groups were sent by the Tula-Mazapan Culture center in an economic conquest effort. This would not necessitate large armies or migrating colonists, but rather contact could have been made by small groups of merchants in areas where there were comparatively large rural populations. In addition, such areas could have provided an abundance of salt, alum, incense, raw copper, and other materials that the home culture desired. Sahagun's description of merchant traders or "pochtecas" of Aztec times suggests that this economic mechanism was deeply rooted in Mesoamerican culture.

Such exploitation may have been expedited by the introduction of a new religious cult which, if accepted by a recipient culture, would give a small group of strangers a priestly position and consequent control over an exploitable population in order to form city-states to be used as collecting centers. The amount of acceptance and change of local cultures in contact would depend on timing as well as on the

personalities of those few individuals sent by a contacting culture. Cultural modifications at each location would vary, but similar general shifts throughout the area might well be noted in studies of architecture, religious paraphernalia, land controls, farm production, population increases, and exploitation of raw materials.

URBAN CENTERS IN A STATE OF RECONSOLIDATION, (A.D. 1200–1521)

During the 1200's, certain shifts in the location of urban centers are noticeable. The Aztec ascendency certainly must have had an impact upon the northern frontier. Some of these centers might have ridden the political storm and held on to their home markets; others may have cut themselves loose and developed their local areas to suit their own needs. Such adjustments can be noted in the cultural residues from these centers after A.D. 1200. Multiplication in the number of archeological phases suggests rapid internal changes. The culture of the Hohokam in the Gila-Salt drainage at Snaketown shifted into the Classic Period and crystallized into a new material culture matrix. The shell center in the Altar Valley of northern Sonora apparently lost its market; while the urban center at Casas Grandes in Chihuahua was considerably changed and approached the very threshold of civilization.

New lines of communication between Sinaloa and the North American southwest occur. There is an exchange of red wares, handmodeled spindle whorls, overlap manos, and other items. The distribution of the three-quarter groove axhead at this time appears to correlate with the area of the Macro-Nawan language group in western Mexico. During this period a number of drastic events took place that helped to alter the history of the higher cultures of northern Mexico. Each center may have been affected by its own internal or domestic relationship with the native population surrounding it. It must be remembered that much of the area was still inhabited by primitive groups of the desert culture. The gathering of raw materials, food stuffs, and perhaps slaves may have led to poor public relationships with the indigenes. In addition, it has been suggested that certain of the nomadic plains groups were penetrating the area at this period and that the balance of power established by the various trading centers may have been put into jeopardy.

The actual downfall may well have occurred after 1521 when the Spanish conquistadores entered Mexico and conquered the Aztecs. This destroyed (1) the market for certain goods held in esteem by the natives, but which were of no value to the Spaniard, (2) large blocks of native population by the introduction of two diseases—

smallpox and measles. These diseases may have spread from native to native as epidemics through the north frontier country long before the first Spanish slavers entered the area, depleting the trading centers and allowing ascendency to the older desert cultures. Living in smaller groups and in comparative isolation, their bearers may have been spared the devastating effects visited upon the urban centers.

SPANISH CONTACTS

To the Spanish, northern Mexico was first a source of slaves and later thought of as that "horrible" frontier that had to be crossed in searching for the Seven Cities of Cibola. Then it became a field where various Catholic orders went in search of souls, hand in hand with conquistadores who searched for gold and silver. Slowly the Spanish frontiersmen pushed northward and the native cultures in their path were either Christianized and absorbed or destroyed. Only a few groups such as the Tarahumar, Seri, and Yaqui have escaped complete acculturation.

CONCLUSION

This paper does little more than to express the urgent need for study in northern Mexico. It has attempted to note only a few of the highlights in the long historical continuum of northern Mexico, an area that will stand in both time and space as an interesting archeological zone. It would behoove scholars to turn their curiosity here in the future.

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CULTURAL DEVELOPMENT IN CENTRAL MESOAMERICA

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INTRODUCTION

Expanded archeological investigations of recent years, as well as the discovery of additional sites possessing traits identified with the Mesoamerican culture pattern, make it possible to identify three important fluctuations in the boundaries of this area. During the Formative Horizon, the northern boundary can be drawn from the Río Pánuco to Cihuatlán, Colima, the imaginary line crossing the lakes of Chapala and Cuitzeo, and following the Río Moctezuma to Tampico (fig. 1). Sites such as Pánuco (Veracruz), Chupícuaro (Guanajuato), Jiquilpan and El Opeño (Michoacán), and Morrett (Colima) have occupations of Formative age (fig. 3). In the south, this horizon is represented as far as the Río Ulúa and Lake Yojoa, and El Salvador, in sites such as Yarumela, Yojoa, Travesía, Cerro Zapote, and Tovar.

During the Theocratic Period of the Regional Developmental Horizon (fig. 4), the northern boundary expands as far as Soto La Marina, San Luis Potosí and northern Jalisco, continuing along the Río Santiago as far as the Río Sinaloa. By contrast, the southern limit retreats to the Río Motagua and Río Lempa along the frontier of Honduras and El Salvador.

Finally, during the 16th century the limits of the area readjust once more. The northern limit is set by the Río Pánuco and the Río Lerma, while the southern limit passes from the mouth of the Río Motagua to the Gulf of Nicoya, via Nicaragua, representing a contraction of the northern frontier and an expansion of the southern one.

The first fluctuation may be the result of diffusion toward the south of basic elements evolved in the central plateau and Gulf coast during the Formative Epoch. The second is perhaps the result of regional differentiation, which produced autonomous theocratic societies strongly linked by commercial ties. The final fluctuation is the product of expansion, probably of a military nature, of northern groups toward the south.

For the purpose of this summary, Mesoamerica can be divided into several cultural-geographical regions, especially evident beginning with the Regional Developmental Horizon. These are: The Central Plateau (Teotihuacanos, Xochicalcas, Toltecas, Mexicas, Cholultecas), the Gulf coast (Olmecas, Totonacas, Huaxtecos, Nonoualcas), the Oaxaca region (Zapotecas, Mixtecas), the Maya area (Chiapanecos, Mayas, Quichés), western Mexico (Colimenses, Nayaritas, Coras, Tarascos), and a northern subregion that includes groups with Mesoamerican and North American influence (Casas Grandes, El Zape, La Quemada, and others).

Finally, and for the purpose of constructing a cultural-chronological sequence, it is possible to recognize three principal horizons corresponding to three stages, which in turn can be subdivided into evolutionary periods. This general scheme, based on the ideas of Olivé (1958), is as follows:

Primitive Horizon (Stage of Savagery) 11000–2000 B.C.
  Preagricultural Period
  Incipient Agricultural Period
Formative Horizon (Stage of Barbarism) 2000–200 B.C.
  Village Formative Period
  Urban Formative Period
Regional Developmental Horizon (Stage of Civilization) 200 B.C.–A.D. 1550
  Theocratic Period
  Militaristic Period

PRIMITIVE HORIZON (11000 TO 2000 B.C.)

Preagricultural Period (11000 to 6000 B.C.)—Paleoclimatic evidence permits the inference that the Valley of Mexico has been exposed to a series of alterations from wet to dry. Humid conditions prevailing during the terminal Pleistocene in the Valley of Mexico and the Valley of Puebla permitted the growth of pasture that supported the bison, horse, mammoth, and other large fauna, so that the early hunters encountered here conditions similar to those they had exploited in North America. Their mobility, dictated in part by the animals on which they lived and in part by their own technology, brought about the dispersal of the early hunters through the Central Plateau, where projectile points of Clovis, Folsom, Plainview, and Lerma types identify their northern affiliation.

The stone-artifact inventory, represented by projectile points, flakes, scrapers, knives, and other instruments related to hunting, coupled with evidence of the use of fire, the atlatl, and social organization in small bands, suggests a very primitive level of cultural development during this period of early nomadic hunters.

Incipient Agricultural Period (6000 to 2000 B.C.)—At the beginning of the Altithermal Period, many of the grasslands began to dry up, causing the dispersion and extinction of the large mammals and forcing man to adapt himself to new ecological conditions. He may have done this partly by migrating to areas where the environment was more favorable, such as the Sierra de Tamaulipas, the Valley of Tehuacán, the coast of the Gulf of Mexico, Chiapas, and other regions. In these areas, as the climatic conditions became once more stabilized in the direction of increased humidity, some of the groups gradually converted from collectors of wild foods to incipient cultivators. Specialized techniques were developed for the acquisition and preparation of food, and are reflected in a new tool inventory including mortars, metates, manos, hammerstones, bark beaters, and awls.

The survival of some of the techniques of the nomadic hunters is attested by finds of Lerma points in the Cueva de Coxcatlán, Puebla, and in the Sierra de Tamaulipas (MacNeish, 1961, p. 23), where they are associated with artifacts of the Incipient Agricultural tradition. Other finds, such as those of Santa Marta in Chiapas, Chalco, and Chicolaopan in the Valley of Mexico, and Frightful Cave in Coahuila, attest to the presence of similar groups and provide the first evidence of the cultivation of maize (at least by 3500 B.C.) and squash, the manufacture of baskets and cloth, burial practices, and possibly of pottery making, since crude sherds have been found in Coxcatlán below levels with pottery of Formative types.

FORMATIVE HORIZON (2000–200 B.C.)

Village or Rural Formative Period (2000 to 800 B.C.)—By the end of the preceding period, groups in several areas had laid the foundation for what would become the Mesoamerican cultural complex. By at least 1700 B.C. farming communities had developed. These are aligned in two important cultural traditions, that of the Central Plateau and that of the Gulf coast. These societies depended upon maize agriculture for their principal subsistence, but also drew upon the resources of wild plant and animal foods when they were available. Among their common and diagnostic characteristics were the manufacture of highly developed pottery, special burial practices, limited trade relations, and a simple form of social organization.

Settlements are along rivers, lakes, or arroyos, or on the coast, agriculture being dependent on rainfall and on natural flooding of the land. Maize, squash, beans, and possibly cotton and manioc were cultivated. Later, slash-and-burn technique made possible the utilization

of forested areas for farming. Houses constructed of pole and thatch were grouped in small villages, perhaps under the loose control of a council of elders or shamans. Some of these villages gradually increased in size until they might be called towns or communities of the simple nuclear centered type (Beardsley et al., 1956, p. 141).

Magic was the most predominant aspect of religious belief, with cults of fertility and of rain, as might be expected of a group dependent upon, but with as yet limited technological control over, agriculture. A deity with feline characteristics appears first on the Gulf coast and moves to the Central Plateau. Death practices include direct earth burial, in extended or flexed position, accompanied by offerings of pottery, implements, ornaments, figurines, and sometimes food. Burial was in cemeteries, below the floor of the house, or in fields. In some instances, dogs, children, or even adults were apparently sacrificed to act as companions to the deceased in the afterworld.

Cranial deformation and tooth mutilation were practiced, especially by the Olmec of the Gulf coast. Other forms of personal ornamentation included painting of the face and body, shaving of the head, and tattooing. If we may judge by the figurines, nudity was customary at the beginning of the period, but clothing was later adopted.

The first pottery vessels are monochrome in surface color (black, white, cream, red), with rounded bottoms and composite silhouette. At a slightly later time painted decoration becomes popular, including red-on-white, red-on-cream, and white-on-red techniques. Vessel shapes become more varied as well, and forms such as bottles, plates, rounded jars (tecomates), effigy vessels, whistling jars, and stirrup-spout jars are represented, as well as the low annular base. The earliest decoration is principally fine incision in geometric motifs, but punctation, excision, fingernail marking, rocker stamping, cord marking, pseudo fresco, negative painting, and other techniques become common as well. Motifs are arranged in zones or panels, and sometimes appear to have symbolic significance. Flat-bottomed jars and plates appear.

Figurines are constructed at first principally by applique. The addition of incision and punctation, and the combination of these techniques in a variety of ways, produce a wide range of figurine styles. Other pottery objects include flat and cylindrical stamps or seals, spherical rattles, animal whistles, anthropomorphic and zoomorphic masks, and napkin-ring ear plugs.

In some places the Olmec tradition of the Gulf coast met and in-

termixed with the Plateau tradition, as at Chalcatzingo, Gualupita, Tlapacoya, and Tlatilco. Elsewhere, both traditions followed an independent evolution, as can be observed at such sites as Zacatenco, El Arbolillo, Copilco, La Venta, Tres Zapotes, Trapiche, Viejón, Pánuco, and El Opeño (fig. 3).

Urban Formative Period (800 to 200 B.C.)—The transition from Village Formative to Urban Formative reflects an important step forward in the economy, making possible the support of temples and a priesthood. The existence of these requires a major technological advance, an increase in population size and density, a more marked division of labor, stronger social organization, and the production of a food surplus.

During this period, some towns were transformed into ceremonial centers, which served as a focus for the population of the surrounding area. The increased population implies a more intensive form of agriculture. Larger areas of forest were cleared for fields, and in some places terraces were constructed to counteract erosion of the slopes. The developing priestly class acquired political control through its religious, economic, and administrative functions. The pantheon included a god of fire (Huehueteotl) and an early form of the god Tlaloc.

Among architectural achievements, stone-faced platforms are common, as well as stepped platforms of rectangular or circular plan, earth mounds, and altars. Pyramidal structures exist but are rare and simple in construction. Building materials included stone, river cobbles, mud, earth fill, and, toward the end of the period, stucco.

In some places the calendar was beginning to develop; in others, the burial of important persons began to take place in tombs of stone. Other variations include severing of heads as trophies, placing of the body on a couch of bark, and radial burials. Glyphic writing, polishers for floors and walls, and other new elements appeared, and trade relations between groups were intensified.

Among the principal crafts are pottery making, weaving, basketry, and stone working. Pottery decoration is mainly polychrome (red, black, white, cream, buff, orange), but other common techniques are negative painting, fresco, and white-on-red. New ceramic elements include mammiform supports, tetrapod supports, spout with bridge handle, basal flange, tall annular base, ring base, zoned painting (bounded by incised lines), and applique adornos on the vessel body. Figurines are made by applique or are well polished and painted. Smiling-faced, solid, handmade figurines, and hollow polychrome ones also occur. Other diagnostic traits of this period are obsidian

knives and punches, tablets with low relief carving, urns with or without burials, burial mounds, sunken patios, stairways with balustrades, and perhaps columns.

During this period a number of local centers develop, some of which still show the intermixture of the two traditions of the previous period. Among these are Zacatenco, Ticomán, Cuicuilco, Tlapacoya, Chalcatzingo, Gualupita, Tres Zapotes, La Venta, Monte Albán, Trapiche, Chiapa de Corzo, and Teotihuacán.

REGIONAL DEVELOPMENTAL HORIZON (200 B.C. TO A.D. 1550)

Theocratic Period (200 B.C. to A.D. 800)— As a result of the process of cultural evolution, some of the unplanned centers developed into true planned, urbanized ceremonial centers. Astronomy, mathematics, the calendar, glyphic writing, monumental architecture, sculpture, and mural painting become highly developed. The existence of these large centers implies the existence of economic surpluses and well-organized means of distribution and control, advanced occupational specialization, theocratic government, intensive commerce with markets and traders, intensive and extensive agriculture, social stratification, control of the sources of production by the upper class, polytheistic religion, and temples and priestly hierarchies. It has not yet been demonstrated that irrigation was the principal factor in the development of these features.

The ceremonial center is converted into the headquarters of the priesthood and their servants, the source of learning, the marketplace, the focus of ritual, as well as the locus of other activities requiring the gathering of people. These multiple functions are reflected in functional structures such as ball courts, plazas and causeways, temples and altars, palaces, and drainage constructions. The result can be considered a true city, something which did not exist in the preceding period.

The architecture makes much use of the vertical panel over a sloping batter (*talud y tablero*), with local modifications in various parts of the plateau, while on the Gulf coast earth mounds predominate as substructures for temples and dwellings. In the Maya region, stone structures are common and make use of the corbelled vault. Plumb bobs, chisels, and polishing tools formed part of the builders' equipment.

Architecture takes precedence over monumental sculpture and painting; the stela cult reaches its climax; stucco decoration becomes common on Maya buildings. Deities such as Tlaloc, Tlazolteotl,

Cocijo, Xipe, Huehueteotl, and Izpapalotl, as well as the motif of the plumed serpent, are frequently represented.

Pottery takes on localized forms, which are traded from one region to another. Vessels with supports and covers, jars with double spout, urns, and effigy vessels are characteristic. Decoration is by polychrome, fresco, champleve, and red-on-buff. Stamps or seals, and figurines with smiling faces, made in molds or with movable limbs, appear during this period. Other features include the introduction of the ball court, observatories, ornamentation of the roof, urn burial, shaft tombs, pyrite mosaics, carved stone yokes, axes and palmas, jade pectorals and ear ornaments, and mica floors.

Among the many Mesoamerican sites that reached this level of cultural development are Teotihuacán, Xochicalco, El Ixtépete, Tepeapulco, Cholula, El Tajín, Pánuco, Monte Albán, La Venta, Cerro de las Mesas, Chiapa de Corzo, Izapa, Remojadas, Los Ortices, Tuxcacuesco, Etzatlán, as well as the Maya centers of the Old Empire in Chiapas and Guatemala.

Militaristic Period (A.D. *800 to 1550*).—Toward the end of the preceding period, a series of groups in western Mexico, of which the Nahuas were the most prominent, began slowly to infiltrate the Pacific coast and the Central Plateau. Cultural elements identified with these groups include the use of a column of mud, sometimes with a stone facing, cloisonne decorated pottery, grooved axes, the use of pipes, one-piece shell bracelets, spiked stone clubs, and brushed white pottery.

Toward the end of the Theocratic Period, some of these groups had settled in places such as Xochicalco, San Juan del Río, La Magdalena, El Cóporo, Tula, and possibly Teotihuacán and Coyoacán, spreading from there to the Gulf coast, Chiapas, and even Guatemala. By A.D. 800, one of these groups, the Toltec-Chichimec, reached the plateau and took control of the Tula domain, creating the misnamed Toltec empire. As a result, the pottery shows notable similarities with that of sites in Querétaro, Zacatecas, and Jalisco.

Beginning with this period, a militaristic tendency becomes manifest. The sculptures and paintings feature the hierarchy of warrior chiefs, and a system of control based on conquest and tribute must have existed. The ceremonial centers have ball courts, usually with walls bearing low-relief sculpture; decorated columns and pilasters; banquettes decorated with processions of priests and warriors; stone slabs with representations of jaguars, coyotes, and eagles; atlantean supports for altars; serpent columns, chacmol figures, "Tzom-

pantlis" or altars of skulls, and circular temples dedicated to the god of the wind. Among the most frequently represented gods are Ehecatl, Tlahuizcalpantecuhtli, Quetzalcoatl, Cinteotl, Tlaloc, and Xiuhtecuhtli. Other traits making their appearance at this time include metallurgy, fine orange pottery, plumbate, nearly flat mold-made figurines, pottery pipes, colonnades, colossal figures, irrigation via a system of canals, axes perforated for hafting, palates for grinding pigment, descending gods, flat roofs (in the Maya area), sacrificial scenes associated with the ball game, and stone facings on structures. Sites such as Tula, El Tajín, Xochicalco, Monte Albán, Isla de Sacrificios, Zempoala, Armería, Ixtlán, Guasave, La Quemada, El Cerrito, El Cóporo, La Magdalena, El Teul, Chichen Itzá, and Tulum are characteristic of this first phase. (A.D. 800 to 1250).

While Toltec influence was being felt in various places, other northern groups were moving onto the plateau, especially the Mixtecs. For this second phase of the Militaristic Period, a number of written sources provide additional information on the culture of the various groups in existence at the time of the Spanish Conquest. The society can be characterized as colonialist or military expansionist, being based on warfare, conquest, and the imposition of tribute as important economic factors. Power was centralized in the military caste. Some settlements achieved a supranuclear level of development (such as Tenochtitlán), with a highly stratified society characterized by military orders, private property, wars of flowers, gladiatorial sacrifice, intensive irrigation, "chinampa" cultivation, and aqueducts. The elaboration of gold working, feather working, the manufacture of codices, carving in bone, wood, and alabaster, sculpture, glossy polychrome pottery (Cholulteca-Mixteca), twin temples, and *yácatas* are other characteristics of the latter part of this period (A.D. 1250 to 1550).

In the field of commerce, there existed trade routes, specialized merchants who also acted as spies, objects that served as a medium of exchange, market days, and judges. Herbal lore, historical records, literature and poetry, religious ritual, and many other aspects of learning were more highly developed than in earlier periods.

Sites such as Azcapotzalco, Tlatelolco, Castillo de Teayo, Zempoala, Quiahuiztlán, Quauhtochco, Tenayuca, Tzintzuntzan, Ihuatzio, Teopanzolco, El Tepotzteco, Malinalco, Mitla, and Zaachila correspond to the terminal part of this period, and although the Spanish Conquest interrupted the aboriginal cultural evolution in Mesoamerica, people continue to live in these same regions today.

PRINCIPAL FACTORS IN THE CULTURAL EVOLUTION OF MESOAMERICA

The first peopling of Mesoamerica was by hunters who entered North America via the Bering Strait and penetrated southward. Some of these groups became gatherers and incipient agriculturists, adapting to the ecological factors of the postglacial period, which required them to seek new sources of subsistence. In the course of time, maize was domesticated, forming the basis for the later evolution of Mesoamerican culture and causing an economic revolution.

After this time, influences from North America gave way to local evolution of the Formative complexes. Two traditions became differentiated: that of the Plateau and that of the Gulf coast. The Olmec of the latter area exerted strong influence over contemporary groups, influence that can be discerned as far away as western Mexico, the Plateau, Oaxaca, Chiapas, and even Guatemala and El Salvador. By the end of the Urban Formative Period, the Olmec had contributed to the formation of the cultures that flourished during the Theocratic Period of the Regional Developmental Epoch. Their development was spurred by Nahua and Teotihuacán influences, which also extended southward. The cultures of Coyotlatelco, Tajín, Toltec, and Pipil may have originated from such interplay of influences.

During the Militaristic Period, the strongest influences are those of the Toltec and Mexica, which can be detected as far south as Guatemala and Nicaragua. Toward the end of the previous period, Central American influences began to be felt in Mesoamerica, especially on the Pacific coast, in the form of metallurgy, shaft tombs, effigy metates, and caryatid supports.

Connections with North America reappear toward the end of the Theocratic Period, and continue until the following period, with elements passing in both directions. A similar interchange existed between the Maya region and central Mexico.

The high degree of cultural development achieved aboriginally in Mesoamerica was the result of the discovery of agriculture, and particularly the improvement of maize. It is possible to speak of a true economic revolution, which gave impetus to technology and to the elaboration of social organization as the cumulative effects of development became more pronounced. The presence of thousands of archeological sites throughout Mesoamerica suggests that ecological differences within the area were not of determining significance after the Formative Period, when agricultural technology was sufficiently developed to permit the exploitation of varying types of geographical

conditions. In later times, commerce, the interchange of ideas, the moving about of certain craftsmen, and the close interrelations between groups contributed to the formation of a cultural pattern unique to Mesoamerica, which ceased to exist only after the arrival of the Spanish.

The fact that some cultures reached a greater peak of development than others is not so much the result of the geographical situation in which they developed, but rather the conjunction of various cultural factors, such as technology, social organization, commerce, population concentration, accumulation and interchange of knowledge, which led to greater achievements, encouraged in turn by the economic stability of these societies.

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CULTURAL DEVELOPMENT IN SOUTHEASTERN MESOAMERICA

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Southeastern Mesoamerica may be defined as the land extending from Oaxaca and the central Veracruz lowlands in the northwest to the Ulua-Yojoa drainage on the east, that is, an area reaching from south-central Mexico to western Honduras and El Salvador (fig. 1). Within it, linguistic and tribal diversity is matched by archeological complexity, and with the exception of certain periods and places, there is much left to know and understand.

In contrast with the rest of Mesoamerica, the southeastern portion is one in which the lowlands are just as extensive as, and played an even more important role than, the highlands. These lowlands are basically two: The Gulf coast plain, from southern Tamaulipas down through Veracruz and Tabasco and including the Yucatan peninsula; and the Pacific coast plain, which is far narrower and less humid, reaching from the lagoon system of eastern Oaxaca to El Salvador. These two plains are connected by the Isthmus of Tehuantepec, a broad land bridge of gentle topography which would hardly have provided any obstacle to easy communication.

The highlands of Oaxaca, Chiapas, and Guatemala are highly dissected, with tremendously precipitous mountain ranges; here communications would have been very difficult, and even today the multitude of rather small valleys contained within them are isolated from each other, with the result that tribal differences have been exaggerated to an extraordinary degree. Only in those valleys broad enough to have supported quite large populations, such as the Valley of Oaxaca, or the plain in which Guatemala City is situated, could there have been any great cultural homogeneity.

Because of this topography, in southeastern Mesoamerica the great advances in aboriginal culture have been registered along the lowlands and far up into the valleys which reach into the highlands from the tropical plains; entire river drainages are often single archeological units.

What can we say of the opportunities offered by these differing environments? First of all, they have not been the same for all re-

gions at all times. Quite obviously, the profound climatic changes which have taken place in the Northern Hemisphere since the final advance of the Wisconsin glaciation have altered some ecological zones quite drastically. For instance, with only a little less rainfall than today, most of the Petén of northern Guatemala would be uninhabitable for either hunters or farmers, owing to the scarcity of drinking water in the dry season. Such a drastic lowering of precipitation probably occurred several times in the history of the Petén. On the other hand, the invention or adoption of certain important techniques such as plant domestication might have "pre-adapted" populations to occupy new ecological niches which had been denied to them previously. We will examine such possibilities later.

Keeping in mind these three factors—highland-lowland contrast, possibilities of easy communication or lack of same, and fluctuating environmental potentials—let us now consider the broad outline of cultural evolution in southeastern Mesoamerica as it is presently known. This evolution has been seen in terms of five great periods: Early Hunters, Archaic, Formative, Classic, and Post-Classic (fig. 5). It will be clear, however, that these are to be considered only as constructs which are subject to change at any time.

Of the Early Hunters Period, very little can be said. The general absence of recorded sites pertaining to the hunting and gathering peoples of the terminal Pleistocene in southern Mesoamerica can only be laid to the failure of archeologists here to take much interest in the problem. It is true that the density of vegetation in both highlands and lowlands has discouraged search, but the find of a Clovis point of obsidian near San Rafael (Coe, 1960a), not far from Guatemala City, indicates the possibility of finding early occupation all over the region. The workshop site of El Chayal (fig. 3), for instance, located only 26 kilometers northeast of Guatemala City, covers at least 5 acres and consists of hundreds of thousands of obsidian artifacts and waste flakes, not one of which can surely be ascribed to the Formative or any later period. The stemmed and lanceolate points and the single-shouldered knives which have been collected at El Chayal suggest an affiliation with South American preceramic cultures such as Ayampitín, Viscachani, and El Jobo. It may well be that in southeastern Mesoamerica, or at least in Guatemala, two ancient traditions met, one from North America with fluted points, and the other pan-continental with lanceolate points, huge percussion-chipped flakes and blades, and heavy choppers.

Unfortunately, we have for these scanty and scattered finds neither firm dating nor faunal association. It might be pointed out, however,

that there is one region which might well provide such data—the valley of the Motagua River, a desiccated, cactus-covered river plain between El Chayal and the Atlantic which has long been a rich hunting ground for collectors of fossil elephants and other large Pleistocene fauna, but which has never been searched for remains of early man. Certainly there is no reason why kill sites of the sort that have been found at Santa Isabel Iztápan should not also be discovered in southeastern Mesoamerica, and it might be that habitation sites, missing thus far in the Valley of Mexico, will be encountered here.

The drastic climatic changes that brought to an end the Pleistocene Age, with its rich grasslands and large herds of herbivores, initiated the Hypsithermal Interval (Deevey and Flint, 1957), beginning about 7000 B.C. and ending, in Mesoamerica, at least, around 1500 B.C. Greatly elevated temperatures combined with decreased rainfall, ample evidence for which has been recovered from pollen cores from the Valley of Mexico examined by Sears (1953) and his colleagues, led to the disappearance of elephants and other megafauna in Mesoamerica and forced men into a collecting-type existence—intensive and highly directed reliance upon more humble animals such as deer and jackrabbits and upon plant foods, particularly seeds. Such a way of life has been documented by the researches of MacNeish (1958, 1961) in Tamaulipas, northeastern Mexico, and more recently in southern Puebla just beyond the borders of our area. It is now clear that in a context almost indistinguishable from the famous Desert Culture of the Great Basin country (Jennings, 1956, pp. 68–72; 1957, pp. 6–9), the Indians of Mesoamerica were beginning to tamper with the evolution of food plants at a very early date. This was the most important step ever taken by the native peoples of the New World, and it was taken for the first time either very near or in the zone in which we are interested.

There is, of course, no wild form of maize (*Zea mays*) in existence, and the locus of its domestication has been uncertain for many years.[1] The most recent evidence from Coxcatlán, and other rock shelters in the Valley of Tehuacán, Puebla, makes it certain that the food energy of maize was first captured by man between 5000 and 4000 B.C. somewhere in the highlands of central or southeastern Mesoamerica —but not in the lowlands, since hardgrained grasses do not naturally occur in undisturbed tropical forests. Other cultigens, particularly

[1] The discussion that follows is based largely on Mangelsdorf (1958), MacNeish (1961), and on conversations with Professor Mangelsdorf and R. S. MacNeish.

squash, pumpkin, and beans, were added to the Mesoamerican diet during this Archaic Period.

It should be stressed, however, that we have here no agricultural "revolution": the steps toward domestication were taken at different times and in different places within Mesoamerica, and for many thousands of years had hardly any effect upon either population density or level of cultural advancement. Until almost the very end of the Archaic, the Indians of Mesoamerica were living on the same level, and with many of the same tools, as the aborigines of Utah and Nevada. But gradually the way was prepared for the next great step forward, so that by the end of the period almost all the prerequisites for Formative life were already present: wattle-and-daub houses, metates and manos, basketry and matting, and all the important domesticates. The dominant pottery shapes of the Early Formative are even foreshadowed by the neckless jars and flat-bottomed dishes of stone recently discovered in terminal Archaic contexts in the Valley of Tehuacán. All that was lacking was an improvement in the yield of maize, which would release men from a primitive hunting and collecting existence, stretched out with a little gardening, into a full-fledged village-farming life.

Actually, to the south of Tehuacán there is remarkably little evidence for Archaic occupation sites, but this is probably due to two factors—the lack of search and the scarcity of truly dry caves and rock shelters which might provide such information. However, a reconnaissance by Kent Flannery (personal communication) of caves in the Mixteca Alta of Oaxaca has disclosed a number of sites that are apparently prepottery, some of which have on the surface projectile points of types well-known in the Archaic occupations of Tamaulipas and Puebla. At Yanhuitlán in Oaxaca, Lorenzo (1958) has uncovered a hearth area which has been radiocarbon-dated to around 2000 B.C., but the few artifacts recovered, while probably preceramic, are hardly diagnostic of anything. Our best data for the Archaic of southeastern Mesoamerica come from Santa Marta rock shelter, in western Chiapas near the Grijalva drainage; tool and projectile point types found in five successive, preceramic occupations are almost identical to those of Tamaulipas and Puebla (MacNeish and Peterson, 1961). However, and this is quite significant, there is no evidence for maize until the first ceramic component at the site, that is, until the Early Formative, and MacNeish believes that domesticated maize reached that part of Mesoamerica lying to the south of Puebla rather late in the story. In the Maya area proper, largely because archeologists have been more concerned with later and more spectacular

remains, there have been discovered no surely Archaic sites, although obsidian projectile points occur in private Guatemalan collections which typologically, at least, should be ascribed to this period. But one thing is certain: the Maya area was definitely marginal to the initial development of agriculture in Mesoamerica, contrary to what has been claimed by earlier writers, most of them misled by the supposed derivation of maize from *teosinte*.

We cannot yet answer the question, Why was central or southern Mexico the region in which the really important food plants of Nuclear America were first domesticated? Desert Culture-like peoples were found everywhere from Oregon to Chiapas during the Hypsithermal climatic interval, all very much interested in the collection of wild-plant foods, but apparently only in the highlands of Mexico were found the ecological niches that exactly suited the wild ancestors of maize, beans, squashes, pumpkin, and other potential cultigens. Thus it was purely a matter of biological good fortune that the peoples of Mexico were the first New World Indians to advance toward a settled life, a head start which gave them a considerable advantage over their less fortunate contemporaries.

The Formative Period can be defined rather loosely, and unsatisfactorily it seems to us, as all of that time span beginning with the first production of ceramics and ending with the earliest Long Count inscription in the Maya area. As a classificatory unit, does this mean anything? In a purely developmental sense, it would be most useful to confine the term "Formative" to mean that period during which farming became sufficiently effective to permit the growth of villages all over Mesoamerica, including our area. But we now realize that within the span usually alloted to the Formative, namely from about 1500 B.C. to about A.D. 300, some unusually advanced civilizations appeared, head and shoulders above the tribal village cultures with which they were contemporary. Then as now in Mesoamerica, cultural evolution has been mosaic rather than unitary, and it is fruitless to attempt to outline broad developmental stages here with any great rigor. Let us therefore consider the Formative merely as a time period, to be used or discarded as we see fit.

The sudden spread of villages all over Mesoamerica at this time implies some drastic improvement in food supplies, that is, in the maize plant. What probably happened was the appearance of *teosinte* as the result of a cross between maize and its close relative, *Zea tripsacum;* subsequent introgression, or backcrossing, with *teosinte* resulted in a stronger maize stalk with greatly enlarged ears—that is, in a tremendous jump in available food energy (cf. Mangelsdorf,

1953). At the same time, we hypothesize, one or more varieties of maize (probably including the primitive Nal-Tel race) developed in the Mexican highlands were "pre-adapted," so to speak, for the tropical lowlands. It is here proposed that these new varieties were diffused down the great river systems like that of the Papaloápan to the lowlands of southern Veracruz, a region of rich alluvial soils and long growing season (far longer than that of the highlands), in which the full potentialities of *Zea mays* were first realized. All of the data we have thus far, based upon intensive excavation and comparative ceramic analysis, point to the Gulf coast plain, particularly south-central Veracruz, as the place of origin of the Mesoamerican Formative, where village-farming became a way of life for the first time.

The best evidence for the Early Formative comes from south-eastern Mesoamerica, particularly from the Grijalva drainage of Chiapas and from the Pacific coast of Chiapas and Guatemala. According to radiocarbon dates, these earliest villages cannot be extended back much beyond 1500 B.C., and probably endure until about 1000 B.C. The pottery of such cultures as Chiapa I (Dixon, 1959), Cuadros (Coe, MS.), and Ocós (Coe, 1961) is by no means primitive, but it is significant that dominant forms are almost entirely confined to those found in ground stone during the preceding Archaic, namely, neckless jars, or *tecomates,* and flat-bottomed dishes. Wherever the idea of ceramic vessels came from, the model was native to Mesoamerica. Decoration tends to be plastic and experimental, with brushing, stick-incising, and rocker-stamping favored, but some painting, particularly of rims in red, is also found. Pottery of this sort is now being uncovered at the Ajálpan site in the Puebla highlands, below Middle Formative materials of Chiapa II cast. The one zone that would be central to all these Early Formative manifestations is the Gulf coast, as is indicated by the find of white-rimmed black ware, a type considered typical of the "Olmec" area, both at Ajálpan and in the Cuadros Phase of the Guatemalan coast.

The position of the Ocós Culture in this picture is somewhat puzzling, for not only is the richly embellished pottery of this phase highly sophisticated in form and decoration, but certain elements are present here on the Pacific coast which point to extra-Mesoamerican connections. Such pottery techniques as cord-wrapped paddling and fabric-marking recall the Woodland ceramics of eastern North America, or perhaps even the similarly decorated wares of the Jomon Period in Japan. Even more striking are the detailed resemblances to the Chorrera ceramics of coastal Ecuador, and we have suggested that such odd modes of embellishing pottery as iridescent striping

arrived via maritime trade from the south (Coe, 1960b). It is also possible that the concept of making female figurines, far more ancient in Ecuador than in Mesoamerica, was diffused from the south at the same time. At any rate, from Ocós times these become typical of Formative Mesoamerica.

While it is doubtless true that "all the facts are not yet in," the Maya area proper, highland as well as lowland, is curiously lacking thus far in any truly Early Formative sites, and it may be that much of it was at that time uninhabited by any other than simple hunting and collecting peoples; the lowland soils are here extraordinarily poor and perhaps would have offered few inducements for clearing by our earliest Formative agriculturalists, while the highland valleys may just have been too remote.

We have now become adjusted to the fact, proved from recent radiocarbon dates, that the great Olmec civilization of the Gulf coast lowlands is Middle Formative in date, probably spanning the period 800–400 B.C., although its origins may extend even further back in time (Drucker, Heizer, and Squier, 1959, pp. 264–267). As such, the Gulf coast continued to be the center of innovation for much that went on at this time, even as far away as the simple villages of the Valleys of Mexico and Guatemala. It would be as meaningless to ignore this as it would be to attempt an understanding of the European Neolithic without taking into account the coeval civilizations of Bronze Age Mesopotamia. The Olmec area was nuclear, all else marginal. Such Middle Formative Phases as Ponce (MacNeish, 1954), Chiapa II–III (Warren, 1961), and Conchas (Coe, 1961) all show derivation from one or more centers on the Gulf coast and bear the imprint of Olmec ceramic styles: Abundant white pottery, the heavy *tecomate,* and the dish with flat bottom and rim engraved with two parallel lines. It may also be that the most ancient pottery of which we know in the Maya area, Mamom, is derived from a Chiapa II-like culture on the Gulf coast. Possibly part of the complex known as Las Charcas, said to be the earliest Formative culture in the Guatemalan highlands (Shook, 1951; cf. Delgado, 1961, p. 102), is another product of this diffusion, but the phase is not stratigraphically placed in a sequence, nor is it certain that some Las Charcas materials are not far later than the Middle Formative.

Although the construction of temple mounds of clay or earth had in all likelihood begun in the Early Formative, with the Olmec civilization there appear the first really large, planned elite centers, such as La Venta. Other new elements are monumental stone carving, stelae, writing, and perhaps astronomy, as well as the manufac-

ture of magnificent objects such as jade figurines and votive axes. The Olmec art style is probably the most impressive ever developed in Mesoamerica and marks this as a great, unitary civilization. Olmec Culture is the full equivalent, both in the temporal and in the typological sense, of Chavín in Peru, with which it was probably connected through long-range diffusion. In all its aspects, including the strange cult of a were-jaguar which was a rain deity, Olmec is the mother-civilization of Mesoamerica, a concept proposed some time ago by Caso, Covarrubias, and Stirling but only recently fully validated. Not only through diffusion into lesser tribal cultures, but also by means of outright imperialistic invasion of regions as distant as El Salvador, the Olmecs set their stamp upon southeastern Mesoamerica and stimulated the rise of later civilizations.

New cultural integrations are seen in the Late Formative (ca. 300 B.C.–A.D. 300) and the spread of civilized life into otherwise primitive areas. In and near the Valley of Oaxaca arose the Monte Albán I Culture, characterized by fine gray ceramics and by a sculptural and ceramic style that has many Olmec elements (e.g., the famous "Danzante" reliefs) (Bernal, 1958). Monte Albán I may have its origins in the Middle Formative, but by the close of the Formative its ceramics are found over an extensive area in the Mexican highlands, from Puebla into Chiapas.

From the point of view of cultural dynamics, of even more significance than Monte Albán I in the Late Formative was the Izapan civilization, really an art style that reaches its highest development at Izapa, on the Pacific coast of Chiapas near the Guatemalan border (Stirling, 1943). The type site itself is a very large elite center with huge temple mounds faced with river boulders; ceramically, it is closely related to such Late Formative phases as Chiapa V at Chiapa de Corzo and Miraflores in the Valley of Guatemala. The art style features large, cluttered, baroque scenes in bas-relief, which often have as subject matter the doings of a deity with long upper lip, clearly a rain god derived from the Olmec were-jaguar. Purely Izapan monuments are known at the famous Olmec site of Tres Zapotes, and it seems a reasonable assumption that the style itself originated in the Olmec area. Thus, Izapan civilization is probably the intermediary in time and space between the Middle Formative Olmec and the Classic Maya. In support of this assertion, we cite the style itself, which clearly foreshadows Early Classic Maya bas-reliefs; the stela-altar complex, present for the first time at Izapa; the long-lipped god who becomes the Maya Chac, or so-called "Long-Nosed God" (a misnomer); the succession of monuments in Izapan style, stretched

out along the piedmont zone of the Guatemalan Pacific slope and up into the highlands around Kaminaljuyú; the hieroglyphic writing present on some of these monuments; and the fact that some Izapan-style monuments are dated to the 7th Cycle of the Long Count system, one (from El Baúl) being 256 years antecedent to the most ancient dated monument known thus far for the lowland Maya (Coe, 1957). Some of these derivative Izapan cultures, such as Miraflores at Kaminaljuyú with its rich tombs and fine sculptures (Shook and Kidder, 1952; Girard, 1962, fig. 242), were extraordinarily complex and continued to exert strong influence over their respective areas for a long time.

It is therefore suggested that regional developments of the Late Formative in southeastern Mesoamerica—Monte Albán I, Izapa, Miraflores, and perhaps the Chicanel Phase in the Petén—are all to a certain degree the cultural legatees of Olmec civilization, and reached their full inheritance when the Gulf coast began to lose its importance. In fact, by the very end of the period influences are moving in a different direction than before, as seen in the presence of such non-Gulf coast ceramic features as negative painting, mammiform supports, bridged spouts, and so forth; these are part of the famous "Q" Complex proposed by Vaillant and Lothrop many years ago, and their exact origin, while probably southern, is still puzzling, although we now know that they are relatively late in the Formative picture.

The Classic Period is somewhat arbitrarily considered to have begun about A.D. 300, or a few decades earlier, and to have endured until about A.D. 900, by which time the Maya centers of the Petén had been abandoned. This dating, of course, depends upon the correct correlation of the Long Count with the Christian calendar, and practically all recent radiocarbon determinations validate the Goodman-Thompson correlation (Satterthwaite and Ralph, 1960). However, the idea of a six-centuries span for the Classic is just one more case of the Maya tail wagging the Mesoamerican dog, and is largely valid for the Maya area alone. Certainly if we define the Classic as a sort of Golden Age, when high civilizations with unified art styles were in the ascendancy, then the Classic began on the Gulf coast as long ago as the Middle Formative. Again, let us be pragmatic, and consider the A.D. 300–900 period as a useful slice of Mesoamerican time, rather than as a great developmental level.

There is no evidence that the achievements of the Classic Period in the southeastern part, or for that matter in any other part, of Mesoamerica rested on any unusual changes in food production or technol-

ogy. Claims that irrigation was extensively practiced by any Classic peoples have never been fully substantiated, and in many important areas like that occupied by the lowland Maya, such techniques would have been impossible. Rather, the mainsprings of the Classic must be sought in the widespread adoption of the social and political organization that made civilized life in Mesoamerica possible in the first place. From the very beginnings of Olmec Culture here, in the Olmec area, monolithic states must have imposed a system of internal tribute and corvée labor which alone would have enabled peoples on a primitive, even slash-and-burn, level of agricultural technology to have built the elite centers and produced the artifacts that are diagnostic of civilization.

The peculiar and transitory Proto-Classic opens the Classic Period; whether it lasted more than a few decades is unknown. The Proto-Classic in southeastern Mesoamerica is more of a burial complex or cult than a bona fide occupation and has never been found at all in many regions. In mortuary ceramics, such as those found at Holmul in the Maya area, in Chiapa VI–VII in the Grijalva drainage, or in Monte Albán II in Oaxaca, more of the "Q" Complex traits appear, such as greatly swollen tetrapod supports. In the eastern Petén, Maya polychrome makes its first appearance. The origins of the Proto-Classic are enigmatic, and it is possible that some of its elements were born outside Mesoamerica, to the south in the Intermediate Area (M.D. Coe, 1962, pp. 176–177). Monte Albán II, however, besides containing these traits intrusive from the south (polychrome excepted), has many continuities with the civilization of Monte Albán I, including the bas-relief style, the calendar, and writing (Bernal, 1958, pp. 4–5). The Valley of Oaxaca always seems to have been a self-sufficient domain of the Zapotec peoples, essentially undisturbed until the Mixtec invasions.

One fact must be stressed in understanding the Early Classic of southeastern Mesoamerica: the overwhelming importance of Teotihuacán. In the period from A.D. 300 to 600, this tremendous city in the Valley of Mexico, truly urban in contrast to the elite centers of the rest of Mesoamerica, exerted heavy influence on the rising states of the southeast. The art styles and pottery of Monte Albán, in spite of regional isolation, show the influence, and at Kaminaljuyú, on the outskirts of Guatemala City, what were probably invaders from Teotihuacán built a center that is in many respects a copy on a far smaller scale of the mother city in the Valley of Mexico, and stocked the tombs of their great with Classic Teotihuacán vessels (Kidder, Jennings, and Shook, 1946). Recent excavations at Tikal have shown

that powerful Teotihuacán influence reached into the heart of the Petén during the initial stages of Classic Maya civilization, with the find of stone monuments exhibiting Tlaloc faces in pure Teotihuacán style (cf. W. R. Coe, 1962, fig. 8; Moholy-Nagy, 1962). The hallmarks of Teotihuacán pottery are the slab-footed tripod with lid, the *florero* and composite-silhouette vase, fresco decoration of surfaces, and Thin Orange ware, and these were widely diffused over much of Mesoamerica to be integrated into local styles. Thus, the Early Classic pottery of the Maya can be divided into three groups: (1) Wares imported from Teotihuacán or Teotihuacanoid sites; (2) local adaptation of Teotihuacán wares with Maya decorative motifs; and (3) purely Maya wares and shapes, such as basal-flange polychrome bowls.

In spite of the effects of Teotihuacán cultural imperialism and regardless of its Izapan heritage, there is much that is distinctive and almost unique in Classic Maya civilization, for instance, the architectural style with masonry rooms built on the principle of the corbel vault and the towering temple-pyramids with roof combs; the realism of the art style as expressed in bas-reliefs and paintings; and the extraordinary degree to which they advanced their calendrical computations and hieroglyphic writing. During the Early Classic, Maya culture per se was restricted to the lowlands, for the Guatemalan highlands were simply a Mexican outpost. In this monsoon-forest environment, slash-and-burn farming was and still is the only feasible way of making a living; surely no real urban concentration was possible with such a system, and claims that the great Classic Maya centers were true cities must be wrong. Recent mapping and reconnaissance in the Petén have disclosed a settlement pattern of dispersed hamlets over the entire inhabitable region, with no very great concentrations of house mounds anywhere (Bullard, 1960). Whatever the details of Maya political organization, the centers were staffed by a relatively small group of elite personages and their retainers, who must have exerted a power over the scattered populace which was backed up by incredibly potent sanctions.

Away from Oaxaca and the Maya area, much of the Gulf coast was in eclipse. Within the old Olmec region, the Cerro de las Mesas civilization (Stirling, 1943, pp. 31–48; Drucker, 1943) perpetuated many older Olmec and Izapan elements, such as the worship of were-jaguars, and at this site have been discovered a number of Early Classic stelae dated in the Long Count system, but the culture as a whole was highly conservative. In central and northern Veracruz, the quite distinctive Classic Veracruz style was beginning to crystallize, under Teotihuacán influence, one that emphasized curvilinear, scroll-

work designs with raised borders as decoration for mirrors, and various paraphernalia of the ritual ball game (Proskouriakoff, 1954).

We have never been much impressed by claims that Teotihuacán continued its existence into the Late Classic (A.D. 600–900) Period. On the contrary, every piece of evidence points to its destruction around the end of the sixth century.[2] After the close of the Early Classic, Teotihuacán vessels and other artifacts cease to be deposited in foreign tombs, and Mexican influence over southeastern Mesoamerica suddenly comes to a halt. Regional cultures such as Zapotec or Maya continue on their own undisturbed courses, becoming even more idiosyncratic than before. The Late Classic, in fact, marks the very peak of Maya civilization in the lowlands; this is their great age of temple building, stela carving, polychrome pottery, and wall painting, as seen in such awe-inspiring sites as Tikal, Palenque, Bonampak, and Copan. On the other hand, we have very little idea of what took place at this time in the so-called "Maya" highlands (which we have always thought were Maya in language only). Perhaps, as Borhegyi (MS.) suggests, nothing at all happens up there but a feeble continuation of an older peasant life.

Yucatan, following the Early Classic, presents a problem in chronology. It was once thought that the Puuc-style sites of northern Yucatan, with their building façades embellished with geometric arabesques of cut stone, were built following the end of the Classic as the result of a supposed Maya migration from the now-abandoned Petén. The name "New Empire" was thus given to these remains (Morley, 1946). Later excavations, however, failed to associate the characteristic Post-Classic ware of southeastern Mesoamerica, Tohil Plumbate, with these sites, and they were then placed in the Late Classic Period, the full temporal equivalent of the great civilization of the Petén (Thompson, 1945, p. 8). Nevertheless, subsequent excavations have made it seem more likely to us that the Puuc style belongs right at the border between Classic and Post-Classic, and that its sites may have been occupied beyond the abandonment of the Petén. As in the probably coeval Xochicalco of the central Mexican highlands, there are three influences present in the Puuc style: One from the Gulf coast, particularly from the Classic Veracruz site of El Tajín; one from central Mexico which may even be Toltec; and a Classic Maya element, probably a legacy from older Classic cultures in the same

[2] This point of view has been confirmed in a recent analysis of Teotihuacán ceramics by Florencia Müller and Robert E. Smith (personal communication). The "Late Classic" in the Valley of Mexico (and, by extension, Valley of Teotihuacán) is almost certainly characterized by the Coyotlatelco pottery style.

region. We think it probable that the famous Toltec capital of Tula was already flourishing in central Mexico when the Puuc sites were yet occupied.

This brings us to the greatest unsolved problem of all, that is, the cause or causes of the Classic downfall, not only in the Maya area, but in all of southeastern Mesoamerica. While many theories, most of them controversial, have been propounded, as yet no final answer can be given. But it is interesting that the pollen profiles from the Valley of Mexico, as analyzed by Sears (1953), show severe desiccation of that zone increasing in an almost logarithmic curve throughout the Classic, and it might be that lowered rainfall toward the close of the Classic Period resulted in the economic, and therefore the cultural and social, collapse of southeastern Mesoamerica as well; we must await pollen diagrams for the Maya area to see whether or not this happened. Furthermore, the Oaxaca highlands are even now quite dry, and the same climatic events may have finished off Classic Monte Albán civilization at the same time.

Whatever its underlying factors, the failure of Classic civilization around the end of the ninth century was a fact, and from that disaster through the Spanish Conquest, both the Maya highlands and lowlands were peripheral to, and to a certain extent under the control of, events which were taking place outside that area. The most important of these events was the destruction of Tula through a combination of internal conflicts and the pressure of outer barbarians. The diaspora of Nahua-speaking groups from central Mexico both before and after this happening (we are accepting the interpretation that the Quetzalcóatl faction left Tula some time before its final destruction; Jiménez Moreno, 1954–1955, p. 224) once again brought powerful Mexican influence into our area. Elite warrior groups, all claiming descent from the lords of Tula, conquered the "Maya" highlands and Pacific coast; more surely Toltec armies forcibly wrested Yucatan from the lowland Maya and established hegemony over them, ruling from Chichén Itzá.

The Early Post-Classic, lasting roughly until A.D. 1200, thus introduced Toltec styles in art and architecture to the Maya area, in particular such features as colonnaded halls, warrior columns, and the reclining stone figures called Chac Mools. New pottery types include the fine-glazed ware called Tohil Plumbate, probably produced to Toltec specifications on the Suchiate River which divides Chiapas from Guatemala. The first metals also appear at this time, mostly in the form of copper bells and gold plaques, the latter decorated in repoussé with scenes of Maya-Toltec battles (Lothrop, 1952). Once

again it is central Mexico that directs the destiny of southeastern Mesoamerica.

It is not until the abandonment of Chichén Itzá and the opening of the Mayapán Phase, however, that there is any evidence in the Maya area of Mexican settlement patterns, that is, of urbanism. Chichén may possibly have been a city, but no survey which could determine this has, to our knowledge, been carried out there. In the Late Post-Classic, Mayapán was a walled town with a dense population (Jones, 1952), and so was the spectacularly located walled site of Tulum (Sanders, 1960, pp. 212–218) on the east coast of the Yucatan peninsula. We know from post-Conquest documents (e.g., Tozzer, 1941, p. 230) that Mayapán was a militaristic despotism in which a handful of Mexicanized overlords held sway over much of the peninsula by holding Maya tribal chiefs and their families as hostages to exact tribute from surrounding provinces; it was these who inhabited the town.

Thoroughly defensible sites are located on strategic hilltops over most of the highland country of southeastern Mesoamerica, and we think it justifiable to consider the Late Post-Classic, to which these are assigned, as a thoroughly militaristic period. Some of these hilltop posts, such as Mixco Viejo or Iximché in the Guatemalan highlands, are obviously based on central Mexican models, with typically Mexican double temples, ballcourts, and other buildings surrounded on all sides by tremendous ravines.

Sanguinary activities of a similar cast were taking place in Oaxaca, where the unscrupulous and warlike Mixtec took over the more promising valleys from the Zapotecs. The marvelous Mixtec art style, however, with its finely painted codices, turquoise mosaics, and superb goldwork, really belongs with the cultures of northern Puebla and central Mexico in general (Nicholson, 1961). Since the expanding Aztec empire had little success with the Mixtec or Zapotec, its conquests did not reach very far into southeastern Mesoamerica; while the province of Soconusco, on the Pacific coast of Chiapas and Guatemala, was added to the Aztec state, Aztec arms had never even penetrated into the Maya area stricto sensu by the time of the Spanish Conquest.

Several conclusions can be reached by this tentative survey of southeastern Mesoamerica. One may see that there have been two great centers of diffusion throughout its cultural development, one within and one without the area as defined. The first of these, and the most ancient, was the lowland region of southern Veracruz and western Tabasco, the nucleus of a diffusion network that ran mainly

along the Gulf coast plain, across the Isthmus of Tehuantepec, and down along the Pacific coast of Chiapas and Guatemala. It was probably from here that village-farming as a mode of life radiated to the rest of Mesoamerica, and it was certainly here that Mesoamerican civilization first began.

As the importance of the Gulf coast waned, waves of diffusion began coming from a different direction, that is, from the Valley of Mexico and its environs, well beyond the borders of our area. From the onset of the Classic through the Conquest Period, Mexican products, Mexican ideas, and even Mexican peoples continued to pour into southeastern Mesoamerica and influence events in that remote region.

What, then, of the Classic Maya? Far-reaching claims have been made by investigators such as Uhle, Spinden, and Morley that the Maya area was a primary center of cultural diffusion for the New World as a whole, these unusual people being credited with the domestication of maize, invention of the calendar and of writing, and all sorts of other "firsts." Recent data indicate that the exact contrary is true: the ancient Maya were elaborators rather than innovators, and the admittedly great Classic civilization of the Petén lowlands hardly exerted any influence at all on peoples beyond the Maya borders.

If admiration is to be bestowed on any ancient peoples of the New World, we would rather see it given to the lowly, quid-chewing collectors of highland Mexico in the fifth millennium before Christ, who first tampered with the evolution of maize and thus made possible all subsequent advances in the culture of the American Indian.

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CULTURAL DEVELOPMENT IN LOWER CENTRAL AMERICA

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A survey of present archeological knowledge reveals that more than half of lower Central America is still terra incognita. The three countries, Panama, Costa Rica, and Nicaragua, have basically the same topography—a rather narrow plain along the Pacific coast, a central plateau often extending into cordilleras, and a wide, low, and humid Atlantic watershed. We know something of the first, a little of the second, and almost nothing of the third.[1]

If we consider each country separately, we see that in Nicaragua, only the Isthmus of Rivas has been excavated scientifically (fig. 2). More is known about Costa Rica; excavations have recently been made in the northwestern and southwestern parts of the country, but Hartman's work of 50 years ago is still the only source available for the central region. Panama has received most attention. A number of sites have been dug in the Parita Bay region, and the sequence, in spite of some gaps, is one of the longest in Latin America. Knowledge of the Chiriqui and Canal regions has much increased in recent years. On the other hand, only a little has been done on Darien since Linné's work (1929), and Veraguas has not yet received the attention it deserves.

The paucity of data makes it necessary to emphasize the provisional character of the outline that follows. The three modern political units seem homogeneous enough to be treated as an archeological area, but in the future it may be convenient to subdivide or combine them with other areas.

The data will be presented in the framework of an areal sequence divided into six periods (fig. 6). Each period, except the first, includes phases from several regions. Thanks to the few carbon–14 dates available, each period can be approximately dated. Finally, we hope to show that each period possesses a certain unity and forms a stage in an evolutionary sequence. The chronological position of specialized

[1] I wish to express my gratitude to Charles R. McGimsey III for reading and commenting on this paper.

developmental period terms applying separately to Panama or Costa Rica is given on appendix table 1.

Isolated finds of fluted points are the only indication of a Paleo-Indian occupation. Two are reported from northwestern Costa Rica, and two others from Madden Lake (Panama Canal Zone). These artifacts may be the earliest evidence of the presence of man in lower Central America, but proof of their antiquity is far from conclusive.

Evidence for Periods I and II comes exclusively from the Parita Bay region. Period I is preceramic and the only data we have come from the Cerro Mangote site (fig. 3; McGimsey, 1956). With a carbon–14 date of 4850 ± 100 B.C., it is the earliest reliable evidence of man in the entire area. The community pattern is of the semipermanent sedentary type. The food sources consist of shellfish and game, no evidence for agriculture having been found. The artifacts consist mainly of pebble tools. Primary extended and flexed burials, as well as secondary bundle burials, are reported.

Period II is unfortunately rather vaguely defined. It includes the earliest phases of the Monagrillo site, Monagrillo and Sarigua (Willey and McGimsey, 1954). The date of 2130 B.C. for the Monagrillo Phase is one of the earliest for pottery in Latin America. Settlement pattern and subsistence sources look the same as in Cerro Mangote; if agriculture exists, it is unimportant. Fish and shellfish are basic. Among the ceramics, simple curvilinear and scroll-patterned incisions and red-on-natural painting are characteristic. The stone tools are very similar to those of Cerro Mangote. On the same site, another phase called Sarigua has been recognized. The main differences are in the pottery, characterized by a thin monochrome with decorative techniques such as applique ridges, stampings, punctations, and incisions. On the basis of comparison with ceramics of other areas, this phase has been dated at about 1000 B.C.

Period III (300 B.C. to A.D. 300) consists of the following phases:

Scarified Guacamayo Phase—Veraguas Province (Lothrop, 1960) with a carbon date of 230 ± 60 B.C.

Scarified Phase—Chiriqui Province (Haberland, 1959; McGimsey, 1961).

Early Diquis Phase (pottery from the deepest levels in Lothrop's excavation in the Diquis region in southwestern Costa Rica).

Zoned Bichrome Period—northwestern Costa Rica (Coe and Baudez, 1961) with dates of A.D. 90 ± 200 and A.D. 260 ± 70.

Avilès and San Jorge Phases—Isthmus of Rivas (Norweb, 1961).

In spite of a date of A.D. 227 ± 60 for the Venado Beach Culture, it is not included in our Period III. We agree with Lothrop (1960) in believing this date too early because the pottery and other traits

such as metallurgy are closely related to the Early Coclé Culture of Period V. A single carbon date cannot be considered as conclusive. During Period III the ceramics over the whole area show many common features. The most typical decorative technique is zoned bichroming, a combination of one-color painting with incision or engraving. Representative types include Bocana Incised, Rosales Engraved, Scarified, and Guacamayo. Simple bichromes are also common. Polychrome is generally not present except at Puerto Nuevo (Veraguas-Chiriqui frontier, carbon–14 date of 230 B.C.), where sherds of a Black-and-Red Line on Buff were found.

The known sites of Period III represent simple small permanent villages. In some regions, as in northwestern Costa Rica, caves were occupied. Agriculture was probably the main source of food, but fishing and hunting remain important. Simple three-legged metates are common, and some elaborate ones have been found in Veraguas. The stone industry consists of pebble tools and polished celts. There is no evidence of jade, metal, figurines, or monumental sculpture. Burial practices differ throughout the area, but the Veraguas shaft-and-chamber tradition is attested for the first time. Large mounds have been reported only at Puerto Nuevo, where they cover burials. In this period, no highly developed division of labor, no social stratification, and no important ceremonialism seem to have existed. Nevertheless, the bases for such developments are present.

The very high developmental level of the Barriles Culture, with structures (floors or foundations of stone slabs), different burial forms, and striking monumental sculpture, contrasts strangely with the relatively simple pottery, which shows affinities with ceramics of Period III.

Period IV lasts approximately from A.D. 300 to 500, and is made up of the following phases:

Santa Maria Phase—Parita Bay (Willey and Stoddard, 1954; Ladd, 1957).
White-slipped Polychrome Phase—Veraguas (McGimsey, 1961).
Thin Red Phase—Chiriqui Province (McGimsey, 1961).
Linear Decorated Phase—northwestern Costa Rica (Baudez and Coe, 1960), formerly called Early polychrome A.
Santa Isabel and Palos Negros Phases—Isthmus of Rivas (Norweb, 1961).

The pottery of this period is characterized by the appearance and development of false polychrome (also called two-color painting, like the Santa Maria Polychrome and Zelaya Trichrome) and of some true polychrome (Veraguas White-Slipped Polychrome and Lopez Polychrome). The motifs are very simple, mainly linear. Figurine whistles are common in northwestern Costa Rica.

No striking changes from the preceding period can be observed.

Economic basis and settlement pattern seem identical to those of Period III. More diversity is nevertheless evident in the artifacts and is perhaps indicative of a higher degree of division of labor. Differential treatment of the dead (in northwestern Costa Rica and Parita Bay) and the construction of earth mounds for burial and building structures (Parita Bay) are rare signs of an incipient social stratification and of the increasing role of ceremonialism in religion.

Period V, which extends from A.D. 500 to 800, includes the following phases:

Early Coclé Phase—Parita Bay (Lothrop, 1937–1942).
El Hatillo Phase—Parita Bay (Willey and Stoddard, 1954; Stirling, 1949).
Alvina Phase—Parita Bay (Willey and McGimsey, 1954).
Venado Beach Phase—Canal Zone (Lothrop, 1960).
Fine Red Line Phase—Chiriqui Province (McGimsey, 1961).
Early Polychrome Phase—northwestern Costa Rica (Baudez and Coe, 1960).
Curridabat Phase—highland Costa Rica (Hartman, 1907a; Rowe, 1959).
Masaya Phase—Isthmus of Rivas (Norweb, 1961).

The pottery is more diversified not only within each complex, but also between one complex and another. Bold geometric multicolor painting is common throughout the area. The tall tripods of the Curridabat ware seem to appear during this period in central Costa Rica. Period V sites are numerous, and an increase in population is noteworthy. In coastal sites of northwestern Costa Rica, shellfish are added to the sources of food.

Drastic technical changes appear everywhere. Beautifully carved maceheads are found in northwestern and central Costa Rica. Elaborately carved metates are present except in the Parita Bay region. Jade pendants and beads are characteristic of the Nicoya Peninsula and perhaps occur at the same time in the Línea Vieja zone (central Costa Rica). In Panama, jade is scarce but is replaced by other semiprecious stones such as agate, opal, and others, worked with equal care and artistry. Finally, metallurgy seems to appear in full development in Panama, at least in the Parita Bay region.

The existence of these highly specialized artifacts and their often extended distribution suggest that they were manufactured by specialized artisans and transported by merchants. The only structures so far reported are those of El Hatillo, which consist of mounds arranged in crescent shape around a court, but others will undoubtedly be found in the future. The cemeteries of Venado Beach exhibit differential treatment of the dead, individual as well as communal burials, primary urn burials, extended, flexed, and sitting positions, and some peculiar practices such as suicide, sacrifice, and mutilations. These traits

are suggestive of a stratified society, in which the elite (chiefs and/or priests) exert sufficient power over their subjects or slaves to convince or force them to accompany their masters in death.

Period VI starts at A.D. 800 and ends with the Conquest. It must be noted that in two parts of the area, this period is subdivided into Middle Polychrome (northwestern Costa Rica) and Gross Red Line (Chriqui) on one hand; into Late Polychrome (northwestern Costa Rica) and Armadillo (Chiriqui) on the other hand. Because we know little about other local complexes, area-wide subdivision does not seem justified at the present time.

Period VI comprises these phases:

Late Coclé and La Mula Phases—Parita Bay (Lothrop, 1937–1942; Willey and McGimsey, 1954).
Classic Veraguas Phase—Veraguas Province (McGimsey, 1961).
Gross Red Line and Armadillo Phases— Chiriqui Province (McGimsey, 1961).
Classic Boruca Phase—southwestern Costa Rica (Lothrop).
Cartago Phase—central Costa Rica (Hartman, 1901, 1907b; Rowe, 1959).
Middle and Late Polychrome Phases—northwestern Costa Rica (Baudez and Coe, 1960).
White Polychrome Phase—southwestern Nicaragua (Norweb, 1961).

Ceramically the Period VI complexes may be divided into two groups. Elaborate multicolor painted wares in both geometric and naturalistic styles are characteristic of Costa Rica, Chiriqui, and Parita Bay regions. In the other regions, multicolor painting is of little importance, and characteristic ornamentation consists of modeling, applique, or incising.

Everywhere, this period seems to be a climax with respect to the preceding periods. Village sites are very numerous and often larger than before, although the main food sources remain the same. Structures occur in every region. Near Penonomé (Coclé Province) alignments of columns and statues are reported. Round houses lined with stones were found in northwestern and central Costa Rica. Earth and stone mounds, sometimes arranged around plazas, occur everywhere in Costa Rica and also in southwestern Nicaragua. If these structures are not evidence of significant mass labor, at least some of them attest to the growing role of ceremonialism in religion. Burials seem to have received more care. In central Costa Rica, the simple interments in the earth are replaced by stone cists; in northwestern Costa Rica and Chiriqui, tombs are indicated by stone markers and roofed with stone slabs.

The growing importance of religion is attested by the spread of monumental sculpture. Tall columns with anthropomorphic figures

carved in low-relief were found by Verrill near Penonomé. Animal figures carved in the round and human peg-statues occur in Chiriqui. Huge stone spheres and smaller anthropomorphic and zoomorphic figures carved in low-relief are reported in the Diquis region (southwestern Costa Rica). Although such representations are rare in central Costa Rica, sculpture reaches its climax in figures of men and women carved in the round, the so-called "sukias," trophy-heads, altars with pedestal base, tables decorated with flying panels, and other forms. In southwestern Nicaragua numerous tall stone statues depict human beings bearing on their backs or heads an animal figure. Others are depicted wearing masks or seated on tall pedestals. These statues are rare in northwestern Costa Rica. What seem to be degenerate manifestations of this art occur at the Papagayo site, near the Bay of Culebra, one of the southernmost outposts of the Nicaraguan sculpture (Baudez, 1959). On the other side of the Lake of Nicaragua, in the region of Chontales, very tall columns (some reaching 4 meters in height) supporting human figures carved in low relief are known to exist.

Everywhere except in the Parita Bay region, richly carved metates continued to be common. The four-legged jaguar form found in central Costa Rica is identical to those of Chiriqui, and similar to the type from Veraguas. The three-legged form is most common in northwestern Costa Rica and southwestern Nicaragua, but sometimes occurs in other regions. Gold is most abundant in Panama. In Costa Rica, metal is very rare in the central plateau, but abundant in the Línea Vieja zone. We do not know at what date metal appears in northwestern Costa Rica and Nicaragua, and the very rare gold objects found in tombs contrast with the abundance of gold objects described by the Spanish chroniclers. A precise typology of metallic objects found in the area is needed as a basis for more exact definition of local styles. For the moment, the Coclé and Veraguas styles seem to be most differentiated; Chiriqui and Costa Rica metallurgies are very similar and seem to borrow many traits from the Coclé and Veraguas productions.

Sculptures, richly decorated stone metates and tools, and gold and jade ornaments, indicate more than an increase of ceremonialism. As their types or styles are limited in number, and often extend over a considerable geographical area, it may be suggested that they were manufactured in certain specific localities and distributed by trade. The same may be said of the standardization and spread of some ceramic types, such as Mora Polychrome. There is evidence that

some sites in Línea Vieja (central Costa Rica) were trade centers for jade and gold (Lothrop, 1955).

In summing up for the history of the area, we can take Period III as a point of departure, information about Periods I and II being too scattered to be considered representative of the area as a whole. As we have seen, the foundation that made the subsequent evolution possible was already firmly established in Period III. Villages were simple, but indicate a permanent sedentary occupation. Agriculture was present and probably the main source of subsistence.

The tendencies observed in this period are more clearly manifested in Period IV in terms of division of labor, social stratification, and religious ceremonialism. The transition from Period III to Period IV reflects gradual growth rather than drastic change.

On the other hand, Period V contrasts dramatically with the preceding period, at least in technical aspects, introducing the manufacture and use of metal, jade and other semiprecious stone artifacts. The archeology reveals an increase in labor specialization, a probably regional specialization in arts and crafts, and extended trade relations. Social stratification is also more obvious than before.

In Period VI the highest achievements are reached. Standardized and widely distributed elaborate artifacts are indicative of greater regional specializations and of a more extensive network of trade relations. Even more characteristic of this long period (probably at the end of it), is the evidence of increased ceremonialism in the form of structures, burials, and monumental sculpture.

Considering the main characteristics of this evolution, it will be noticed first that it is not continuous. Although slow progressive growth is detectable in Periods III and IV, a remarkable jump can be observed at Period V around A.D. 500, with other important qualitative changes during Period VI.

It is often assumed in New World cultural development that all cultures had a common growth until a certain time, after which some pursued their development and reached summits while others stopped and remained stagnant. This is not what we observe in our area. Here the cultures seem to have developed at a different pace than in the high culture centers, with a slower rhythm and taking jumps of less qualitative importance. At first glance, it appears that the Panamanian cultures are precocious in relation to those of Costa Rica. During Period III the Scarified Guacamayo Phase as it is represented at Puerto Nuevo (230 B.C.) is not only much earlier than the Costa Rican Zoned Bichrome (A.D. 90 and 260), but looks technically much

more advanced, having the first two-color painted sherds reported in the entire area, structures, elaborate burials, and carved metates. If the Barriles Culture is as early as its pottery suggests, the thesis of the precocity of Panamanian cultures will be further supported. And more so, if the early Venado Beach date is confirmed.

Similarly in Period V, Early Coclé and El Hatillo seem to represent more diversified and complex cultures than those related to the northwestern Costa Rican Early Polychrome. During Period VI, present evidence does not indicate that any of the phases in the area were more developed than the others; but further work may change this picture.

From data gathered in the 16th and 17th centuries by Spanish chroniclers, northwestern Costa Rica and southwestern Nicaragua were included in Mesoamerica. One would therefore expect a much higher culture in these regions than in the southern part of the area. Actually, however, archeology does not as yet reveal such a superiority in spite of many Mesoamerican influences in southwestern Nicaragua and northwestern Costa Rica.

Most of the questions on the nature and importance of relations between the various regions within lower Central America cannot as yet be answered. Too few sites are known, and many of these are poorly known. Our ignorance of the prehistoric natural environment is also a handicap. Darien, for instance, is now a considerable natural barrier between Central and South America. We think it is premature to assume that the tropical forest landscape as it exists today was the same in prehistoric times, and therefore to infer a virtual lack of land connections through the Isthmus in earlier times. On the contrary, within the limits of our present knowledge, the close cultural relationships between Veraguas-Chiriqui-Diquis and inland central Costa Rica, observable at least as early as A.D. 500, seem indicative of numerous overland contacts. If sea contacts were common, one would expect to find more evidence for them than we now have—for example, between southwestern and northwestern Costa Rica.

In a tentative evaluation of this sort, these cultures should be considered in themselves and not solely in comparison with centers of higher culture. It would seem unjust to approach this area, as is so often done, with a negative attitude, looking for what was lacking and not for what was present. For this reason, we have emphasized perhaps prematurely such positive concepts as social stratification, division of labor, ceremonialism in religion, and others. From the few archeological facts available, a relatively high level of social diversification and complexity is indicated for the cultures of lower Central America in late pre-European times.

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CULTURAL DEVELOPMENT IN COLOMBIA

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Colombia is a country of marked geographical contrasts, which align into two general regions, (1) a mountainous zone beginning near the Caribbean coast and occupying the western half of the country, and (2) lowlands extending eastward from the Andean foothills to the Orinoco and Amazon River drainages.

The mountainous region represents the northernmost extension of the Andean chain, which on reaching Colombia subdivides into three principal ranges. These form two intermontane valleys through which flow the Cauca and Magdalena Rivers (fig. 7). To the north the land flattens into the Caribbean coastal plain, rising again in the northeast to form the Sierra Nevada de Santa Marta, Colombia's highest peak. From here to the Venezuelan border stretch the arid plains of the Guajira Peninsula. On the Pacific side, a broad depression between the Cordillera Occidental and the Serranía de Baudó comprises the Chocó. It is drained by two rivers, the Atrato flowing north and the San Juan flowing south.

The eastern zone, equal to the mountainous area in extent, is a broad alluvial plain stretching from the foothills of the Cordillera Oriental to the Orinoco and Amazon Rivers. This area, which varies from 100 to 500 meters in elevation above sea level, is made up of two very different regions. From the Río Arauca in the north to the Río Guaviare in the south, a combination of relatively sparse seasonal rainfall and high temperatures produces a vegetation pattern of savanna and gallery forest. From the Guaviare southward, the influence of continental climate, expressed principally in increased temperature and more constant rainfall, produces continuous forest like that characteristic of the Amazon Basin.

This geographical diversity is paralleled by a variety of climates. All temperature variations can be found within Colombia, from the enervating and humid Pacific coast and Amazonian lowlands, through the relatively dry and hot eastern llanos and Caribbean coast, to temperate high valleys, and finally the snow-covered peaks above 4,600 meters. When this temperature range is added to variability of rainfall, both in amount and frequency, the result is a multitude of regional differences.

Within this geographical framework, the archeology of Colombia introduces a series of problems whose solution is rendered difficult by the scarcity of systematic data. Although a few areas, such as the Caribbean and Pacific coastal regions, have been subjected to considerable archeological exploration, the Andean region has been investigated only in restricted areas, and the vast eastern lowlands are completely unknown.

This situation has made it seem most prudent to summarize the data at present available within a framework of large periods based on carbon–14 dates obtained from various Colombian sites, and from sites with related materials in Venezuela, Panama, and Ecuador. Within these periods, except for the first, represented only by surface collections, phases of cultural development can be proposed. These phases are regional in character and emphasize the northern portion of the country, where the most information is available at the present time.

Period I (*?–3000* B.C.).—The earliest cultural remains in Colombia have been found up to the present time only in surface sites. The best documented come from the lowlands. Early lithic industries are reported from the lower Río Sinú, at the site of San Nicolás de Bari (Reichel-Dolmatoff, 1957, pp. 123–125), and in the Chocó region on the Pacific coast, along the Catrú and Jurividá Rivers (Reichel-Dolmatoff, personal communication). The flint industry of San Nicolás de Bari consists of scrapers with evidence of use, and a number of nodules that seem to have functioned as hammers. In contrast, the Catrú complex includes finished artifacts such as scrapers, blades with serrated edges, perforators, burins, and knives. The Catrú and Jurividá complexes differ considerably technologically, and the quartzite artifacts of Jurividá, which are larger than those characterizing the Catrú complex, show some resemblance to the early lithic material from El Inga (fig. 7) and Santa Lucia, near Quito in Ecuador. It should be noted that none of these early Colombian lithic industries contains projectile points.

A single possible site of this period in the Andean region is that recently discovered by Hans Bürgl at Tumba de Garzón near the mouth of the Quebrada Majo on the Río Magdalena, Department of Huila. The material consists of various artifacts of petrified wood associated with remains of mastadon and megatherium at the base of a Pleistocene terrace. The lithic material was classified into two groups according to size: "Large rounded stones that could have been used for pulverizing or pounding, and small stones with pointed ends or cut-

ting edges that could serve as picks or scrapers" (Bürgl, 1957, pp. 9–29).

These early lithic remains in Colombia lack absolute dating. The sites appear to represent sporadic workshops of wandering groups whose principal subsistence source was hunting. There is no evidence of agriculture at this time or of burial practices.

Period II (3000–1000 B.C.).—Remains belonging to Period II have thus far been found only in northern Colombia, in the area between the Magdalena and Sinú Rivers (fig. 8). The earliest material comes from Puerto Hormiga, located on the Canal del Dique. A carbon–14 date of 4875 ± 170 years (Reichel-Dolmatoff, 1961, p. 354) makes this the earliest reported ceramic complex not only in Colombia, but in South America. The pottery is crude in workmanship and simple in form. Frequent use of vegetal temper, either fibers or leaves, gives it a spongelike structure. Decoration is rudimentary and irregularly applied, and includes incised lines filled with red pigment. Associated stone artifacts are of quartzite and show no secondary retouch. Subsistence was derived from shellfish and collection of wild seeds.

Puerto Hormiga is followed by the phases of Barlovento, San Jacinto, and Malambo. These exhibit certain stylistic relationships, which are confirmed by their relative chronological position as indicated by carbon–14 dates, making it possible to outline the cultural development in this geographical region during Period II.

The Barlovento Phase (Reichel-Dolmatoff, G. and A., 1955) is characterized by simple pottery, rounded vessels being typical. Decoration is by broad incised lines in curvilinear motifs, frequently combined with punctate zones. The incisions often show traces of red pigment. The infrequent lithic material consists of artifacts made by percussion. The depth of the deposit and the presence of sherds in the earliest levels indicate that the Barlovento people knew pottery before their arrival at the site. The midden refuse has characteristics suggesting that it may have been a seasonal camp, visited during the time of the year when shellfish are most abundant. Additional sites representing this phase have been found within the limits of Cartagena and on the Isla de Barú (Reichel-Dolmatoff, 1958, p. 475).

In the San Jacinto Phase, which follows Barlovento, the simple subglobular vessel shapes and broad-line incised decoration in curvilinear motifs continue. New elements include simple spouts in the form of open channels at the rim, and perforated lugs, often zoomorphic in form, and decorated with incision (Cruxent and Rouse, 1958, p. 36). In the succeeding Malambo Phase, this modeled and incised

style of decoration reaches its maximum development. Comparison of Malambo materials with various of the styles comprising the Barrancoid Series of Venezuela, such as El Palito, La Cabrera, and Barrancas, shows similarities suggesting that toward the end of Period II the first cultural contacts were established between northern Colombia and Venezuela. The carbon–14 date for Malambo (derived from charcoal) is 3070 ± 200 years (Angulo Valdés, 1962), making it slightly older than Barrancas with a date of 2820 ± 80 (Cruxent and Rouse, 1958, p. 15). The extent of the refuse deposits, their proximity to the banks of the Río Magdalena, and the abundance of griddle fragments permit the conclusion that this phase corresponds to a sedentary village life based on the cultivation of manioc and probably other plants. Although there must have been a secondary dependence on hunting and on fishing from the rivers and lakes, shellfish were no longer exploited. Some burials have been encountered in the refuse, but they provide no evidence of religious beliefs.

Period III (*1000* B.C.–A.D. *500*).—On the Caribbean coast, this period includes the Momil Phase, and phases belonging to the First Painted Horizon, a designation proposed by Reichel-Dolmatoff (1954, p. 365) to characterize the ceramic complexes of Loma and Horno in northeastern Colombia.

The Momil Phase is represented by sites in the region between the lower Río Magdalena and the lower Río Sinú. The cultural complex has been correlated with Mesoamerica and the Central Andes, with the result that it has been looked upon as a link between the Formative cultures of these two parts of Nuclear America (Strong, Kidder, and Paul, 1938; Canby, 1951; Reichel-Dolmatoff, G. and A., 1956). Associated with these elements are others that can be derived from the latter part of the Malambo Phase. Sites indicate relatively large sedentary populations, depending primarily on the cultivation of manioc and secondarily on hunting and fishing. Although there is no evidence of institutionalized religion, the abundance of anthropomorphic figurines has been interpretated as reflecting formalized religious concepts. Primary burials without offerings are frequently encountered in refuse deposits.

Certain ceramic traits of the Momil Phase diffused toward the northeast of Colombia, where they appear in the same chronological order but at a later date than at Momil. These include painting in red and black on white utilizing curvilinear motifs, and conical supports followed by solid or hollow mammiform supports. The Tocuyano style, with a carbon–14 date of 2100 ± 300 years, reflects the diffusion of these traits as far as western Venezuela. The result of this

diffusion is expressed in the First Painted Horizon, represented by Loma and Horno. The settlement pattern continues the same, the principal innovation being the first indirect evidence of the cultivation of maize in the form of manos and metates.

In the Andean region a large gap exists at the present state of our knowledge between Period I and San Agustín, whose earliest carbon–14 date is 2505 ± 150 years (Duque Gómez, personal communication), placing it chronologically in our Period III. These dates would appear to settle in the negative the question as to whether or not San Agustín is to be considered part of the Formative Horizon, at least as it is defined in South America. No cultural contact appears to have existed between the highlands and Caribbean lowlands at this time, since the archeological remains are quite different.

Typical of the San Agustín Culture are monumental stone structures, such as temples, tombs, and subterranean galleries; primary burial in tombs covered with stone; pottery decoration by positive and negative bichrome painting, and incisions filled with white pigment; vessels with tripod and tall pedestal bases; and the working of gold. The geographical distribution of this culture has not been well defined, but evidence has been reported from the departments of Cauca and Huila, as well as from the headwaters of several rivers draining toward the Amazonian lowlands. Parallels have been noted between various of the San Agustín traits and certain Peruvian complexes such as Chavín and Recuay, as well as with certain Mesoamerican cultures such as Chorotega and Maya. These similarities can be more adequately evaluated when the cultural position of San Agustín in Colombia is better known. However, there can be no doubt that this culture reflects clear influences from these two parts of Nuclear America.

The San Agustín Culture corresponds to a sedentary population that succeeded in developing complex religious concepts, probably accompanied by elaborate ceremonialism. Occupational division of labor and social stratification appear to have been characteristic. Agriculture was the primary subsistence resource. Although the settlement pattern has not been clearly defined, it seems probable that the population was distributed around ceremonial centers, the principal one being San Agustín itself.

Several sites in the extreme northeast of the department of Cauca represent the Tierradentro Complex. Its chronology is unknown, but similarities have been noted in the pottery and stone sculpture between it and San Agustín. Although the San Agustín type of stone architecture is completely lacking, it seems likely that Tierradentro may

be contemporary with the latter part of San Agustín, placing it at the end of Period III.

Period IV (A.D. *500—1000*).—During this period many features of the previous period continue, but a number of new elements are introduced. A characteristic feature is the tendency toward cultural homogeneity in northern Colombia, as a consequence of the wider diffusion of the cultural patterns, a phenomenon that was not evident earlier. This was facilitated by greater population density evinced by the large number of sites representing this period.

In pottery, changes can be observed in form and decoration, such as the introduction of large storage jars, anthropomorphic vessels, and jars with tubular spouts. In decoration, painting loses its importance, while modeling and incision acquire great popularity. Architectural innovations include circular stone house foundations and buildings on platforms. Agricultural terraces, in conjunction with the abundance of manos and metates, imply more intensive cultivation of maize. There is no evidence of ceremonial centers, but the existence of primary and secondary burials with offerings is indicative of change in religious beliefs.

During this period, some regions remained little affected by the general cultural advance. Such was the case around the Cienaga Grande de Santa Marta, where the population continued to depend exclusively on fishing and the collection of shellfish until Spanish times. It is probable that environmental factors, such as the swampy land around the Cienaga and the sparsity of rainfall on the Isla de Salamanca, impeded the introduction of agriculture into these areas. Instead, the inhabitants changed their way of life from a seasonal dependence on shell gathering to permanent settlement in pile villages. This is reflected in the numerous shell middens on this part of the coast that show in their upper levels types of pottery characteristic of Period IV in decoration and vessel shape.

The latter part of the Tasajeras Phase, which is dated by carbon–14 at 1000 ± 105 years (Angulo Valdés, 1962), equates with the appearance of the Second Painted Horizon (Reichel-Dolmatoff, 1954, pp. 364–365). Included here are the ceramic complexes of Coco and Portacelli in northeastern Colombia. The latter shows affinities with Coclé and Chiriquí styles of Panama with the Tierra de los Indios style of western Venezuela. Since this ceramic style has not been found in Colombia except in the northeast, it seems probable that it represents a diffusion to this region from western Venezuela. As far as the significance of the similarities with the Panamanian ceramic styles is concerned, nothing can be said until evidence is available

from the large portion of the coast separating Panama from eastern Colombia, where traces should be expected if a connection exists and the route was by land and not by sea.

Absence of stratigraphic sequences and absolute dates makes the identification of highland phases belonging to Period IV uncertain. The Quimbaya and Nariño Complexes, found in southwestern Colombia, have been considered to be contemporary, although they differ considerably stylistically. We do not know either their chronological position or their possible affiliations with San Agustín and Tierradentro. Their most typical ceramic features are the abundant use of negative painting in two and three colors, and the presence of annular bases and shoe-shaped vessels (Bennett, 1944).

Period V (A.D. *1000–1500*).—Much of the information about the late pre-Conquest cultures comes from accounts of the chroniclers, who observed the climax of many of the aboriginal cultural patterns before their extinction. Archeologically, Period V is characterized by a well-marked tendency toward regionalism. In northern Colombia two great cultural complexes develop out of the cultural homogeneity of the preceding period. The slopes of the Sierra Nevada de Santa Marta were the center of development for the Tairona Culture, while the lower courses of the Sinú and San Jorge Rivers were occupied by the Betancí-Viloria Complex, believed by Reichel-Dolmatoff (1958, p. 484) to have intruded into the region from the interior.

Poisoned arrows, trophy heads, taking of slaves, necklaces of human teeth, war dances, objects of gold, copper, and shell, primary and secondary burial in urns, cannibalism, and stockades for protection of houses are traits mentioned in the Spanish chronicles as characteristic of the area as a whole. Houses constructed over tombs of compacted earth, which were also used as cemeteries, an abundance of anthropomorphic jars, bichrome and excised decoration of pottery, and highly developed metallurgy in gold and tumbaga are mentioned for the Betancí-Viloria Complex. The typical settlement pattern over the whole area at this time is large villages along the rivers and adjacent lagoons. Subsistence was principally agricultural.

Some investigators have suggested that the origins of Tairona Culture are to be found in the plains of the northern part of the country, while others have tried to correlate certain of its traits with Mesoamerica and Central America. However, efforts to reconstruct its derivation are impeded by the absence to date of a complete chronological sequence and the absence of carbon-14 dates for the earliest manifestations of Tairona Culture. The same is true of the Betancí-Viloria Culture.

Although the influence of the Tairona Culture can be detected over a large portion of the lowlands just prior to the Conquest, its maximum development was achieved on the slopes of the Sierra Nevada de Santa Marta. In a geographical context of difficult topography, this culture is striking for its feats of architecture and engineering: Terraces for house sites and fields, stone floors, containing walls, stone stairways on the terraces and house entrances, roads paved with stone slabs to facilitate communication within and outside the settlement, stone bridges, irrigation canals, drains, stone porticos, columns and stelas, and tombs covered with large slabs.

Also characteristic is the ceramic style, which includes composite silhouette forms, tetrapods, double jars, jars with tubular spout, anthropomorphic and zoomorphic jars, annular bases, and decoration by excision and modeling in anthropomorphic and zoomorphic forms, especially the feline. Black pottery is typical, and painting is absent. Metallurgy is well developed. In the socio-political sphere, large urban centers, a marked division of labor, social stratification, incipient militarism, theocratic government, and intertribal trade can be noted.

In the Andean region, the Chibcha Culture and the complexes of Río Pichindé, Río Bolo, and Quebrada Seca (Ford, 1944) represent Period V. The favorable geographical conditions—temperate, flat, and fertile land, abundant water, and a topography that favored intercommunication—explain in large part the unity of cultural pattern over the extensive zone comprised by the altiplano of Cundi and Boyacá, a zone that at the time of the Spanish Conquest appears to have been densely populated.

One of the most frequently proposed hypotheses about the origin of the Chibcha derives them from the Amazonian region (Schottelius, 1946, pp. 221–225). However, the same scarcity of stratigraphic excavations and absence of typological seriation of the known sites exists here as in the southwestern part of Andean Colombia. We consequently have no reliable information on the sequence of development. Inferences about spatial extent, drawn from the distribution of isolated elements, are equally speculative, particularly in regard to comparisons with the Tairona and groups in southwestern Colombia. Most of the excavated sites are buildings and cemeteries with little depth of deposit, but refuse deposits so far investigated also exhibit little depth of accumulation, suggesting either that the history of the Chibcha Culture was relatively short, beginning some 300 years prior to the Spanish Conquest, or that the pattern of settlement was dispersed rather than concentrated (cf. Haury and Cubillos, 1953). Whatever the explanation, the high social and political development

attained by the Chibcha seems in marked contrast to the slight degree of urbanism, a judgment that may be influenced by the absence of architecture in stone.

Information provided by the chronicles indicates that the Chibcha developed complicated patterns of political organization, including a territorial division into two large states, each containing dependent chiefdoms. One of the most outstanding aspects of this culture was probably its highly formalized religion, which included priests, temples, and offerings. Various methods were employed for disposal of the dead, including mumification, burial in stone-lined tombs, secondary burial in urns, and the use of funerary offerings. As sedentary people, the Chibcha practiced agriculture in which maize, potatoes, and arracacha (bastardilla) were the principal crops. For this purpose, terraces were constructed on the slopes of the surrounding hills (Haury and Cubillos, 1953). Produce was distributed by means of periodic markets and through trade with neighboring tribes, in which salt, blankets, and gold were also exchanged.

CONCLUSION

From this summary, based on tentative periods and phases in pre-Hispanic cultural development in Colombia, the following points emerge:

1. If the association of man with extinct fauna at Tumba de Garzón is confirmed, the earliest appearance of Paleo-Indian hunters in Colombia can be estimated at some 20,000 years ago.

2. A date of 4875 ± 170 years for the site of Puerto Hormiga makes this pottery the oldest so far discovered in South America.

3. Because of its key geographical location, fronting both on the Pacific Ocean and the Caribbean, with easy access to the Orinoco and Amazon Basins, Colombia was undoubtedly exposed to multiple cultural influences from groups moving northward and southward across the continent.

4. At the end of Period II and during Period III, Mesoamerican influences appear in the form of well-defined complexes, as evidenced in the Momil Phase on the north coast, and the Tumaco Complex in the extreme southwest adjoining coastal Ecuador (cf. Estrada and Evans, this volume).

5. At the end of Period II, there is evidence of contact between northern Colombia and Venezuela, in the form of similarities between pottery of the Malambo Phase and the earliest styles of the Barrancoid Series.

6. Following the Formative Period, Colombia did not follow the

pattern of cultural development recognized in the Central Andes and Mesoamerica, but instead is characterised by an orientation toward the development of regional cultures.

7. Colombia's geographical position and environmental characteristics make it possible to state with assurance that additional work in little-known parts of the country will help to clarify many of the unsolved problems of cultural development in the New World.

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CULTURAL DEVELOPMENT IN VENEZUELA

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Venezuela occupies the northernmost portion of the South American continent. Her coast borders the Caribbean, providing the closest link to the chain of islands formed by the Lesser and Greater Antilles. Bounded on the west by Colombia, on the south by Colombia and Brazil, and on the east by Brazil and British Guiana, Venezuela must have served at various times in the past as a center of convergence for influences moving to and from these areas (fig. 7). The present political boundaries incorporate marked geographical variation, ranging from the high mountains of the Andean chain in the west, through the coastal valleys of the Lake Valencia area to the broad llanos or plains of the Orinoco and the tropical forests of the Guiana formation.

The principal aboriginal centers of cultural development equate in a general way with the major geographical regions, the Orinoco drainage following a path distinct from that of the western or Andean region. A third subarea can be distinguished around Lake Valencia on the central coast, where the two major traditions meet and intermix. Within each region, the sequence is divisible into Preceramic and Ceramic Epochs, each of which can be in turn subdivided into periods on the basis of evidence from relative chronology and a series of carbon–14 dates. Thus, the Preceramic Epoch comprises two periods: Preceramic I, prior to 5050 B.C., and Preceramic II, 5050–1050 B.C. The Ceramic Epoch contains four periods as follows: Ceramic I, 1050 B.C.–A.D. 350; Ceramic II, A.D. 350–1150; Ceramic III, A.D. 1150–1500; and Ceramic IV, A.D. 1500 onward (fig. 9).

PRECERAMIC EPOCH

Preceramic Period I.—Initially, the human occupants of the region were probably hunters. Such groups are best represented on the northwestern coast at the site of El Jobo, State of Falcón (fig. 7). The characteristic artifacts are elongated, leaf-shaped or lanceolate points, some with serrated edges; stemmed points, side scrapers, and knives, some showing evidence of retouch. In general, the lithic industry of El Jobo resembles typologically projectile points associated with the second mammoth found at Santa Isabel Iztapán, Agate Basin, Nebo

Hill, Lerma, and other North American sites, and South American finds such as Lauricocha in Peru and Ayampitín and Intihuasi in Argentina. The extremely eroded condition of the site does not permit the establishment of stratigraphic sequence, but a carbon–14 date of 16000 ± 300 years (Rouse, 1960, p. 8) aligns the site chronologically with some of the above-mentioned finds.

Folsomoid points found at Bejuma, State of Carabobo, and points and scrapers recovered along the shores of the Icabaru and Kukenan Rivers in Venezuelan Guiana can be included typologically in this early preceramic period, although there is no evidence as yet of their stratigraphic position or associated cultural or faunal remains.

Preceramic Period II.—The second period of the Preceramic Epoch is characterized by the appearance of groups of shellfish gatherers along the Caribbean coast. A number of carbon–14 dates indicate that about 2200 B.C., shell middens were in existence both in the east (Cubagua Phase, 4150 ± 80 years; Manicuare Phase, 3570 ± 130 years and 3050 ± 80 years) and the west (El Heneal, 3400 ± 120 years). The artifact complex from the shell middens varies both in tool types and in the raw materials from which they were manufactured, probably reflecting chronological differences. The earliest sites are characterized by conical bone points, bone spatulas, and biconical stones, while the later ones reveal an increasing predominance of shell tools. The principal tool innovations are the shell adzes made from the *Strombus gigas,* and stemmed stone projectile points.

The shellfish diet of these groups must have been supplemented by fishing with nets and by hunting of land animals. The existence of manos and metates suggests that wild-plant foods were exploited. The presence of sites not only on the mainland but also on the offshore islands indicates that the people possessed watercraft and a rudimentary knowledge of navigation. Evidence of burial practices is limited to the Manicuare Phase at a single site (Punta Gorda), where human remains were found scattered in the midden refuse. Red ocher has been found in all the middens, but its use is uncertain.

CERAMIC EPOCH

MIDDLE AND LOWER ORINOCO AREA

Ceramic Period I.—About 1000 B.C. the first pottery-making groups appear along the Orinoco River. Known as the Saladero Phase, the pottery is characterized by white-on-red decoration in geometric motifs covering the entire vessel surface and by fine incised hachure. The Saladero people apparently practiced the cultivation of manioc, judging from the existence of a few sherds of griddles. However,

the abundance of wild-plant and faunal resources would have made it possible for such a group to support itself rather easily, and even to have attained the beginnings of social stratification or occupational specialization, with a rudimentary agricultural technology.

Subsequent to the Saladero Phase, around 900 B.C., a new group of immigrants filtered into the middle and lower Orinoco, perhaps coming from the north coast of Colombia, where stylistically similar pottery from the Malambo Phase on the lower Magdalena River is carbon-14 dated at around 1200 B.C. (see Angulo, this volume). This new complex, known as the Barrancas Phase, is characterized by a predominantly plastic style of pottery decoration based on modeling and incision, in which a profusion of biomorphic modeled and incised adornos is the most outstanding feature.

The elaboration and competence of the Barrancoid style of decoration indicates that at the time of their arrival in the Orinoco valley the potters already possessed a high degree of technical skill in the ceramic art, the fruit of a long tradition. Griddles suggest the use of manioc, although the presence of manos and morters raises the question as to the extent to which the Barrancas people depended upon manioc as a staple.

The Barrancas Phase appears to show great uniformity and considerable expansive power. The final portion of the Saladero Phase shows strong Barrancoid influence, particularly along the eastern Caribbean coast. By contrast, there is little evidence of Saladero influence on the plastic style of the Barrancas Phase.

Toward the end of this first ceramic period, at about the time of the beginning of the Christian era, the Saladero Phase moved toward the east coast of Venezuela where it appears under the name, El Mayal Phase, carbon–14 dated at 1795 ± 80 years (Cruxent and Rouse, 1958, p. 15). These people from the Orinoco probably came into contact with the earlier shellfish-gathering groups that had persisted along the coast. In any case, the pottery-making cultures adopted a mixed subsistence economy, including both seafood and agriculture. This adaptation was maintained until the time of the Spanish Conquest and is reflected archeologically in the pottery-producing shell middens along the eastern coast.

Subsequently, certain stylistic elements of the Saladero and Barrancas Phases appear to have diffused into the Antilles, giving rise to a series of ceramic complexes whose style is reminiscent of those of the Orinoco Valley.

Ceramic Period II.—Around A.D. 400 the Arauquín Phase appears on the llanos of Apure and Guarico bordering the Middle Orinoco.

The style of ceramic decoration is plastic, featuring incision, zoned punctation, modeling, and excision. This phase introduces a new type of tempering material in the form of spicules of fresh-water sponge.

Like their predecessors, the people of the Arauquín Phase must have adapted themselves to the ecological conditions of the llanos. It is interesting to note, nevertheless, that at the time of the Conquest, according to the Spanish chroniclers, the inhabitants of this region cultivated maize, lived in large communal houses, manufactured crucibles for casting gold which were used for trading with other tribes, and did not possess a reserve supply of food. Spindle whorls and basketry impressions left on pottery indicate a knowledge of spinning and weaving techniques.

The use of body painting is suggested by pottery stamps, possibly related also to religious observances; similar stamps are characteristic of the Colombian highlands. Another clue of possible religious significance is the biomorphic adornos representing individuals covered with what look like bird masks, perhaps the regalia of a shaman. Except for a single secondary urn burial reported from the Atures region (Verneau, 1901) and not certainly associated with the Arauquín Phase, there is no indication of funerary practices. The earth mounds, found particularly in the Apure region, suggest a level of population density and social organization commensurate with the execution of simple collective efforts.

By A.D. 600, the Barrancas Phase at the mouth of the Orinoco has changed sufficiently to be given a new designation, Los Barrancos Phase, characterized by a decline in the elaborate earlier modeled style, and the substitution of incision as the dominant decorative technique. Los Barrancos is contemporary with the Arauquín Phase, from which it adopts sponge spicule temper, excised decoration, and pottery stamps. Primary flexed burials unaccompanied by offerings are associated with Los Barrancos. During this period, the Barrancoid tradition expands for the first time toward the southeast, where it is represented in British Guiana in the form of the Mabaruma Phase (Evans and Meggers, 1960, p. 147).

Ceramic Periods III and IV.—In late pre-European times, the mouth of the Orinoco appears to have been the recipient of influences from several neighboring complexes. The Guarguapo Phase, which succeeds Los Barrancos, shows more Arauquinoid than Barrancoid elements in paste, vessel shape, and decoration. Barrancoid decorative traits are not only rare, but degenerate in form (Cruxent and Rouse, 1958, pp. 232–233). Toward the end of the aboriginal period, there is a resurgence of the Barrancoid ceramic tradition in the form

of the Apostadero Phase. The modeled adorno style closely resembles that developed in neighboring British Guiana, suggesting the possibility of influence from that direction.

In contrast to the situation in western Venezuela, the Orinoco cultures of the late period seem to represent a decline in complexity rather than a climax of cultural development. Sites are smaller and refuse deposits shallower than in earlier periods, and the pottery is simpler in form and less frequently and less ornately decorated. The lessened developmental continuity on the lower Orinoco in contrast with the great stability of Ceramic Periods I and II may reflect a lessened permanence of settlement on the part of groups throughout the entire area. More frequently moved villages might result in bringing people with slightly different traditions into closer contact, thus facilitating trade and other kinds of influence. The disrupting effects of European contact, which were felt in this area earlier than in western Venezuela, brought an end to this trend toward simplification.

ANDEAN AND COASTAL AREA

Ceramic Period I.—Around 200 B.C., almost 800 years later than the introduction of pottery making into the lower Orinoco, a ceramic tradition incorporating well-developed painted decoration appears in western Venezuela. This is the Tocuyano Phase, occupying the valley of Quibor, in the Andean foothills. In addition to black-on-white painting in linear motifs, the pottery of this phase is characterized by plastic forms of decoration including broad incision in curvilinear patterns, undulating applique fillets, and biomorphic adornos, and certain distinctive vessel shapes with tripod, tetrapod, annular, and ring-and-leg bases. Some of these traits occur earlier in northwestern Colombia, implying an introduction from that direction.

In the Quibor Valley the Tocuyanoids must have found land well suited to agriculture. Although the region is today extremely arid, different climatic conditions probably existed in the past, when it was watered by a large number of streams that today flow only during the rainy season. The absence of griddles has led Cruxent and Rouse (1958, p. 263) to infer that manioc was not cultivated in this part of Venezuela, although this evidence cannot be considered conclusive. Manos and metates, usually equated with maize, are also absent in the Quibor Valley, although associated on the coast with ceramic complexes related to the Tocuyano Phase. Some form of crop must have been planted, however, and by analogy with the situation existing at the present time we may infer that the temperate slopes were used

for the cultivation of potatoes, a crop well suited to the support of an expanding population.

The Tocuyano Phase and those that follow it in the region during the succeeding period appear to represent a southern extension of the First Painted Horizon of Colombia. The Tocuyano ceramic style in particular is widely diffused over western and coastal Venezuela. A carbon–14 date of 1930 ± 70 years (Cruxent and Rouse, 1958, p. 15) for the Cerro Machado site gives it an antiquity in the La Guaira area equivalent to that in the valley of Quibor. Unfortunately, too little is known of the few sites so far reported as representing the Tocuyano Phase to speak with any assurance of its general cultural characteristics.

Ceramic Period II.—Between A.D. 350 and 1150, a number of regional ceramic complexes characterized by painted decoration continue to be representative of western Venezuela. The vicinity of Betijoque, State of Trujillo, is occupied by the Betijoque Phase, possessing a decorative style based on white-on-red painting, with lesser amounts of black or red painting on unslipped surfaces. Additional forms of decoration include undulating applique fillets and chainlike applique on the vessel body, nubbins with transverse incisions, biomorphic adornos, and faces modeled on the vessel wall. Other typical artifacts include painted figurines with flat head and coffee-bean eyes, and pectorals and pendants of slate.

La Pitia Phase is approximately contemporary with the Betijoque Phase on the northwest coast of Lake Maracaibo. The sites are a series of shell middens containing pottery decorated in the following varieties of painting: Red-on-white, red-on-black, red-and-black-on-white, and black-and-red-on-plain. Among the most typical motifs is the so-called "combing," also characteristic of the pottery of the Loma-Horno Period of the Sierra Nevada de Santa Marta, Colombia (Reichel-Dolmatoff, 1951). The existence of primary and secondary earth burials and of secondary urn burials, as well as grave offerings such as marine shells, suggests the possibility of differential treatment of the dead and of beliefs in an afterlife.

La Pitia Phase apparently has strong affiliations with northwestern Colombia. Like related complexes of the Río César and Río Ranchería, it was probably originally associated with a primary dependence on agriculture. However, in common with nearly all the other pottery-making groups to move onto the Venezuelan coast, this appears to have been rapidly replaced by a mixed economy in which seafood rivaled plant food in importance. The presence of manos and grinding

stones suggests that among the plant foods exploited was a variety of grain.

Along La Cabrera Peninsula and the coast of Lake Valencia, influences from the plastic Barrancoid tradition of the Orinoco mixed with the pottery tradition of western Venezuela, giving rise to La Cabrera Phase. The pottery style is reminiscent of Barrancas, being based principally on incision, modeling, and applique, and emphasizing biomorphic adornos. Associated with this are a series of western cultural elements, such as coffee-bean eyes, double spout linked by a bridge handle, incised lines filled with pigment, ring-and-leg bases, and pipes.

The relatively large extent of the archeological sites implies that the population at this time must have been numerous and dispersed along the coast. Griddles indicate the utilization of manioc; pipes, the cultivation of tobacco. Subsistence was probably basically agricultural, although supplemented to a large degree by hunting and fishing, since the zone is rich in both land and sea fauna. Burial was primary, and some differential treatment of the dead, possibly equated with differential social status, is evident in the association of pottery vessels with some individuals.

Ceramic Period III.—Between A.D. 1150 and 1500, the Lake Valencia region continued to feel the influences of diverse cultural traditions. At the beginning of the period, new types of pottery appear that are related stylistically to the Arauquinoid tradition of the Orinoco River. Perhaps it was this influence that stimulated the development of the Valencia Phase, one of the most complex archeological phases of Venezuelan prehistory. The pottery decoration is exclusively plastic, featuring biomorphic adornos representing birds, frogs, and mammals; large funerary urns, effigy jars, and female figurines with rectangular heads are typical.

Large habitation mounds cover a wide zone bordering the lake and constitute one of the most striking features of the Valencia Phase. If all were occupied simultaneously, they reflect an incipient urbanism. Some degree of social stratification seems implied by the organization of collective effort required to construct the earth mounds. Some evidence of religious development is supplied by the profusion of pottery vessels associated with secondary urn burials, and by the abundant and well-developed figurine style, which suggests to some observers the existence of a fertility cult. On the other hand, as Kidder (1944) has pointed out, there is no clearcut separation between utilitarian and nonutilitarian pottery. Some vessels associated with

burials show evidence of having been used for cooking, although it could be argued that this consisted in the ritual preparation of food to be deposited as an offering in the grave.

There appear to have been no important advances in agricultural technology accompanying this increase in population density. As perhaps happened on the Orinoco, the wild plant and animal food sources were sufficiently abundant to provide a food surplus without intensification of agricultural production, so that there was no incentive for the people to look for ways of improving their dominion over nature.

Ceramic Period IV.—The protohistoric period in western Venezuela is marked by the appearance of a group of archeological phases characterized by painted decoration in highly standardized geometric motifs arranged in panels or bands. Negative painting is sometimes associated. Plastic techniques like incision, modeling, applique, and corrugation occur but are of minor importance. Vessel shapes include tripod, tetrapod, pedestal and ring-and-leg bases, as well as large jars, probably used for storage.

The Carache (Trujillo) and Guadalupe (Valley of Quibor) Phases, representing this late horizon in the Andean region, show considerable cultural unity, particularly in the sharing of a well-polished, fine, black type of pottery. The Dabajuro Phase, occupying the northwestern coast, has strong affiliations with both in polychrome decoration, and is also related to pottery complexes from the islands of Aruba and Bonaire.

A slightly greater degree of social and cultural stability during this period seems to be indicated by the widespread occurrence of habitation mounds. These continue the urbanization begun in the Lake Valencia region during the preceding period, and perhaps reflect a further development of social stratification or other increases in social complexity. The pottery, which is characterized by standardization of form, great elaboration in decoration, and an abundance of nonutilitarian wares, is also indicative of division of labor, at least in the pottery-making craft.

Agricultural production becomes considerably intensified. Techniques such as terrace construction and irrigation make their appearance, implying well-organized group efforts toward increasing crop yield. This is paralleled by innovations in ceremonialism. Numerous caves in the mountains were apparently the focus of cult activities, judging from the quantity of ceremonial pottery and the large slate pectorals in the form of a bat that have been found in them. Also typical are seated or standing pottery figurines. The greatest elabora-

tion of ceremonial elements occurs in the western phases of Dabajuro, Guadalupe, and Carache (States of Falcón, Lara, and Trujillo). Stylistically related complexes are found in the mountains farther to the south, along the coast from Falcón eastward, and on the central llanos, although in the latter areas the diagnostic traits are much diluted.

In general, the complexes representing western Venezuela during this period show stylistic affiliations with the pottery of Coclé in Panama, and more particularly with the complexes belonging to the Second Painted Horizon of Colombia (Reichel-Dolmatoff, 1951).

SUMMARY AND CONCLUSIONS

At the present state of our knowledge, Venezuelan archeology presents a two-part picture. The life of the Preceramic hunters and gatherers of shellfish who occupied the area at least as early as 5000 B.C. was interrupted about 1000 B.C. by the introduction of well-made pottery, there being no transitional or developmental stage between Preceramic and Ceramic.

In general terms, two different ceramic traditions appear to be represented in Venezuela: an eastern one based principally on plastic techniques of decoration (modeling, incision, punctation, excision, applique), and a western one emphasizing painting. These define two contemporary centers of parallel cultural development, the former centering on the middle and lower Orinoco and the latter in the western mountains. In later times these two traditions met and intermingled in the area around Lake Valencia on the central coast, giving rise to what is possibly the highest cultural development attained in the area.

A variety of cultural influences appear to have coalesced in Venezuela. In the Preceramic, the lithic industries resemble early forms of projectile points from both North and South America. The shellfish gatherers possess a series of shell and stone tool types resembling artifacts from shell middens in Panama, the Antilles, and Florida. The Ceramic phases have morphological and decorative characteristics suggesting affiliations with complexes in northern Colombia, the Amazon Basin, and the Antilles.

In respect to cultural development, there can be observed a tendency toward increasing complexity in coastal and western Venezuela. Agricultural technology, social stratification, the formation of incipient urban centers associated with structures (mounds, causeways, etc.), and ceremonialism, although probably present in the initial

periods to some degree, reach their maximum development in the latest archeological phases of the western or Andean portion of the area.

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CULTURAL DEVELOPMENT IN ECUADOR

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The coast of Ecuador has emerged in the last decade as one of the most exciting regions in the New World for those who concern themselves with prehistoric cultural development. Hindsight makes it obvious that this should be the case. Perched astride the Equator, where ocean currents meet, Ecuador is in a unique geographical position. Straying voyagers from north, south, or west would be almost inevitably cast upon her shores. The coastal landscape, ranging from the rolling hills of Esmeraldas and northern Manabí, through the fertile and flat plain of the Guayas Basin to the coastal mangrove swamps of El Oro (fig. 7), affords a variety of possibilities for human exploitation. The excessively wet and swampy Pacific border of Colombia and the Peruvian coastal deserts seem almost inhospitable by comparison.

Although low hills separate the Guayas Basin from the coast and cover portions of south Esmeraldas and Manabí, they do not constitute barriers to travel and communication. Nor are there any rivers large enough to impede movement. The major natural obstacle is the Andean chain, whose precipitous slopes rise with remarkable abruptness, transforming the environment to which men must adapt to survive. A similar distinction, only slightly less abrupt, exists between the highlands and the low, humid forests of the Oriente, which merge into the greater Amazon Basin. This natural division, in which the differences between highland and lowland environments were probably more significant than the mountain barricade itself, is reflected in the cultural development. At all times, the highland regions are more closely related to each other than to the coast, although diffusion of ceramic styles and other traits and occasional trade pottery indicates that some communication did exist between highlands and lowlands. Although it is dangerous to generalize in the absence of data, present knowledge of the archeology of Ecuador suggests that the coast played a more significant role than the highlands in initiating and diffusing cultural elements from early prehistoric times onward.

The reconstruction of cultural development presented here would have been impossible 10 years ago. At that time most work had been undertaken in the highlands. The coast was known chiefly from purchased collections representing the late cultures, and from brief reports of surveys and limited excavations. Only rarely was chronology based on stratigraphic evidence, and no absolute dates were available. Today, the situation is reversed; dozens of stratigraphic excavations, hundreds of surface collections, hundreds of thousands of classified potsherds, and numerous carefully excavated grave lots, provide the basis for the coastal chronology, substantiated by a dozen carbon–14 dates and several hundred obsidian dates (Estrada, 1962, Cuadro 4–5; Evans and Meggers, 1960, table 1 and fig. 19). In addition to providing a chronological framework, this research has produced evidence that early man on this part of the South American coast was not as isolated from the rest of the world as he was once thought to be.

The picture of cultural development that is beginning to emerge is relatively clear and simple, and we are not sure whether this is because of a unique interplay of environmental and cultural factors, or because of the almost unique circumstances surrounding the reconstruction. From the beginning of intensive fieldwork in 1954, a single theoretical point of view has prevailed. We have looked for interrelationships, major chronological innovations, broad generalizations. We have emphasized similarities rather than differences between sites and complexes. Whether this has made the picture appear simpler than it really is must be left for future work to decide.

A chronological framework composed of four major periods best suits the cultural development of Ecuador (fig. 10). These have been termed: "Preceramic," "Formative," "Regional Developmental," and "Integration." Spanning at least 1,000 years each, these periods are longer than those generally utilized in other areas. Each marks a major alteration in culture, and although there are differences and changes within each period, they are minor in comparison to the distinctions between one period and the next.

Preceramic Period.—Little is known of the prehistory of Ecuador prior to the introduction of pottery making. Lithic industries have been reported from the highlands, the best-known site being El Inga, in the vicinity of Quito (Bell, 1960; Mayer-Oakes and Bell, 1960). Obsidian artifacts, including projectile points and a wide variety of scrapers, appear to equate with late Paleo-Indian complexes coming to light with increasing frequency in other regions in the Americas.

Shell middens occur on the margins of old bays along the Guayas

coast. Some of these can be identified with later cultures through the presence of pottery. Others, especially a considerable number composed principally of mangrove oyster shells, have yielded no artifacts or other evidence of human association as yet. Since the deposits are highly eroded, positive identification may never be possible. There is no reason to doubt, however, that the southern coast at least was inhabited in Preceramic times by small groups of hunters, gatherers, and fishermen. Their existence may be inferred not only from evidence of such a way of life to the south on the coast of Peru, but also from the events that resulted in the inception of the Formative Period on the Ecuadorian coast.

Formative Period.—The Formative has been defined as beginning with the advent of pottery making, represented by the appearance of the Valdivia Culture (Evans, Meggers, and Estrada, 1959). Carbon–14 dating places this introduction at about 3000 B.C. The word "introduction" is used purposely, since Valdivia pottery is too well developed to constitute a local invention. Characteristic of Period A of the Valdivia Culture are decoration by combing, finger grooving, shell stamping, fingernail punctation, corrugation, fine and broad incision on a red slipped surface, zoned beveling of the rim, and finger punching from the interior producing an exterior boss. Distinctive vessel-shape features include small tetrapod feet, castellated rims, and folded-over, finger-pressed rims. The most diagnostic artifact is a small stone figurine, often the form of a thin polished slab, but sometimes with incised stylization of facial features, arms, and legs.

This complex, restricted to the northern shore of Guayas Province, is associated with a shellfish-gathering subsistence supplemented by collection of other kinds of wild plant and animal foods. The population appears to have been small and relatively sedentary. Both the pottery complex and its preagricultural context are unusual in the New World Formative, and the carbon–14 dates have been questioned on this basis. However, there is a remarkable similarity in both of these respects between Period A of the Valdivia Culture and early middle Jomon of southern Japan (Estrada, Meggers, and Evans, 1962).

The preagricultural shellfishers of Jomon time made pottery decorated with finger grooving, fingernail impressions, corrugation, shell stamping, shell scraping, incision, and polished red slip, as did the early Valdivians. Also present are folded-over finger-pressed rims, castellated rims, and small tetrapod feet. Differences exist between the total ceramic complexes of early Valdivia and early middle Jomon, but even when these are taken into consideration, the similarities are

striking. Furthermore, the dates in Japan fall between approximately 3000 and 2000 B.C., making the two cultures contemporary. We consequently feel that however radical it may seem to postulate a transpacific contact as early as 3000 B.C., this is the only conclusion that adherence to the principles of comparative analysis will allow.

The Valdivia Culture apparently endured about 1,000 years. Except for a southward expansion near the end of the period, it was restricted to the portion of the coast between Valdivia and the Santa Elena Peninsula. During this time, the ceramic complex underwent a considerable amount of change. The relatively crude decorative techniques of Period A gave way to broad line incision and excision on beautifully polished surfaces, and these in turn were superseded by brushing and applique fillets. Some of the early vessel shapes and rim forms died out and new ones took their places. The stone figurines gave way to a unique and highly standardized type of pottery female figurine distinguished for its combination of nudity and varied, often elaborate, hair treatment. Except for circular shell fishhooks, and stone tools associated with their manufacture, the surviving nonceramic artifact inventory of the Valdivia Culture is nondescript.

Sometime between 2000 and 1500 B.C. a second shellfishing group appears on the same portion of the Guayas coast. This is the Machalilla Culture (Meggers and Evans, 1962). Like its predecessor, it is characterized by a primarily hunting, fishing, and gathering pattern of subsistence coupled with strikingly beautiful and well-made pottery, with thin walls and polished surfaces. The pottery complex is completely unlike Valdivia. Decoration is by fine incision, thick red painted bands, blurred and streaked by pebble polishing, and punctation. Vessel shapes include strongly carinated bowls (composite silhouette) and stirrup spout jars. No similar complex has been reported to our knowledge from either side of the Pacific, so that its derivation is at present unknown. The presence of sherds of Machalilla pottery types in Valdivia sites of Period C and also of Valdivia pottery in Machalilla sites, suggests that the two groups were able to maintain a peaceful coexistence for several centuries, without effecting any major alteration in either complex, as far as the material remains are able to show.

This simple way of life was destroyed by a third invasion, coming this time from southern Mesoamerica. No carbon–14 dates are available and obsidian dates are not entirely in agreement, but the introduction appears to have taken place around 1500 B.C. For reasons that are not yet apparent, the Valdivia Culture becomes extinct, while the new elements are amalgamated with the Machalilla Culture. The result-

ing complex, known as the Chorrera Culture, rapidly spread to the Guayas Basin, as well as up the coast into the present province of Manabí. The only explanation that can account for this expansion into what remains today as some of the most fertile agricultural zones of the Ecuadorian coast is the introduction of a staple food crop. Both the cultural consequence and the time period at which it occurred suggest that this crop must have been maize.

Among the Mesoamerican elements introduced at this time are pottery napkin-ring ear plugs, small obsidian blades, types of pottery decoration such as iridescent painting, zoned red and black painting, and innovations in form such as the annular base, undulating rim, and "cuspidor"-shaped bowl. Carry-overs from the Machalilla Culture include the incised and red-banded types of decoration, and the carinated bowl form. Other elements of possibly local origin include bottles with tall spouts, connected to the body by a strap handle with a whistle at the base, zoomorphic whistling jars, and rare but beautifully modeled masculine pottery figurines. The thin walls and mirror-like polished surfaces produced by the Chorrera potters were never equaled, much less surpassed, in later cultures.

Habitation sites were small, and no evidence has survived of house construction. No ceremonial structures have been identified, and if any existed they were apparently of perishable materials. The only implication that social organization was more advanced than in Valdivia times is the outstanding ceramic achievement, which seems almost incredible in the absence of specialized craftsmen. The handicap of a wet tropical climate is particularly severe in this case, where so much of the cultural inventory must have been of perishable materials, and we are willing to postulate that the sociopolitical and religious level of development attained by the Chorrera Culture was higher than will ever be directly demonstrable from the archeological remains.

Over the course of centuries, the Chorrera Culture spread not only over the coast, where so far it is unreported only in the far northern province of Esmeraldas and the southernmost province of El Oro, but also into the southern highland provinces of Cañar and Azuay. The numerous similarities between the pottery of Chorrera and Chavín suggest that this diffusion may have continued southward into the north Peruvian highlands. In Ecuador this expansion was followed by adaptation to local conditions and sufficient isolation to produce a series of regional complexes that mark the advent of the next chronological period (fig. 10).

Regional Developmental Period.—Even a superficial observer who

travels today along the Ecuadorian coast will be struck by distinct regional differences in topography and vegetation. These environmental zones apparently were more marked in the past and correspond almost exactly to the divisions between the various complexes characterizing the Regional Developmental Period: the Jambelí Phase in the mangrove swamps bordering the Gulf of Guayaquil and the Province of El Oro; the Guangala Phase along the central and northern Guayas coast; the Bahía Phase from Manta to Bahía de Caráquez; the Jama-Coaque Phase in northern coastal Manabí; the Teaone Phase on the southern coast of Esmeraldas Province; the Tejar and Daule Phases in the Guayas Basin. Several of the highland complexes, such as Huancarcuchu, Late Cerro Narrío (Narrío Moderno), Tuncahuán and Iluman, probably represent similar contemporary developments (Bennett, 1946; Estrada, 1958, Cuadro, 1; Collier and Murra, 1943; Collier, 1946).

This period, dated at between about 500 B.C. and A.D. 500, is characterized by the maximum degree of regional cultural differentiation, not only in ceramic styles but in level of sociopolitical and religious development. Nevertheless a certain unity remains in the traces of Chorrera ceramic elements brought forward from the past, and this is reinforced by the universal presence of two horizon markers: white-on-red, and resist or negative painting. These new types of decoration make their appearance simultaneously on the Ecuadorian coast and constitute the ceramic criteria for recognition of the inception of the Regional Developmental Period.

New vessel forms also appear, such as the tall pedestal-based compoteras, tripod and polypod bowls, and small graceful goblets. Figurines, uncommon in the Chorrera Culture, blossom into a variety of exotic and beautiful forms, many made partly or wholly in molds. Cylindrical and flat pottery stamps with intricate patterns are also abundant in several regions. The first evidence of metallurgy is a gold ring from Bahía and a copper one from the Tejar Culture. Shell beads and amulets, zoomorphic pottery whistles, manos, and metates are among the other elements that are common to all cultures of the period.

Regional differences are evident, however, not only in the way in which these common traits are interpreted, but in associated features. Polychrome painted decoration is restricted to the Guangala and Bahía Cultures, as is iridescent painting. Postfired painting is found in complexes from Bahía to the north. The zoned punctate decoration of Daule is a unique local style. Black wavy-line painting done with a

multiple brush, and anthropomorphic polypod legs distinguish the Guangala Culture.

There is considerable difference in the level of sociopolitical and religious development attained by the various regional cultures. The Jambelí Phase, associated with the mangrove swamps of the southern coast, continued the early Formative way of life in many respects, subsisting on shellfish and other wild foods, possibly supplemented by limited agriculture. The pottery, although incorporating the horizon style markers (white-on-red and negative painting), is much simpler in form and less varied in decoration than in any of the other contemporary groups. Since there is evidence of contact with the Guangala and Bahía Phases, this cultural lag cannot be attributed to isolation, but must be associated with the limited agricultural potential of the environment.

The Bahía Phase, by contrast, attained a level that in Peru would be termed "Florescent," and in Mesoamerica, "Classic" (Estrada, 1962). It provides the first evidence of ceremonial structures, in the form of stone-faced platforms. The Island of La Plata was apparently a religious sanctuary, to judge from the presence of thousands of figurines and other presumably ritual objects and the total absence of habitation refuse. Figurines are exceedingly abundant and varied, including hand-made, mold-made, standing, seated, male, female, solid and hollow construction, and applique, mold-made, and painted decoration. The variation is not random, however, and the majority of examples fall into a dozen rather well defined types. Habitation sites are larger than during the previous period, and are composed typically of large mounds associated with catchment basins for fresh-water storage.

The navigational skill of the Bahía people is attested by their use of La Plata Island as a ritual center. Certain components of the ceramic complex suggest that they ventured much farther afield. The zoned, postfired painted decoration on Bahía pottery is nearly indistinguishable from that of south coastal Peru and bears a close resemblance to examples of similar decoration from Mesoamerica. More than this, the variety of figurine styles, pottery masks, pottery stamps, and other objects of indisputably Mexican affiliation, long known from this part of Ecuador, can be assigned to the Bahía and neighboring Jama-Coaque Cultures. The resemblances are so numerous and detailed as to suggest maintenance of direct contact over a period of time, and the absence of stepping stones in Central America indicates that the path was by sea.

Trade objects of Bahía origin found their way to all parts of the Ecuadorian coast as well, attesting to the existence of communications between the various regional cultures. Undoubtedly these few artifacts leave only a hint of the extensive commercial relations that existed and even less evidence of the ideas and concepts that may have accompanied them. The maintenance of regional diversity is an indication not only of adaptation to local environmental resources, but also of the absence of politically unifying structure that went beyond the regional scope. There is no indication of warfare or defensive installations from any part of the coast during this time.

The versatile, well-organized, and energetic Bahía populace came into contact not only with the groups so far mentioned, but with strangers from more distant lands. Around 200 B.C. a complex of unique ritual objects makes its appearance, including small pottery neckrests, models of houses with saddle roofs and columns, realistic figurines seated with legs folded one above the other, novel golf-tee earplugs, and pendants of stone and pottery fashioned in the form of a tusk. These traits are not of equivalent antiquity elsewhere in the New World, whereas they are widespread and earlier on the western side of the Pacific. To equate their appearance with the arrival of a vessel from Asia seems the most reasonable way to account for them (Estrada and Meggers, 1961). The Bahía people, having demonstrated their receptivity to new religious ideas by their adoption of Mexican figurine styles and other ritual objects, might be expected to seize upon other innovations with equal enthusiasm—at least such an interpretation fits the evidence as it comes from the ground. It is doubtful that either of these foreign influences produced a fundamental alteration in the already existing culture. In fact, the Guangala Phase, which borders the Bahía Culture on the south, received none of these influences and still achieved a comparable level of sociopolitical and religious development.

There is some evidence of an environmental change toward the end of the Regional Developmental Period, and this seems to be correlated with the disappearance of the regional complexes. Along the coast of Guayas Province the mangrove swamps were converted into salitres. There are indications all along the coast of a decrease in rainfall. These changes increased the aridity of the coastal zone and rendered obsolete the simple agricultural methods that had been effective before. Around A.D. 500 the cultural consequences begin to be evident that crystallize into the urban civilizations of the final Integration Period.

Integration Period.—By the time of the Spanish contact, coastal Ecuador was divided into three large archeological cultural areas: The Atacames Culture was spread over coastal Esmeraldas and northern Manabí; the Manteño from Bahía de Caráquez to the Island of Puná (Estrada, 1957a); and the Milagro along the Andean foothills from the vicinity of Quevedo to the Peruvian border (Estrada, 1957b). Large urban centers are characteristic; for example, the Manteño occupation is more extensive than the present town of Manta, which had a 1960 population of 27,000. The Manteño and Milagro people were earth-movers on a grand scale. The Manteño constructed agricultural terraces in the steep-sided ravines of Cerro de Hojas and neighboring hills, while the Milagro people built thousands of large artificial earth mounds as building substructures and for burial. Whether these cultural areas correspond to political units cannot be demonstrated as yet, but such a conclusion would seem in keeping with the level of sociopolitical development indicated by the archeological remains.

Much of our knowledge of these late cultures is derived from the cemeteries, where the dead were buried in urns, together with small pottery vessels and other possessions illustrative of their status and occupation. The variety of these objects in the Milagro Culture is suggestive of advanced occupational specialization and of marked differences in social status. Aside from pottery, the most frequent offertory objects are copper ornaments of chains, bells, earrings, and nose rings, and copper tools such as tweezers, axes, pins, knives—attesting to a well-developed metallurgy. Less common, and associated with individuals of higher status, are silver bowls and ornaments, and jewelry of gold set with disks of blue stone. The simple and elegant nose ornaments and elaborate earrings are among the most beautiful creations of New World metalworkers. Gold was also used to inlay carefully drilled holes on the front face of the upper incisors.

Of perishable creations we know much less, but one urn dating from about the time of Spanish contact produced enough fragments of intricately carved wooden staffs, basketry, and textiles to demonstrate that in these arts the coastal Ecuadorians were not inferior in skill to their neighbors to the south. The textiles represent a variety of weaves, and are decorated by warp and weft float and ikat techniques, the latter being especially finely executed. Beaded fabrics, shirts covered with silver and gold bangles, headdresses of feather plumes, and collars of embossed gold and silver suggest that the chief or priest must have presented a magnificent sight.

The pottery of these late cultures shows the simplifying and standardizing effects of mass production. The beautiful and varied decoration of the previous period is replaced by simple geometric patterns created by incision, combing, applique, or burnishing. Beautiful negative painted vessels continue to be made, and anthropomorphic jars are typical of the Manteño Culture. In general, vessel shapes are more standardized than in the preceding period. Pottery artifacts are also much rarer. Figurines are important only in the Manteño Culture, but are less abundant and less varied than before, implying a major alteration in the beliefs with which they were associated.

Pottery vessels from the cemeteries attest to trade relations between the Milagro farmers and the seafaring Manteño of the coast. Evidence that trade had passed beyond the stage of barter comes from caches of copper axe-money encountered in Milagro burial urns. These thin beaten copper plates with thickened edges, although different in form, are reminiscent of the axe-money of Mesoamerica, a resemblance that probably is not coincidental.

Although the predominant use of perishable materials coupled with the destructive action of the tropical climate leaves little direct evidence, it cannot be denied on the basis of what has survived that a high level of urban civilization was attained by the coastal cultures of Ecuador in late pre-Spanish times. Reports from the highlands of artificial mounds, intricate metal objects, shaft tombs and other late coastal traits suggest a similar level of development may have existed there.

In the latter part of the 15th century, the Inca empire was extended northward to encompass highland Ecuador. Stone structures in Azuay and Cañar Provinces and sherds of Inca pottery types recovered as far north as Imbabura Province provide archeological confirmation of the historical record. On the coast, however, with the exception of rare finds on the islands of Puná and La Plata, there is no evidence of Inca domination. Whether the tropical climate made the area less attractive, or the local groups were better organized and afforded greater resistance to conquest is not clear; perhaps it was a combination of the two factors. Whatever the explanation, Milagro burial mounds, dated by the presence of glass beads at the end of the aboriginal period, show no variation from those of earlier times that could be attributed to Inca influence. It would not be surprising to find, however, that the coastal Ecuadorians of Inca times had learned from this latest group of foreigners as they did so often in the past, and readapted new ideas into forms uniquely their own. It was left to the Europeans to conquer and subdue them, once and for all.

The devastation of native life by European settlement and the destruction of material remains by the rigors of a tropical climate have been so complete that archeologists 400 years later are still prone to deny that civilized life was ever attained by the prehistoric peoples of Ecuador. It is now apparent that we must grant these aboriginal cultures not only this, but also a major role in the establishment and maintenance of contacts with Mesoamerica beginning in the Formative Period—the results of which appear to have been of basic significance for the development of culture in the Andean Area as a whole.

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CULTURAL DEVELOPMENT IN THE CENTRAL ANDES—PERU AND BOLIVIA

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In 1940 Kidder read a paper at the Eighth Pan-American Science Congress entitled "Speculations on Andean Origins" (Kidder, 1942). At that time the archeology of the Central Andes began with the highly developed, florescent civilizations of Mochica and Nazca. Chavín was still considered by many North American archeologists to be post-Mochica. Although it was possible to postulate, as Kidder did, a series of early developments, they remained largely speculative until after World War II and the resumption of fieldwork in the area. Twenty years ago it was impossible to compare Peruvian culture history, in its overall growth from a preagricultural stage, to the other civilizations of the world. Today this can be done, at least in broad outline.

The increase in knowledge of Central Andean prehistory has largely been one of the discovery of whole cultures previously quite unknown, with a heavy emphasis on the coast, particularly the northern coast. It is thus now possible to discern an early hunting and gathering stage, not yet sufficiently well known to link it with the succeeding stage of early horticulture, which seems to begin on the coast at about 4000 B.C. This is followed by the introduction of pottery at about 1200 B.C. and the development that culminates in the first of a succession of three culture climaxes in Kroeber's (1939) sense of that concept. This is the Chavín Culture, now proved to precede the classic cultures of Mochica, Nazca, and Tiahuanaco, and separated from them by a further developmental stage marked by great technological advances.

From the appearance of the second climax, marked especially by Mochica, Nazca, and Tiahuanaco, the further history of the Central Andes, culminating in the Inca Empire, which we consider our third climax, was known prior to 1940. A good deal has been added to that knowledge, particularly in the field of more accurate dating, thanks to carbon–14, but there are still a number of large gaps to be filled.

There is an obvious imbalance between what is known of the coast in general and of the highlands. Large areas of the northern and central highlands are still virtually blanks, and the whole history of the domestication of the locally specialized highland crops is unknown. Published studies of settlement pattern (Kidder, 1956) have been almost entirely confined to the Virú Valley (Willey, 1953) on the north coast, and a few early horticultural sites (Bird, 1948; Engel, 1957a, 1957c, 1958). We still know very little of the beginnings of Chavín, and we have only the haziest speculative notions of the full implications of Tiahuanaco influences over large areas. The question as to whether this spread of Tiahuanaco-derived styles on the coast and in the highlands of central and northern Peru was militarily inspired conquest or the result of a decline of the earlier cultures, creating a vacuum into which these styles moved, is of great theoretical importance in setting up a developmental scheme for Peru for use in accurate comparative studies.

In our view, a developmental sequence is a hypothesis in which the terminology used reflects the nature of progressively more complex and radically different conditions of culture and society—an outline of macro-evolution of supra-individual culture. Beyond this are the rise and fall of individual cultures and the larger cyclical patterns of Peruvian history.

In order to achieve the best possible outline of this kind, we require much more information on the nature of society than we now possess for nearly all time periods. Having established a reasonably sound chronological framework, we now must not only fill regional and temporal gaps, but we must also expand our knowledge of whole sites and construct site ethnographies in order to progress beyond our present unbalanced dependence on pottery sequences. This is an ailment which still afflicts much of American archeology, by no means unique to Peru.

With these shortcomings in mind we suggest the following overall developmental sequence, frankly representing only the core of our area.

Peru	Mesoamerica
VI .... New Kingdoms and Empire V .... City Builders	Post-Classic
IV .... Regional States Florescent or Regional Integration	Classic
Regional States Formative or Regional Diversification III .... Cultist Temple Centers	Formative
II .... Horticultural Villages	Archaic
I .... Preagriculture	Early Hunters

We feel that this scheme, largely derived from Bennett (Bennett and Bird, 1949), expresses the Central Andean situation better than the Mesoamerican stages of Archaic, Formative, Classic and Post-Classic, but it must be emphasized that we regard it as hypothetical and subject to revision on the basis of new evidence (fig. 12).

Preagriculture (*ca. 9000 to ca. 4000* B.C.).—Early hunters and gatherers evidently occupied both coastal and highland zones of the Central Andes, but the evidence is still sparse. The carbon–14 date of 7566 B.C. from Lauricocha (Cardich, 1960), a cave site in the north highlands (fig. 11) is the only one so far obtained. It is associated with a small assemblage of fairly crude flaked tools and projectile points. Lanning and Hammel (1961) present an excellent summary of the rather sparse additional remains of this stage. They include points and scrapers of nonflinty stone from Viscachani and some other sites in highland Bolivia and southern Peru; the smaller, flint points from the central highlands; the few surface specimens of long points from the Pampa de los Fósiles on the north coast; and some material from the south coast. All these are presumably of quite early date. Viscachani specimens are typologically close to those from Ayampitín, in Argentina (fig. 13), where dates clustering around 6000 B.C. have been obtained. We therefore seem to have enough evidence to postulate an early hunting and gathering occupation, but it lacks internal sequence and needs a great deal of further investigation. There appears to be a long interval, perhaps on the order of 2,000 years, between these early lithic remains and the preceramic horticultural sites on the coast and the as yet unknown early agricultural sites in the highlands that presumably precede the earliest known highland sites having both pottery and agriculture.

Horticultural Villages (*ca. 4000* B.C. *to 800* B.C.).—Since 1946, when Junius Bird first discovered the preceramic horticultural village of Huaca Prieta at the mouth of the Chicama River (Bird, 1948), a large number of sites with no pottery but with evidence of cultivation of a variety of plants other than maize have been located (Engel, 1957a, b, c; 1958). Basketry, matting, netting, and twined fabrics of cotton are typical of this stage, but stone technology varies from the very simple flaked pebbles of Huaca Prieta to inventories including well-made projectile points and throwing sticks from the south coast.

Although the material culture of the people of Huaca Prieta was extremely simple, the beginnings of art in typically Peruvian style have been recorded from the site (Bird, 1962, figs. 4–8). Designs of birds, including the condor, and serpents were woven into twined fabrics by floating warps. Gourds were decorated by neatly carved faces that

strongly suggest felines in full face, although the teeth so characteristic of later depictions of cats are lacking.

Villages, as far as they are known, were small, closely knit settlements at or near river mouths. These cultures seem to have been oriented to the beach for fishing and beach gathering, and to the lagoons for wild-plant gathering. There is no evidence whatever in the long history of Huaca Prieta from about 2500 B.C. to about 1200 B.C. for inland hunting, and very little of such evidence elsewhere. Domesticated plants include one type of squash, lima beans, perhaps the kidney bean, bottle gourds, cotton, and a number of species that may or may not have been cultivated.

Very recently Engel (1960 and n.d.) has announced the discovery of an even earlier aspect of the culture of the Horticultural Villagers. At Chilca, Paracas, and Nazca, in sites dating between 3800 and 3000 B.C., he has found small semisubterranean houses and burials of people who lived very much as did those of the following millennium, but who lacked cotton. They grew the lima bean and bottle gourd, and collected the roots of wild plants and shellfish. They also fished, as attested by fish bones and a bone fishhook, and hunted birds. Crude lanceolate projectile points and the use of vicuña pelts for burial wrappings indicate that they were also land hunters. For matting and netting, they used wild vegetable fibers. Simple bone tools, and grinding stones are also present.

These finds seem to point to the possibility that linted cotton was introduced at about 3000 B.C. from an Asiatic source to hybridize with the wild, unlinted native cotton, producing the distinctive Peruvian cotton that is still being cultivated. They also bring incipient agriculture in South America closer in time to the same level of development in Mexico.

The main archeological problem posed by these simple, culturally relatively static villages is the origin of this way of life, which appears on the coast of Peru at about 4000 B.C. Having achieved a neat economic balance between sea and land, they show no internal change until very late in their history and apparently were isolated from contacts with other regions, at least from contacts that led to significant changes. They have no known antecedents; it is pure speculation as to whether they came from the interior, down the coast, or are local developments. From the highlands at this time there is nothing to throw any light on this problem, nor on the early development of highland crops.

At about 1400 B.C. maize appears in the rubbish (Collier, 1962). It is now quite certain that this is of Mesoamerican origin. As Col-

lier (1961, p. 107) has noted, the introduction of maize made very little difference to the life of Horticultural Villagers for a considerable length of time. It does, however, mark the end of what seems to have been pretty nearly complete isolation, and foreshadows a rather slow but, in view of the facts of geography, inevitable growth and change. The introduction of pottery occurs at about 1200 B.C.—at first simple, competently made plain ware, with no definite foreign stylistic affinity, and known in the literature only from Virú Valley (Strong and Evans, 1952) and Aldas (Lanning, 1959).

It has been suggested (Evans, Meggers, and Estrada, 1959) that the early Valdivia wares of the Ecuador coast (apparently at least a thousand years older than any in Peru), resemble the earliest pottery of north coastal Peru. We have not been able to find any strikingly comparable traits of shape in available literature to support this view.

Cultist Temple Centers (800 to 300 B.C.).—The transition from the static communities of Horticultural Villagers to the height of the Chavín climax is rather hazily understood. Basically, it is a change from an essentially archaic way of life that had reached a level of what may be called "river mouth efficiency," to use Caldwell's (1958) concept, to a state of very considerable dependence on agricultural lands at some distance from the sea. Settlements are still found near lagoons and beaches, but there are also many well up the valleys, which could only have subsisted by means of irrigation, although there is no physical evidence of canal systems.

What may be among the earliest, if not the very earliest, of the specialized religious structures from which this stage takes its name, are the platform and mounds at the still sketchily reported site of Aldas near Casma on the central coast, thought to be pre-Chavín (Engel, 1957c; Lanning, 1959; Collier, 1962). Sherds from pits at the site show no traits of Chavín style, and resemble some pre-Chavín pottery found by Engel at Curayacu, south of Lima (Lanning, personal communication to Donald Collier). Aldas also produced a broken figurine, which in the opinion of some Mesoamerican specialists most closely resembles a style characteristic of southeastern Mexico, popular in the Middle Formative of that area, dated between about 800 to 500 B.C. (Ishida et al., 1960).

On the Peruvian coast, there appears to be a gradual expansion in elements of pottery form and decoration that by about 700 B.C. include certain specific resemblances to some of the wares of the Mesoamerican Formative. Peruvian pottery at this time is still largely unpainted, but such traits as zoned incision, the flat-bottomed, gently flaring-sided bowl, and the stirrup spout suggest influence from

southeastern Mexico. In this diffusion, the Machalilla and Chorrera Phases of the Ecuador coast (Estrada, 1958; Estrada and Evans, this volume) must surely have played an important role. Even more striking is the case of rocker stamping, which in Mesoamerica is most closely associated with the Olmec Culture of southern Mexico.

Whether the emphasis on large felines, raptorial birds, and serpents in Olmec and Chavín art is coincidental or the result of diffusion is an unsettled point. As has already been stated, condors, serpents, and very possibly large cats were depicted as early as 2000 B.C. The condor (Bird, 1962, fig. 4) is treated in this early art in a manner very similar to that in Chavín stone carving, so that the possibility of independent adoption in Peru or even of a south to north diffusion of these themes cannot be ruled out at present.

On the other hand, Smith (1962) has recently reviewed Olmec art and has found much evidence of Olmec elements in the figures cut into the stone slabs of the platform at Cerro Sechín in the Casma Valley, and in a number of small specimens, mainly of turquoise, attributed by Larco Hoyle (1941) to the Cupisnique Phase of generalized Chavín Culture. It is interesting that several of these specimens are from Lambayeque, well to the north of Cupisnique in the Chicama Valley drainage. Coe (1962) has independently pointed out what appears to be an Olmec design on a jar from the same period at Kotosh. In view of this evidence, we see the real possibility that Olmec may have directly or indirectly influenced the northern coast of Peru at a time prior to the full development of classic Chavín art as known from Chavín de Huantar, in the northern highlands, and at such places as Cerro Blanco in Nepeña Valley and at Moxeke in Casma Valley. At any rate, after more than a thousand years of settled agriculture, something sets off a florescence of art, bringing with it the first indications that the communities of a region are united in common economic, religious, artistic, and architectural endeavors.

Temple centers of the Chavín horizon were built, from what is known of settlement patterns on the coast, to serve small, "scattered house" villages subsisting on an as yet far from fully developed agricultural system. The Chavín florescence on the Peruvian coast is in some ways comparable to Caldwell's (1958) conception of the nature of Hopewell Culture in the Ohio Valley—a culture that had reached a level of "forest efficiency" that did not include reliance on developed agriculture, but which had the resources to devote much labor and wealth to what seems to have been a cult of the dead. On coastal Peru, "river mouth efficiency" gave way to the beginnings of "upriver efficiency," stimulated by the introduction about 900 to 800 B.C.

of an improved form of maize, and by the addition of warty squash, sweet manioc, and avocados to the list of cultivated food plants. This made possible dedication to the supernatural of priests and specialists, who oversaw and constructed temples, and planned and executed the painted reliefs in clay that decorated them. It would seem reasonable to look forward to the identification of a comparable state of developing "highland efficiency" as a precondition for the full development of highland Chavín and the cultures of the major highland basins.

The distribution of Chavín style, especially in pottery, has been notably extended in recent years, particularly in the highlands and to the south. Elements of Chavín art are present in early Paracas pottery. We have little direct information on this interesting development in the Nazca district of the south coast, but clearly the beginnings of the southern polychrome tradition were developing here prior to the extinction of full Chavín style in the north. What may have happened is that elements of Chavín style in Paracas diffused southward, affecting the locally developing polychrome tradition in a region in which we believe the painting of pottery to have begun in Peru. Later, this technique, including the specialized one of resist dye (negative painting) spread to the north. Just when the Chavín elements reached the south coast is not clear, but on the basis of present evidence it must have been very late in the history of Chavín art, and possibly, in a technical sense, in the succeeding cultural stage.

In the highlands, through the recent work of Lumbreras (1960b) and others (Flores Espinoza, 1960; Casafranca, 1960), Chavín pottery and presumably Chavín religious ideas are known as far south as the Ayacucho region.

South of Ayacucho, there was a relatively long period of ceramic history paralleling that of the Chavín styles to the north, but apparently uninfluenced by them. At Qaluyu in the Province of Puno north of Lake Titicaca, pottery painted in dark brown on white in simple geometric patterns has been found associated with brown ware decorated by wide grooving or trailing in curvilinear patterns. These have been carbon–14 dated at between 1000 B.C. and about 600 B.C. Early wares at Chanapata in the Cuzco region, and from the lower levels at Chiripa on the Bolivian shore of Lake Titicaca, dating back to about 800 B.C., also show no Chavín influence.

Regional States Formative (*300* B.C. *to* A.D. *200*).—This stage marks the transition from Chavín to fully matured Peruvian civilization. It is a time of expanding technology, especially in the irrigation of the coastal valleys. In the present state of knowledge, the stage

has more meaning for the coast than for the highlands, where little irrigation seems to have been practiced, at least in comparison to the coast where it was essential to full land use. On the north coast, in the Virú and Chicama Valleys, there was a further expansion up-valley almost certainly associated with canal irrigation, although physical evidence for this is much obscured by later developments. Agricultural development was paralleled by other technological experimenting; pottery began to be painted in white-on-red on the northern and central coasts, and in polychrome on the south coast. The kidney bean is a important added source of protein. Copper appears for the first time, gold having been used to a small extent earlier in Chavín. This is a period of expansion of all systems of culture, reaching an apogee in the succeeding florescent stage. It lacks artistic evidence of a pervasive religious force so apparent in the Chavín horizon, but there are large pyramid platform mounds that must have supported temples. Settlement patterns in Virú Valley (Willey, 1953) indicate a change from the older "scattered house" village pattern to a more concentrated arrangement of conjoined rooms or house units, still small in comparison to later towns, but foreshadowing them.

In the highlands, very little is known about this stage. At Chiripa (Bennett, 1936), a circular village of 15 contiguous houses dates from about 300 B.C. Charred remains of tubers, quinoa grain, and fish bones reflect a mixed agricultural and fishing economy. Simple white-on-red pottery may be related to early experimental white-on-red wares of the coast. So far, no specialized religious structures have been found associated with Chiripa Culture, nor with the Chanapata Culture (Rowe, 1944), which seems also to fall in this stage. Recent excavations by the Bolivian government, under the direction of Carlos Ponce Sanginés, are reported to have identified two new phases underlying Bennett's Early Tiahuanaco (Bennett, 1934). These are apparently not to be fully equated with Chiripa, but may well prove to belong to a formative stage leading to the florescence of Tiahuanaco.

Regional States Florescent (A.D. *200 to 600*).—Accurate dating of the second culture climax of Peruvian history is difficult, but by about A.D. 200 the full agricultural potential of the coast had been reached and Classic Tiahuanaco was probably at its peak in the Titicaca Basin. Again, there is a serious imbalance between knowledge of coast and highland, for little is known of the highland cultures of the north except local pottery styles, such as Recuay. The exact nature of the great site of Tiahuanaco itself is still uncertain, although on the basis of its size and the presence of refuse over large areas it could well have been, if not a city, a very large town. Highland populations,

in the Titicaca Basin at least, obviously greatly increased since Chiripa times.

On the coast, this stage is marked by the well-known climactic art styles of Mochica and Nazca, and the less spectacular ones of the Central Coast. Population expanded and the simple settlements of the previous stage grew into large agglutinated towns. Great adobe platforms for temples built on the north coast at this time were never exceeded in size. The famous scenes of Mochica life painted on pottery indicate, as might be inferred from architectural structures and the highly developed irrigation system, a strongly theocratic social control, with very considerable emphasis on warfare. This is in marked contrast to the Early Classic of Mesoamerica, but might be expected in an area where arable land cannot be expanded by cutting and burning more forest, but is limited by the amount of water available in individual rivers and by the contours of the land itself. It is therefore no surprise that the art of Nazca, and even more so that of Mochica, shows so much belligerent activity. In the north this culminates in the expansion of the Mochica state as far south as the Santa Valley; the conquest of the intervening Virú Valley has been well documented archeologically. It would seem that for the remaining 1,100 years or so of native Peruvian history, continuing struggle for control of the arable land was the basis of politics, both along the coast and in the highland basins.

City Builders (A.D. *600 to 1000*).—There is much still to be learned about the social and political nature of the spread of ideas and stylistic elements from Tiahuanaco and Wari that penetrated to the northern Peruvian coast and south into northern Chile. We now believe (Lumbreras, 1960a, b) that in the Ayacucho region influences from late Nazca were in turn strongly affected by Classic Tiahuanaco, producing the styles of Wari (often referred to as Coast Tiahuanaco). It now appears almost certain that it was from the Ayacucho region, with its great walled center at Wari, that military conquest was initiated. This action was inspired by a vigorous cult, symbolized by an iconography of Tiahuanaco—via Wari, whose bearers took control of the coast as far north, perhaps, as Lambayeque.

During this advance, the classic Mochica style and others along the coast were completely obliterated. In the highlands, including Cuzco, there is much new evidence for a similar conquest. In contrast, the expansion of the pure style of Tiahuanaco was limited to the far south of Peru, northern Chile, eastern Bolivia, and to a small degree to northwestern Argentina (fig. 14).

At this time urbanism appears at Cuzco and on the central and

northern coasts. High-walled compounds of houses and rooms were constructed, and the populations of the valleys began to live in true cities. Whether this concentration was for the purpose of making more land available for cultivation or for easier control of the masses may never be known. Defense must also have been a consideration. It is thought, however, that such centers were of two kinds—"urban elite" and "urban lay" (Schaedel, 1951), the latter lacking the religious buildings and palaces reserved for the upper classes. We estimate, admittedly without any statistical evidence, that the ultimate effect of coastal urbanism was to decrease the active farming population by 8 to 10 percent, with a nonfarming population as high as 50 percent in large towns.

Wari style in its early, unadulterated version, replete with easily recognizable Tiahuanaco elements in pottery and textiles, does not seem to have endured long. There are few reliable dates against which to measure the breakdown of the original Tiahuanaco conventions into geometric and often very carelessly rendered designs. These changes have been intensively studied by several specialists, without complete agreement, but probably by A.D. 1000 all trace of definite, depictive Tiahuanaco stylistic influence had disappeared.

New Kingdoms and Empire (A.D. *1000 to 1532*).—The last few centuries of Peruvian pre-Conquest history are known about as much from early Spanish accounts as they are from archeology (see Rowe, 1944, 1946). Many of the great urban centers, such as Chanchan, capital of the Chimu Kingdom on the north coast, attest a further development of urban living and continuing strongly stratified society. In that area there is a resurgence of Mochica shapes and themes in pottery, which, excepting for large storage jars, is nearly 100 percent mold-made black ware (Collier, 1955). This probably reflects a retention of old traditions in the far north of Peru, beyond the influence of Wari. The Chimu Kingdom extended its power to the central coast, where other lesser but still powerful kingdoms controlled the valleys. Over the whole area, and in Cuzco as well during the rule of the Inca Dynasty, all sorts of industries, especially that of pottery, show signs of mass production and lack of careful, individual craftsmanship. Luxury goods were turned out in great quantities. Metallurgy was at its technical peak in the casting of bronze, not known prior to this time, and in gilding. The coast was rich, apparently fairly stable politically, with strong local rulers and distinctive regional styles. In the highlands generally, and in the Titicaca Basin in particular, a marked degeneration in the quality of pottery after the decline of Tiahuanaco may possibly be the result of much jockeying for power and of warfare.

By the middle of the 15th century, however, regional confederations, the histories of which are only dimly discerned, had aligned themselves. In the final conquest of the great area from northern Ecuador to central Chile by the Inca, the Colla Confederacy of the Indians of the Titicaca Basin gave the Inca their greatest difficulty. The achievement of the Inca in holding such an empire for as long as they did was a remarkable one, but one that in the long history of struggle for control of the relatively tiny, highly productive areas, was doomed to succumb to renewed political rivalry. The Spaniards, appearing at a crucial point in the conflict for succession to the throne of the Inca, could hardly have picked a more opportune time.

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CULTURAL DEVELOPMENT IN NORTHWESTERN ARGENTINA

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Northwestern Argentina includes the mountainous portions of the provinces of Jujuy, Salta, and Tucumán, all of the provinces of Catamarca and La Rioja, and parts of San Juan and Santiago del Estero. Some authors also include the region of the Sierras Centrales, in the vicinity of Córdoba and San Luis (fig. 13). This was the area occupied by the most highly developed indigenous cultures, characterized by relatively advanced technology in metallurgy, pottery making, and textile arts, built upon ideas diffused from the Central Andean Area. It was also the only portion of Argentina to be extensively occupied by Inca troops.

Traditionally, northwestern Argentina has been divided into several subareas on the basis of physiographic and cultural criteria. The Puna, geographically a southern continuation of the Bolivian altiplano, exhibits cultural connections not only with the north but also with the Chilean Puna or Puna de Atacama, which appears in the literature under the name "Atacameñan region." To the south of the Puna is the Valliserrana area, misnamed the Diaguita region. Culturally and geographically, this area is closely allied to the Valles Transversales of Chile, often referred to as the Chilean Diaguita region. Other important subareas are the Selvas Occidentales and the Quebrada de Humahuaca, both of which present a number of distinctive cultural features.[1]

Ecological conditions within northwestern Argentina vary according to the subareas into which it is divided. The Puna is dry and cold, with an elevation of more than 3,200 meters above sea level. Agriculture is difficult. Maize can be grown only in exceptional locations, and potatoes and quinoa are the principal crops. Llama herding was

[1] We wish to express our appreciation to the following Chilean colleagues who kindly supplied information on recent archeological work in their areas of specialization: Grete Mostny, B. Berdicheswky, J. Montane, J. Iribarren, M. Orellana, and the Rev. G. Le Paige. Special thanks are due Percy Dauelsberg, who provided a copy of the chronological chart compiled during the Arica conference of 1961, which forms the basis for our correlation chart.

of great importance. The Valliserrana area includes valleys and slopes between 1,200 and 3,000 meters in elevation. Rainfall is moderate, averaging about 300 mm. per year. Irrigation was extensively employed, especially for the growing of maize. Pumpkins, beans, and potatoes were secondary crops, providing a varied diet. Agriculture was supplemented by llama herding. Wild fruits were collected, and hunting was a supplementary source of meat. The Selvas Occidentales, with low hills representing the last extension of the Andes and a dense subtropical forest vegetation, offer very different environmental conditions, which are reflected in the cultures that occupied this subarea.

It is difficult to undertake a synthesis of cultural development in northwestern Argentina, and more so to identify the causal factors. One reason for this is the scarcity of comprehensive studies, leaving many regions completely unknown or only superficially investigated. Furthermore, even in many of the better-known areas no stratigraphic work has been done and no absolute dates are available. Other difficulties derive from the fact that Argentina occupies a position marginal to the great South American nuclear center. It represents a kind of frontier for agricultural and pottery-making traditions, bordering on the hunting and gathering cultures of the Chaco, the Pampa, and Patagonia. Water routes beginning with the Paraná and Paraguay, and ascending the Salado and tributaries of the Bermejo into the very heart of northwestern Argentina, made the region subject to strong influences from the Tropical Forest cultures of Amazonia.

As a result of these complications, deriving both from marginality of geographical position and incompleteness of archeological information, any developmental framework of periods established for the nuclear area or areas of South America is difficult to apply to northwestern Argentina. Although the principal cultural component is undoubtedly of Andean origin, at certain times in the history of the area important roles were played by cultures adapted to the river and forest environment, which is very different from the Andean type. These traditions met and mixed, producing results distinct from the pattern farther to the north in the Andean Area. Also, the marginal geographical position had the consequence that cultural influences from the north must typically have arrived after a certain amount of lag in time, so that cultural stages representing a more or less well defined time period in the Central Andes cannot be projected onto northwestern Argentina without clear recognition of the lack of contemporaneity in the traits involved.

PRECERAMIC CULTURES

Archeological investigations during the past decade have demonstrated the existence of a number of preceramic cultures, not only in northwestern Argentina, but in adjacent parts of Chile and Bolivia. The earliest well-defined and dated preceramic tradition is the Ayampitín Culture (Gonzalez, 1960), characterized by lanceolate points thick in cross section; large, semicircular end or side scrapers; manos and metates; knives with curved edges. At the cave of Intihuasi, this complex is carbon–14 dated at 6000 B.C. It appears to have extended over all of northwestern Argentina, and similar projectile points have been found at Viscachani, Bolivia, at Lauricocha, Peru, and at San Pedro Viejo in the Valliserrana region of Chile. They are abundant in the Puna de Atacama, particularly in the Puripica-Tulan cultural phase, where their antiquity is probably equal to or slightly greater than in northwestern Argentina. One important difference between these complexes with lanceolate points lies in the fact that those from the Puna de Atacama, Bolivia, and Peru appear to lack grinding implements, suggesting that in those regions the economy was based exclusively on hunting.

We do not know yet whether the lanceolate-point tradition belonged to the first human occupants of this region. Although chronological evidence is not reliable, there is a possiblity that there was an earlier group possessing different lithic traditions. In Viscachani, Bolivia, and at Gatchi in the Chilean Puna, traces have been found of an industry of crude bifaces and flakes that may be earlier than the lanceolate points. Similar lithic remains are reported from other parts of the continent, and all should be thoroughly investigated to determine both their chronological position and their degree of interrelationship.

Following the lanceolate-point horizon, there is a diversification in point types, including both stemmed and stemless varieties, perhaps as a result of the emergence and intermixing of regional traditions. It is difficult to synthesize these differences. Only one point appears so far to have clear temporal and regional distributions, and that is an isosceles triangle form, with a generally straight or slightly concave base and straight or curved sides. One variety is asymmetrical, having one basal angle larger than the other. Originally these points were erroneously classified as Ayampitín II, but they represent a completely different tradition, one that does not occur at the type site of Ayampitín. It is well defined at Intihuasi cave, where it is superimposed over the Ayampitín industry. The triangular points have also

been found in Bolivia, Peru, and Chile, and as far south as Patagonia (Palli Aike, level III). They make their appearance between 3000 and 4000 B.C. and continue until the introduction of pottery making, often associated with implements connected with food gathering, and possibly with incipient agriculture. This tradition was probably dispersed along the Andes, since it occurs abundantly in the Tambillo-Cebollar complex of the Chilean Puna, in Pichalo II on the coast, in San Pedro Viejo (Hurtado) in the area of the Valles Transversales, and at Ichuna and other sites in Peru. In Mesoamerica, there is a triangular-point tradition that can be viewed as a possible source of diffusion toward the south.

AGRICULTURAL AND POTTERY-MAKING CULTURES

In reviewing the development of the agricultural and pottery-making cultures, two approaches are possible: Changes can be summarized either in terms of fixed time periods or in terms of stages of development. The ideal would be to fit sequences into the first system, and to draw from this a reconstruction of the developmental stages. Since the lack of absolute local chronologies makes this impossible, the reverse procedure must be adopted, namely, the establishment of periods based on typological relationships between various elements, without knowing always whether these represent contemporary occurrences or survivals.

However they vary in other respects, schemes adapted to the Andean Area agree in the recognition of three major horizons: The Chavín, the Tiahuanacoid, and the Inca. In northwestern Argentina, it is of interest to observe that there is no evidence of the Chavín Horizon, so that this important time marker cannot be utilized. Nor is there direct influence of Tiahuanaco except in the northern Puna, although certain elements such as the appearance of bronze can be drawn upon to establish connections. Only the Inca influence is clearly defined and widespread.

Keeping in mind the problems inherent in dealing with a marginal area like ours, we suggest a division of the agricultural and pottery-making cultures into four periods (fig. 14) with the following general characteristics:

Early or Initial Ceramic Period (200 B.C. to A.D. 700). This period begins with the introduction of pottery making and ends with the appearance of the first Tiahuanacoid influences. The following complexes are included: Tafí, Ciénaga, Condorhuasi, Candelaria I, Tebenquiche, Molle I and II, Pichalo I and II, Laguna Blanca, Otumpa, Culture of the Mounds (Megalithic), Chullpa-Pampa. It is probable

that in the future it will be possible to define an Initial Monochrome Pottery Horizon represented by Ciénaga I, Tafí, Pichalo, Candelaria I, Molle I, and Molle II.

Intermediate or Middle Ceramic Period (A.D. 700 to 1000). Tiahuanacoid influence is evident particularly in the Puna de Atacama. In northwestern Argentina, the period is marked by the florescence and decline of the Aguada Culture, Haulfín (?) and San José. Another complex of this period is Pozuelos.

Late Ceramic Period (A.D. 1000 to 1450). Well-integrated local complexes emerge. Ceramically, the area is united by the Late Bicolor Horizon. Representative complexes include: Belén, Santamaría, Sangasta, Hornillos, Tilcara Black-on-Red, Coquimbo Clásica, Puneño, Arica I, and Atacameñan urban centers.

Empire or Inca Period (A.D. 1450 to 1550).

Early Ceramic Period.—The dates now in our possession indicate rather clearly that pottery-making cultures arrived in northwestern Argentina between 500 B.C. and the beginning of the Christian era. At this time, there were already two well-differentiated traditions. These first pottery complexes were superimposed on preceramic complexes of the Intihuasi II and III type. Although we cannot be certain whether or not these latter groups were incipient agriculturalists, we do know that they had hunting and gathering economies with strong emphasis on the latter practice (as indicated by the abundance of flat milling stones), which would have facilitated the acceptance of agriculture.

It is difficult to trace the derivation of the two early pottery traditions, Tafí and Candelaria I. The closest affiliations of Tafí appear to be with the Mound Culture or Chullpa-Pampa-like complexes of south-central Bolivia. Our information on these is exceedingly sparse, but the pottery types seem closely related. The second tradition, Candelaria I, resembles more the pottery later developed among the Paraná River cultures. Its origin should probably be sought via the large rivers or along the eastern slope of the Andes at the edge of the Tropical Forest.

The Ciénaga gray incised pottery tradition, which appears slightly later, is analogous to that found in the region of the Selvas Occidentales (Valley of the San Francisco), suggesting that its origin may lie in that direction, or in southern Bolivia. It is unreported so far in the Puna and in northern Chile. Some traces exist in the region of the Valles Transversales, which have been classified as Molle, but these appear from their quantity and type to be importations or influ-

ences from the great center of this pottery tradition in the valleys of Hualfín and Santa María.

The Pichalo III and IV ceramic tradition appears to be independent of those just mentioned, and to have moved down along the coast. Molle I resembles in general features, such as vessel shape and reduced firing, the gray-black ware of the southern Puna (Laguna Blanca) and the Puna de Atacama. The gray incised pottery shows clear Ciénaga influence.

Molle II exhibits several features of great interest. One is the presence of two distinctive vessel forms, the bridge handle and the stirrup spout. Both traits are significant in the Central Andes, but absent or highly unusual in northwestern Argentina, so that an origin from the latter direction can be ruled out. Another unusual feature is post-fired painting, otherwise known only at Tebenquiche. These traits are absent in Chile north of Molle, except for occasional stirrup-spout vessels. Finally, negative painting is a Molle II characteristic absent in northwestern Argentina but with clear Andean derivation, and particularly common on the coast of Peru. An explanation of the origin of these elements is difficult unless we postulate a maritime connection with the Peruvian coast, which would be feasible even against the Humboldt current.

Other elements of Molle II ceramics, such as the almost exclusive use of stepped motifs, polychrome painting, and highly polished slips, are shared with Condorhuasi. Many features are identical, and it is difficult to determine which complex gave rise to the other. The final conclusion will be reached only when a number of absolute dates are available for the Molle complex, but there are some clues as a basis for conjecture. For example, grooved axes do not occur in the Molle area, although they are very common in northwestern Argentina. They are also unknown in Peru. If the direction of diffusion had been from Condorhuasi toward Molle, the grooved ax should have crossed the cordillera. A movement in the opposite direction would explain more completely the evidence as it now exists.

The postulation of the imposition of a polychrome tradition on a complex such as Candelaria would produce a result similar to that represented by Condorhuasi, and would explain the close resemblances between these two complexes, which have even led some to consider them a single culture. The polychrome forms, however, are centered in the southern Valliserrana region, and do not occur in the Candelaria area. An origin from the Selvas Occidentales can be ruled out. This leaves only two routes: From the altiplano, which would link

with cultures in Bolivia, or across the cordillera from Chile. Either appears possible at present, the former because of the affinities between cultures such as Tafí II and complexes of the Titicaca Basin, and the latter because of the earlier-mentioned relationships between Condorhuasi and Molle.

The culture that brought the Tafí ceramics, brought a number of other traits that became widespread during the Early Ceramic Period. Among these are a settlement pattern consisting of small houses around a central patio. This is found not only throughout northwestern Argentina, but also in the Puna. It is a pattern shared with cultures as distant as Chiripa, and one that persists among Tropical Forest tribes of today. Associated with this settlement pattern is the practice of burial in the house floor or in the central patio, and stone wall construction. Another frequently associated trait is the use of artificial mounds (Tafí, Alamito, Ciénaga, Huasco). Urn burial of children in cemeteries (Ciénaga), association of grave goods with adult burials, stone cists (Condorhuasi in Laguna Blanca), ceremonial platforms, stone sculpture (Condorhuasi, Mound Culture, etc.) and terraces (Ciénaga) are other innovations in this period. Comments on the origin and route of introduction of some of these elements are of interest.

Burial urns, particularly for children, are typical of Ciénaga, complexes of the Selvas Occidentales, and the mounds of south-central Bolivia. They do not occur in El Molle, and are absent or rare in Condorhuasi. They are found sporadically in the Puna, where they are not grouped in cemeteries as they are in Ciénaga, and where they have not been dated. This practice could not have come from northern Chile or the western Puna, but must have reached northwestern Argentina from the north (southern Bolivia) via the altiplano or from the river valleys and tropical forest bordering the eastern Andes.

A similar argument can be made for the origin of grooved axes and pipes. Without distinguishing among the latter typologically, it can be said that they do not occur in Peru, but are very common in northwestern Argentina, being present in all the complexes of the Early Ceramic Period. In Chile, pipes occur in the Puna region, being particularly characteristic of the Molle Culture. This distribution suggests they must have arrived via one of the routes postulated for the introduction of the burial urns. From northwestern Argentina they crossed the cordillera into Chile and were incorporated into the Molle Culture, an event that must have taken place during Molle I. The diffusion of the lip plug (tembetá) may have had a similar history, al-

though other alternatives are possible here since this trait is found in the Titicaca Basin at an early time and could have been diffused from there into the Puna region and then southward.

Other traits appear not to have diffused from northwestern Argentina across the cordillera into Chile. Among them is stone sculpture, which occurs in well-defined form in Tafí, Alamito, and Condorhuasi. This is a trait that links more closely with the altiplano than with the tropical forest, and particularly with cultures in the Titicaca Basin and the mounds of south-central Bolivia, where stone sculpture was well developed. Its distribution is significant because it parallels that of the grooved ax.

Little or nothing is known of the religion or supernatural beliefs of the cultures of this period. The only clue is the presence in Condorhuasi, and probably also in Tafí, of the feline representation. In the later Aguada Culture, this plays a more important role.

The use at this time of three different metals and techniques such as casting and repoussé indicates that metallurgy must have been introduced into northwestern Argentina along with the earliest pottery. Although the path is not clear, the technology is undoubtedly Andean. The presence of metal objects in Candelaria and cultures of the Selvas Occidentales must represent influence from the Andean Area and a route via the altiplano seems most probable. The existence of rather advanced metallurgy in Molle II can be linked with the Ciénaga-Condorhuasi occurrence, and is perhaps part of the same cultural current that brought polychrome pottery into Chile. Traces of this influence are present in Molle I in the form of elementary knowledge of metallurgy.

The formation of the cultures in northwestern Argentina is thus the result of intermixture of three major diffusion currents, which projected themselves onto the preexisting hunting and gathering cultures of the area. The earliest of these three currents appears to have originated in the altiplano. It must have introduced basic subsistence elements such as the potato, quinoa, and the use of the llama, as well as monochrome pottery and elementary metallurgy. We do not know whether or not maize was also introduced via this route. The second major current flowed from the eastern forests, perhaps skirting the edge of the mountains. This brought elements not found in Peru, such as pipes, burial urns, grooved axes, and egg-shaped sling stones. It is probable that some of these elements moved into south-central Bolivia before reaching northwestern Argentina, here fusing with the first current out of the Andes. This part of Bolivia, less extreme environmentally than either the altiplano or the tropical forest, provided

a kind of testing ground or foundation for the cultural florescence reached in the middle and late periods in northwestern Argentina. A third influence came from Chile about the time of Molle II. As mentioned earlier, Molle II shows a number of Central Andean traits that do not occur in the neighboring regions and probably were introduced from the north by sea. Polychrome pottery may have entered northwestern Argentina from this direction, replacing an earlier decorative complex that made use of one or two colors of paint but was inferior in quality. Alternatively, this tradition could have been diffused from the north, since cultures with comparable features occur in Bolivia. It is an interesting and somewhat anomalous situation that a strong early polychrome tradition should exist so far to the south.

The earliest complexes in northwestern Argentina, part of Chile (except Molle II), and southern Bolivia lack many of the basic elements used to define the Formative Period in Nuclear America. Among these missing elements are the bridge handle, stirrup spout, rocker stamping, negative painting, zoned decoration, and excision. By contrast, characteristic ceramic features include a tall jar with a half-ring handle, and simple vessel forms with conical bases and no decoration. Among important nonceramic elements are rectangular spindle whorls, grooved axes, pipes, and the relatively early occurrence of metallurgy. It is probable that this early complex was associated with the cultivation of quinoa and potatoes. This situation raises the question as to whether differences within the Formative are not sufficiently great to require a redefinition of the present concept of the period. The problem is particularly evident when Molle I, Tafí and Ciénaga are compared with Molle II. The latter possesses some of the typical elements of the Formative, as it is at present defined. The others are quite different, as a result of different origins. Nevertheless, there is every indication that Molle II is later than Molle I and Tafí, in spite of the fact that it possesses the largest number of characteristically Formative traits.

Some of the patterns of introduction and loss of traits are surprisingly uniform over the entire area including both northwestern Argentina and Chile. An example is the pipe, which is common in the Early Ceramic Period, but disappears suddenly and completely in the Middle or Late Ceramic Period. In northwestern Argentina it is present in Tafí, Ciénaga, and Condorhuasi, but disappears after Aguada. In the Valles Transversales it is very common in Molle I but absent in Molle II.

Middle Ceramic Period.—The Middle Ceramic Period is characterized by a number of cultural changes, which produce a situation

strongly contrasting with that during the previous period. In spite of this, it is difficult to describe a cultural common denominator for the entire area. In the western Puna (Chilean Atacameña), direct evidence of classic Tiahuanaco is evident in the form of objects of wood, metal, and pottery. Resemblances are so close as to suggest a Tiahuanaco colony in this area. In other regions, such as the Valles Transversales, there is no indication whatsoever of Tiahuanaco influence. Identification of complexes representing the Middle Period depends here on well-defined archeological sequences and absolute dating. Finally, there are regions like the Valliserrana area in which direct evidence of Tiahuanaco contact is absent, but elements of technology or art style seem indicative of Tiahuanaco influence.

In the Valliserrana area, this period is in many respects a continuation of the previous one; in other respects it presents notable differences. The typical culture is Aguada (Gonzalez, 1961); the definitive stylistic element is the feline, represented on a majority of the material objects whether of pottery, metal, or wood. Associated are frequent representations of human beings, either warriors or individuals with sumptuous headdresses. The characteristic pottery is polychrome, usually black and red or purple on a buff or orange surface or a white slip. Also typical is a gray ware with incised decoration utilizing the same feline and anthropomorphic motifs found in the painted style. This latter ware can be derived from the earlier Ciénaga pottery. From both the technical and artistic point of view, Aguada pottery attained a quality never surpassed in northwestern Argentina.

The cemeteries of this period contain multiple flexed adult burials, often with rich grave offerings. Differences in these offerings imply marked differences in social position between the individuals during life. Urn burial of children, common during the previous period, has almost disappeared.

The typical weapon was the atlatl. New technological elements include the appearance of bronze, and mosaics of stone on wood or stone on stone. Conical and cylindrical stone spindle whorls make their appearance, although rectangular bone ones continue to be made. The settlement pattern seems to be similar to that of the previous period, although population density has apparently increased.

It is difficult at present to trace the origin of Aguada, although the existence of strong outside influences cannot be disputed. The appearance of bronze and the forms of the metal tools point toward the Titicaca Basin, and particularly toward Classic Tiahuanaco, but proof of such influence in the form of actual trade objects does not as yet exist. A number of Tiahuanacoid stylistic elements can be identified,

such as individuals with feline masks, or carrying axes and trophy heads, and individuals with an atlatl or two staffs. Although it is true that these elements are widely distributed throughout Nuclear America, Tiahuanaco is the place closest to northwestern Argentina where they are commonly represented. Furthermore, there appears to be good evidence of the contemporaneity of Aguada and Classic Tiahuanaco in the form of three carbon–14 dates, which place Aguada at around A.D. 800. Whether or not Tiahuanaco is the source, there is no doubt that in the northwestern part of Argentina, Aguada is the culture showing the greatest number of elements of Central Andean derivation.

Conditions in the Valliserrana area were ideal for the elaboration of these influences. Two traditions, Ciénaga and Condorhuasi, had already met and mixed there with the earlier Tafí Complex. The fusion of elements of Ciénaga and Condorhuasi, the latter incorporating elements of Candelaria, produced excellent pottery, metallurgy, intensive agriculture, and good stoneworking expressed both in tools and sculpture. On this foundation, an elaboration of new religious, social, and artistic concepts rapidly brought into being one of the most important cultures of northwestern Argentina. It is difficult to understand why the Aguada Culture never crossed the cordillera into Chile, or expanded farther north than the Valle Calchaquí.

During the Middle Period the region of the Selvas Occidentales was occupied by a culture with well-developed gray pottery decorated in geometric patterns. Certain forms are shared with Aguada, but the feline motif is practically absent, suggesting that the religious and artistic aspects of the Aguada tradition did not influence this area. The northern Puna is little known, but gold objects of Classic Tiahuanaco form have been recovered from graves in the western Puna. Since Tiahuanacoid influence is later diminished, this may be the period in which elements producing the tradition of the wooden tablets and tubes with feline or anthropomorphic figures, feline masks, crosses, and other motifs found on the engraved gourds were introduced.

Late Ceramic Period.—The cultural development of the Middle Period appears to have been suddenly interrupted as a result of strong influences from the eastern forest zone. The result was the elimination of old traditions and the implantation of new practices. Among the former, the most important was the disappearance of all Aguada types of pottery and the tradition of incised gray and black ware, and in religion the disappearance of the feline cult and related elements such as the masked warriors and image of the "sacrificer."

Innovations include the appearance of the communal pit house,

which replaces the Aguada type of settlement. The custom of burying children in decorated urns again becomes widely distributed. Metallurgy in bronze was not only continued, but elaborated, both in technique and in quantity and variety of objects. Pottery is characterized by new traditions, such as the extensive use of geometric motifs in the decorated wares of Santamaría and Santiagueña, paralleled in the geometric decoration of Coquimbo. Designs in black on red appear in many of the pottery types of Quebrada and the Valliserrana area, and are part of the black-on-red horizon that extends from the Puna to northern Chile.

These influences from the east do not appear to have been very strongly felt in Chile. Although urn burial of children reached the western Puna, this area along with the northern Chilean coast appears to have been more closely linked culturally with the altiplano than with the south. A certain number of products of northwestern Argentine origin reached the Puna and the coast as a result of trade. In return, northwestern Argentina appears to have been influenced by architectural developments in the aforementioned regions, and by pottery decoration in the Valles Transversales.

In spite of the short time that the period lasted, a great deal of regional variation was produced, although indications of mutual influence can be noted. A number of traits were diffused over the entire area, among them bronze gauntlets; discoidal or rectangular pectorals, plain or with relief figures; bells of wood or cast metal; and urns for the burial of children.

Communal pit houses in use at the beginning of the Late Period were shortly replaced by a small stone-walled structure with rectangular floor plan. There is a diffusion of the corbelled vault, a trait unknown in the Valles Transversales but typical of southern Peru. Toward the end of the period, there is an expansion of urban or semiurban centers, composed of irregularly agglutinated stone-walled rooms. Although absolute dates are not available, these centers appear to be contemporary with those of the north coast of Peru and pre-Inca in time.

The bow and arrow are present in all cultures of this period. In Quebrada, warfare is implied by the large quantity of trophy skulls that have been found. Toward the end of the period, fortresses occur everywhere except in the region of the Valles Transversales.

Metallurgy is more advanced, and artifacts include large bells, pectorals, tweezers, and socketed axes. By contrast, stone working including sculpture is notably diminished, especially in the Valliserrana area. Wooden objects are common in the Puna.

Empire or Inca Period.—The Inca Period is well represented in the entire area under consideration. Archeological evidence is abundant and varied in pottery, metallurgy, and architecture. The monumental Pucará de Andalgalá, in the Valliserrana area, is surrounded by a series of walls and contains large buildings, indicating that it must have been one of the most important Inca centers in northwestern Argentina. A series of "tambos" are distributed along the principal Inca roads, in some of which Inca-influenced pottery constitutes 90 percent of the total sherds. Characteristic types include Cuzco Polychrome and Casa Morada Polychrome. Inca structures are more readily identifiable by the associated pottery than by architectural features, although diagnostic elements such as niches and double-sloped roofs occasionally occur. Some remains of structures used for cult observances or lookout stations exist at very high elevations (Chañí, Llullaillaco, Cerro del Plomo, etc.)

In some places, the indigenous pottery associated with that showing Inca influence is not of local traditions. In Tafí, for example, Inca sites have been found with Belén instead of Santamaría ceramics. In Ranchillos, Mendoza, the southernmost outpost of Inca influence, Coquimbo pottery occurs. These disconformities probably reflect the presence of *mitimaes*.

Inca influence is widely attested throughout the Valliserrana area at sites such as Chilecito, Famabalasto, Quillay, Pucará de Andalgalá, Chincal, Conquija, La Paya, and Barrealito (San Juan). Among the metal objects frequently encountered are winged axes, star clubs, and small metal bolas with a transverse bar on which to fasten the rope. In the region of the Valles Transversales, Coquimbo pottery combines the Inca aryballoid form with local painted decoration. Casa Morada in La Paya contains many clearly Inca elements. The Pucará de Tilcara produced various objects not only of pottery but also of other kinds of material, among them a complete lapidary workshop containing typical stone llama figures. In northern Chile, Inca influence can be seen in tomb construction and in miniature objects placed in tombs, as well as in pottery and architecture of the Atacameñan "cities." In the northern Puna, bowls with small painted llamas in the classic Inca-Pacajes style occur. No Inca influence seems to exist in the region of Santiago del Estero or in the Sierras Centrales.

CONCLUSION

Cultural development in northwestern Argentina and adjacent parts of Chile is a product of geographical and environmental factors, which presented a variety of ecological zones and exposed the

area to influences of diverse origins. The direction of evolution, while generally toward increased social and cultural complexity, is a wavering rather than a straight line, reflecting the disrupting effects of pressures from the altiplano and the tropical forests. More clearly than any other part of aboriginal Latin America, this region appears to deserve the label of a melting pot, into which elements of very different origins were fused together to produce a unique and characteristically local result.

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CULTURAL DEVELOPMENT IN BRAZIL

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Like most modern political units, Brazil is a land of geographical diversity. The greater Amazon Basin is a vast area of slight elevation bound together by a dozen major rivers and many smaller streams flowing from north, west, and south to empty into the main channel of the Rio Amazonas (fig. 15). During the rainy season the daily downpour exceeds the capacity for drainage, with the result that the rivers flood their banks, and many square miles of forest are inundated. Intermittent elevations of varying extent are the locus of modern settlement as well as of villages and fields of past inhabitants. At the driest part of the year, many tributaries become blocked with large sand bars leaving small channels barely passable in a dugout canoe, and rapids are reduced to a trickle among the rocks.

The environment of this area is one of the most difficult to shape to the needs of civilized life. Rapidly declining soil fertility requires the frequent moving of fields, and the small amount of arable land in exploitable radius of the village keeps population concentration at a low level. The Tropical Forest pattern of culture—characterized by small and frequently moved villages; a subsistence derived from slash-and-burn agriculture, supplemented by hunting and fishing; a social organization lacking strong centralized control and class distinctions, and having only a rudimentary division of labor—was present throughout most of the area at the time of European contact, and in many respects remains the most efficient form of human adaptation.

The coastal and southern portions of Brazil are by contrast lands of higher elevation and more temperate climate. Although united by a frontage on the sea, whose fertility as a food source is reflected in the hundreds of shell middens or sambaquis that line the shore, this zone is not uniformly exploitable in other respects. The northern portion, occupying the easternmost projection of the continent, is subject to extreme aridity. Southward, rainfall becomes increasingly more

dependable and soils are sufficiently fertile to make agriculture feasible. In aboriginal times, slash-and-burn technique characteristic of the Amazon Basin was practiced, resulting in a similar pattern of relatively small and frequently moved settlements, except along the shore where the added subsistence resources of the sea appear to have made larger and more permanent population concentrations possible.

The attempt to summarize prehistoric cultural development in Brazil throws into sharp focus the geographical contrasts within the present political boundaries. A kind of cultural continental divide separates the east-central and southern parts of the country from the Amazon Basin. Because of the contrasting environments and exposure to different sources of diffusion, it is difficult to relate the archeological sequences in one region to those in the other. A summary of Brazilian prehistory must therefore be organized into two geographical parts, the Amazon Basin and the coastal uplands from the State of Piauí southward to Rio Grande do Sul.

THE AMAZON BASIN

In proportion to its area the Amazon Basin has received less attention from archeologists than any other part of the New World. Most of the work that has been done is concentrated in the vicinity of Santarem and on the island of Marajó. However, we are now in possession of chronological information from eastern Peru (Lathrap, 1958), the middle Amazon (Hilbert, 1955, 1959b) and the lower Amazon (Hilbert, 1959a; Meggers and Evans, 1957), making possible a few suggestions about the origin and development of aboriginal culture.

Throughout this vast region there is no reliable evidence as yet of human occupation prior to the introduction of the first pottery. Since Paleo-Indian materials have been reported in most of the surrounding area, it must be concluded that the Amazon Basin was also inhabited in preceramic times. The alluvial nature of the soil, which restricts the availability of raw materials suitable for the manufacture of stone tools, and the density of the concealing vegetation could account for the absence of such remains. Anything of bone or wood composition would not survive the tropical climate. Thus, while we may accept the hypothesis that the area was inhabited by wandering hunters and gatherers for undetermined thousands of years prior to the introduction of pottery, the archeological record begins at present only when pottery making is introduced.

The earliest ceramic complex, represented so far at four sites distributed from eastern Peru to the mouth of the Amazon (Tutishcainyo, Yasuní, Jauarí, Ananatuba), is characterized by broad-line in-

cised and zoned-hachure decoration, relating it in a generalized way to the late Formative complexes of Peru and Ecuador. The distribution and chronology of the sites are in keeping with an introduction downriver from the west, and the small amount of differentiation between the eastern and western occurrences makes it seem probable that this complex was distributed by migration. No carbon–14 dates are yet available, so the postulation of a maximum antiquity of about 500 B.C. (fig. 16) for this movement is a guess based on comparison with the chronological sequences in Peru, Ecuador, and Venezuela (Meggers and Evans, 1961, fig. 7).

The habitation sites of the Ananatuba Phase, representing this early complex on Marajó Island, do not differ in size, composition, or any other significant feature from sites of the Taruma Phase in British Guiana, left by a tribe possessing a typical Tropical Forest culture that survived into historic times. This similarity suggests that the introduction of pottery making into the Amazon area also marks the transition from a wandering hunting way of life to the Tropical Forest pattern of culture, characterized by small and frequently shifted settlements, social organization based on kinship ties, and a subsistence economy divided between slash-and-burn agriculture and wild products collected from the forest. There is no evidence of burial practices or religious observances.

The next major event in the archeological record is the introduction of an elaborate ceramic complex characterized by incised, excised, and polychrome painted decoration. In its best-known form, the Marajoara Phase on the island of Marajó, this complex is associated with sociopolitical and religious traits belonging to a higher level of development than that represented by Tropical Forest Culture, including marked social stratification, occupational division of labor, specialized ceremonial pottery vessels and other ritual objects (Meggers and Evans, 1957). Large earth mounds were used as building substructures and cemeteries. Methods of disposal of the dead include secondary urn burial, earth burial, and cremation, with offerings reflecting differential status during life.

Details of material culture, as well as the general level of development, indicate that the Marajoara Phase originated in the northwestern part of the continent. Ceramic evidence of its movement downriver has been found on the Rio Napo in eastern Ecuador (Meggers and Evans, 1958), and along the middle Amazon, where it is represented by the Coarí and Guarita Phases (Hilbert, 1959b; Meggers and Evans, 1961, fig. 5). This introduction can be placed at around A.D. 1000 on the basis of carbon–14 dates from the westernmost sites. In the tropical

forest environment, the intensive agricultural production needed to support a highly differentiated social system could not be maintained. As people were increasingly diverted from specialized activities to the role of food production, the culture underwent a gradual simplification that transformed it into something resembling the Tropical Forest pattern.

A few centuries before the European conquest, another wave of influence can be identified by the appearance on the middle and lower Amazon of pottery decorated with carefully drawn parallel incised lines, and modeled and punctate adornos. The best-known example is the elaborate pottery from the Santarem region. In sites such as those of the Mazagão Phase in Brazilian Guiana, this pottery is associated with glass beads of European origin. On the Orinoco River, carbon–14 dates place the appearance of the related Arauquín style at around A.D. 1000. This time difference suggests a movement from the Orinoco via the Casiquiare into the Rio Negro and down the Amazon.

Among new vessel forms introduced at this time is the griddle, usually associated with the preparation of cassava bread from bitter manioc. While manioc must have been cultivated considerably prior to this time, its preparation took forms for which no corresponding pottery artifact has been identified, if one exists.

Habitation sites producing this incised and punctate ceramic style are typically small in area and have shallow refuse accumulations, suggesting a continuation of the pattern of shifting fields and frequently moved villages characteristic of earlier groups. Secondary burial or cremation deposited in urns grouped in cemeteries is associated, but there is no clearcut evidence of differential treatment of the dead. Historic accounts from Brazilian Guiana describe typical Tropical Forest elements of social organization and religious belief (Meggers and Evans, 1957).

In view of postulations of earlier writers that Amazonian cultural development was influenced by movements around the Guiana coast and up the river, it is of interest to mention a final movement in late pre-European times, which brought the Aruã Phase to the islands of Marajó, Mexiana, and Caviana in the mouth of the Amazon. This is the only culture showing numerous relationships with the Antilles, not only in aspects of pottery decoration and vessel shape, but also in other items of material culture. Burial was in large urns placed on the surface of the ground in cemeteries. Villages were small and frequently moved, and although apparently not protected by stockades were located on the banks of small streams away from the coast, where they would be concealed from view. Whether aggressiveness was a re-

action to European mistreatment or a continuation of aboriginal practices is uncertain, but historical references to the Aruã emphasize their hostile behavior.

In summary, it can be said that the Amazon Basin was repeatedly invaded in aboriginal times from the west and north by groups bringing different and at least on one occasion more advanced cultural traits. Although pottery characteristics are most easily recognized, many other elements were undoubtedly introduced temporarily or permanently, in restricted regions or broadly diffused throughout the area. What can be reconstructed of their history seems to show that the Tropical Forest pattern was the most effective adaptation to the environment, with the result that features too advanced or otherwise uncongenial to this way of life were slowly but surely lost with the passage of time. Although details of expression were undoubtedly as variable through time as they are through space on the ethnographic level, evidence remaining in the archeological record indicates that the Amazon Basin was an area of relative cultural stability from the first introduction of pottery until the arrival of European colonists, and in remote areas even up to modern times.

CENTRAL AND SOUTHERN BRAZIL

Like the Amazon Basin, the central and southern parts of Brazil have received little attention from archeologists. The work that has been done, mostly in the last decade, is directed mainly toward three problems: The antiquity of man in the Lagoa Santa region, the age and chronology of sambaqui or shell-midden culture, the pottery-producing sites of Tupí-guaraní origin.

Most of the available data concerning Lagoa Santa are more conjectural than factual. Although Peter Wilhelm Lund's first report on the area was published in 1839, the contemporaneity of man and extinct mammalian species is still being disputed. The Confins find would point to a relatively great antiquity of man if we accept the research by Walter, Cathoud, and Mattos (1937). This conclusion has been disputed by Hurt (1960) on the basis of a carbon–14 date of 3000 ± 200 years for Lagoa Funda Cave (Crane, 1956). More recent dates obtained by Hurt (1962, p. 1), however, tip the scale again in favor of antiquity for Lagoa Santa man. One of the carbon samples from Lagoa Santa Rockshelter No. 6, excavated by Hurt, gives an average age of 10,024 ± 127 years according to the new value of 5,730 years for the half-life of carbon–14.

On the basis of caves he examined, Walter established three cultural periods for the Lagoa Santa area. The oldest, represented by the

lowest levels of such caves as Eucaliptus, Samambaia, and Limeira, is characterized by a high percentage of stemmed bone projectiles and completely polished stone axes (Evans, 1950). On the other hand, Hurt (1960, p. 587), after excavating six different caves, decided that "although differences were noted in the vertical distribution of artifacts from one meter section to another there were no variations that could not be attributed to random distribution or size of sample. For this reason all the preceramic artifacts collected in the 1956 project were assigned to a single complex." This complex was composed predominantly of hundreds of flakes and fragments of quartz crystal, which Hurt considers to be tools and not rejects. The complex also includes several varieties of axes and celts made by percussion flaking and polishing, pitted hammerstones and choppers. The relatively rare bone artifacts include projectile points made from the hollow cannon bone of birds and a few splinter awls. Beads and ornaments were made from drilled olivella shells (op. cit., p. 583).

More progress has been made toward evaluation of the antiquity of sambaqui sites, which occur along the seacoast from the Amazon to Rio Grande do Sul, although many problems of interpretation remain. A series of carbon–14 dates from the southern sites gives them a time range of between 7,500 and 1,500 years ago (Laming and Emperaire, 1958). This long span suggests that efforts to classify sites on the basis of differences in artifact content and typology may have a chronological basis.

Among the first to attempt a subdivision was Serrano, who proposed four phases with both areal and temporal implications: "the southern; the middle; that of the sambaquis with *Azara prisca* (archaic); and the Amazonian" (1946, p. 404). The southern phase, which includes the sites from Rio Grande do Sul, Santa Catarina, Paraná, and southern São Paulo (fig. 15), is characterized by zooliths and round stones or bolas. Pottery may occur in the upper level. The archaic phase, which he correlates with the Lagoa Santa complex, is distinguished by stone axes of trianguloid form, chipped stone knives and scrapers, and hammerstones. Little information is provided on the middle and Amazonian phases (op. cit., pp. 405–407).

Recent fieldwork in sambaquis of Santa Catarina, Paraná, and São Paulo States by Orssich (1956), Bigarella (1954) and Laming (1958) generally supports Serrano's point of view. Laming and Emperaire distinguished two complexes. The oldest one, corresponding to Serrano's "archaic" phase, is represented by crudely chipped biface artifacts, hammerstones, and crude flaked knives. The second complex, much more recent and corresponding to Serrano's "south-

ern phase," is typified by polished stone axes, bone tools, shell ornaments, and burials. This recent complex is exemplified at Ilha dos Ratos, Paraná State, carbon–14 dated at 1540 ± 150 years (fig. 16). The older phase is characterized by the Maratua component, near Santos, State of São Paulo, carbon–14 dated at 7803 ± 1300 years.

The three stages or phases Orssich recognizes in the Araujo II Component on the Paraná Coast can be correlated with the Ilha dos Ratos finds and also with the southern phase of Serrano's classification: a complex characterized by polished stone axes, bone tools, shell ornaments, and burials. Bigarella (1954), after an inventory of 44 sambaquis from the Santa Catarina coast, reported similar results.

The third type of preceramic site is composed of inland sites in São Paulo and the other southern States. Unfortunately, we have little information about these sites. Stone arrow points, axes, scrapers, and other well-known museum materials come principally from the States of São Paulo and Paraná. We have collections of material supposedly of Paleo-Indian origin, but we cannot be sure of the provenience. Such is the case of the famous Gualter Martins' collections, bought by the Museu Nacional in Rio de Janeiro. According to Pereira de Godoi (1946), such material comes from the area of Rio Claro, State of São Paulo, but we have tried to trace its provenience without much result. The work of Laming and Emperaire (1959), Tirburtius et al. (1951), Schmitz (1959), and Rohr (1959) makes it clear that we can assign the inland sites of south Brazil to an early cultural phase, characterized by the absence of pottery and by the presence of polished stone axes, choppers, scrapers, and certain kinds of stone arrowheads, bone awls and needles. Carbon–14 dates from the José Vieira site indicate that this lithic complex appeared about 6,500 years ago and persisted into the ceramic horizon (Laming, 1959).

The ceramic horizon has been investigated more extensively, most of the work dealing with the so-called Tupí-guaraní complex of Paraná, Santa Catarina, and Rio Grande do Sul. This horizon can be related to the southern sambaqui component, since Tupí-guaraní pottery has been reported from the top levels of many sites (Krone, 1914; Bigarella et al., 1954; Serrano, 1946). We do not know yet how early the Tupí-guaraní occupation of the southern sambaquis can be dated, but it has been estimated as far back as 1,000 years. The pottery, characterized by corrugated and polychrome wares, survived up to historic times. Comparison of surface collections from São Paulo and Paraná sites suggests that those in Paraná are older (Silva,

1962). It is possible therefore that the complex diffused up the Paraná River and its tributaries from Paraná State toward São Paulo State and the coast.

Another ceramic tradition has been described from Santa Catarina Island (Schmitz, 1959) and Joinville (Tiburtius et al., 1951), both sites in Santa Catarina State. Similar material has been reported on the São Paulo coast. Most characteristic is a punctate decoration, which generally is absent in Tupí-guaraní sites. Willey (1949, p. 188) believes that the punctate and the incised traditions are closely related to pottery of the Pampas and Patagonia, and represent "the old ceramic hearth of the Paraná drainage and the south." Nevertheless, a similar tradition is found in British Guiana in the Mabaruma and Taruma Phases (Evans and Meggers, 1960). Until carbon-14 dates are available for the south Brazilian sites, it seems preferable to avoid hypotheses about direction of migration.

Although archeological data are still inadequate for reliable conclusions, the following tentative cultural sequence can be suggested for southern Brazil:

1. An early preceramic horizon, beginning about 10,000 years ago, represented by the old levels of Lagoa Santa caves and certain sambaqui sites such as Maratuá near Santos.

2. A second preceramic horizon, beginning about 6,000 years ago, represented by the oldest levels of José Vieira, Paraná State, and including some Lagoa Santa sites and certain sambaquis of Serrano's southern phase.

3. A third preceramic horizon, beginning 2,000 to 1,500 years ago, represented by the recent sambaquis of Paraná, Santa Catarina, and Rio Grande do Sul, as well as some inland occupations such as the intermediate levels of José Vieira site.

4. A ceramic horizon, beginning about 1,200 years ago, including the older Tupí-guaraní sites of Paraná State.

5. A more recent ceramic horizon, perhaps beginning around 800 years ago, represented by the Tupí-guaraní sites of São Paulo State.

6. The European contact horizon.

During this long period of time, spanning some 10,000 years, relatively little change appears to have occurred in the general cultural pattern. Wild-food resources were apparently sufficiently abundant and reliable to provide a steady source of subsistence, and along the coast at least, to support a relatively sedentary mode of life. The major innovation—the introduction of pottery making—did not disturb this adjustment. If agriculture was introduced at the same time, it was a form that favored continuation of the previously existing settlement

pattern. Known village sites are small in area, and frequently shallow in refuse accumulation. Neither material culture remains nor burials offer any features that could be interpreted as reflecting differences in social status. Life appears to have been simple and relatively changeless for the prehistoric inhabitants of southern Brazil.

No archeological evidence has been reported to confirm the existence of the large communities mentioned by early European explorers along the central Brazilian coast, but it is impossible to judge whether this is because large habitation sites do not exist or because the area is as yet so superficially explored.

CONCLUSION

If we return in conclusion to the image of a cultural continental divide, separating the Amazon Basin on the north and the west from the coastal uplands on the east and south, we find that the picture on both sides, although culturally distinct and independently derived, is in one respect similar: both regions were marginal to centers of development and diffusion, so that inventions and discoveries came to them relatively late if at all. The Amazon Basin, closer geographically to the Andean center and accessible by easily traveled river routes, made the transition to agriculture and pottery making earlier than the region to the south. It is possible that the abundant food resources from the sea put off for some time in the south the transition to an agricultural subsistence that may not, initially at least, have been as productive. Climate and soil are more suitable for intensive agricultural exploitation here, however, than in the tropical forest, and it would be of interest to know why the potential was so little developed in aboriginal times.

There are many fascinating problems to be investigated on both sides of the cultural continental divide, relevant both to the reconstruction of prehistory on the South American continent and to problems of cultural theory. The principal ingredient lacking is the archeologists to undertake the work.

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CULTURAL DEVELOPMENT IN LATIN AMERICA: AN INTERPRETATIVE OVERVIEW

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In addition to preparing the exciting interpretative analyses of their areas, the participants in this symposium were requested to supply information on the earliest occurrence of a long list of traits (Appendix, table 2). These data provide a basis for interareal comparisons of the rate of cultural development, and conclusions about the origin and spread of traits and complexes. At least, this was the theoretical justification for our request that the data be supplied.

When it came to distilling conclusions from this mass of information, it became evident that the traits in the list were not of equal value for showing diffusion, or even for estimating relative degree of cultural development. Key elements, such as the introduction of maize agriculture, are rarely directly attested, and the indirect evidence may be susceptible of more than one interpretation. Important innovations in social organization are often of a functional nature that may cause them to evolve independently. Dating is tentative, not only because of the incompleteness of fieldwork, which may turn up earlier occurrences of many traits than are now known, but also because of the wide margin of error implicit in carbon–14 dates, which makes comparison of areal chronologies somewhat hazardous. However, although the evidence is incomplete and difficult to interpret, it is nevertheless suggestive, and it would not become me to be less daring than some of my colleagues in trying to assess and interpret the facts we now possess. Although the following presentation is in positive terms, its speculative nature should be constantly borne in mind.

Of the hunting and gathering cultures that reflect the peopling of the New World, little new can be said. Sites have been found in many regions where they were previously unknown, and some of the cultural remains show correlations of continental scope. Although many of the data are still unpublished, it seems improbable that our general conception of the peopling of Central and South America is likely to be fundamentally altered, with the exception that the antiquity of the movement is apparently greater than we have hitherto believed.

The people who discovered the New World were probably unaware

of what they were doing. The lands they had passed through in northeastern Asia were in all probability occupied sparsely by small migratory bands. Once across the Bering Strait, similar small bands of hunters would probably encounter each other with sufficient frequency to simulate the demographic situation they had left behind, and to obscure the actuality that they were invading mountains, plains, and river valleys where human beings had never passed before.

By about 5000 B.C. the immigrants had learned to exploit the fish and shellfish of seacoasts, and the fauna and flora of forests and plains throughout the Americas. In the process of making maximum use of the foods naturally available, they learned to conserve and gradually to improve what they found. The earliest surviving evidence of this trend comes from Mesoamerica, where diminutive cobs of maize and seeds of squash and beans have been found in preceramic deposits dating between 5000 and 4000 B.C. In South America, the earliest known indications of incipient agriculture come from the shell middens of coastal Peru, where lima beans and bottle gourds appear between 3800 and 3000 B.C. The difference of some 1000 years between these initial dates leads to the suspicion that the impulse toward cultivation may be traceable to a Mesoamerican influence, the first of several to be felt on the Pacific coast of South America.

The origin of domesticated cotton, present on the Peruvian coast after about 2500 B.C., offers a different kind of problem. Although possessing Asiatic features, its derivation via transpacific contact has not met with general acceptance among American archeologists. New evidence of Jomon-like pottery on the coast of Ecuador, with an initial date of between 3000 and 2500 B.C., makes it necessary to reexamine the question. It could be argued that this plant was introduced together with pottery onto the coast of Ecuador, where climatic conditions rule out its preservation, and that it then diffused southward to coastal Peru. The fact that pottery making did not also diffuse does not invalidate this hypothesis; it can easily be imagined that cotton for fishing line and nets contributed more to the security of life than pottery, which was more difficult to make and more easily broken than other types of containers already in use. What we need to know is whether cotton was utilized in Japan as early as 3000 B.C.

Maize appears on the coast of Peru in a preceramic context around 1400 B.C., but it had no significant cultural effect, the variety perhaps being poorly adapted to the arid coastal environment. This time we can be rather sure that the source was Mesoamerica by inference from archeological evidence on the coast of Ecuador. Here a complex of distinctive ceramic traits was introduced around 1500 B.C. possibly

from coastal Guatemala. The amalgamation of these new traits with pottery of the local Machalilla Complex resulted in the Chorrera Culture, the first Ecuadorian pottery-making complex to spread away from the seashore toward the foothills and up into the southern valleys of the Andes. Such an expansion must reflect an increase in the productivity of agriculture, which can probably be attributed to the introduction of maize. Climatic conditions on the coast of Ecuador are sufficiently similar to those on coastal Guatemala that a variety introduced from there would be preadapted to local conditions, in contrast to the situation on coastal Peru. The appearance of a number of early Ecuadorian ceramic traits in Mesoamerica around 1200 B.C. implies the existence of return voyages and suggests that communication once established was not wholly accidental or uncontrolled (fig. 17).

Diffusion of the Chorrera Culture into the southern highlands of Ecuador would have allowed the development of maize varieties adapted to new climates and elevations. With the passage of time, the pottery also underwent modification, losing some of its more distinctive Mesoamerican elements as it diffused south. The pottery of the Chavín Culture, which makes its appearance in the north highlands and coast of Peru between 1000 and 800 B.C., incorporates so many details of decoration and vessel shape present earlier in Ecuador that an influence from this direction cannot be denied (fig. 17). Classic Chavín however, is characterized by a religious cult expressed in highly stylized feline motifs on pottery and stone, no evidence of which as yet has come to light in Ecuador. The suggestion that this cult and art style reflect a sea-borne connection with the Olmec Complex of Mesoamerica accounts for both the Chorrera-Chavín differences and the striking resemblances between the Olmec and Chavín art styles.

Perhaps impeded by geographical barriers and environments difficult to exploit, the diffusion of agriculture to southern South America appears to have been slow. Pottery, which generally provides evidence of settled life, does not appear in northwestern Argentina until shortly before the beginning of the Christian era, and its arrival on the southern coast of Brazil was delayed another 1,000 years. On the Atlantic coast, as on the coast of Peru, the preceramic subsistence pattern was oriented toward the abundant resources of the sea. We know from the archeological record that the introduction of domesticated plants had no immediate effect on the ancient Peruvian way of life, and this situation seems to be paralleled on the coast of Brazil. The reliability of shellfish as a primary food source is further attested by archeological evidence from coastal Venezuela, where for-

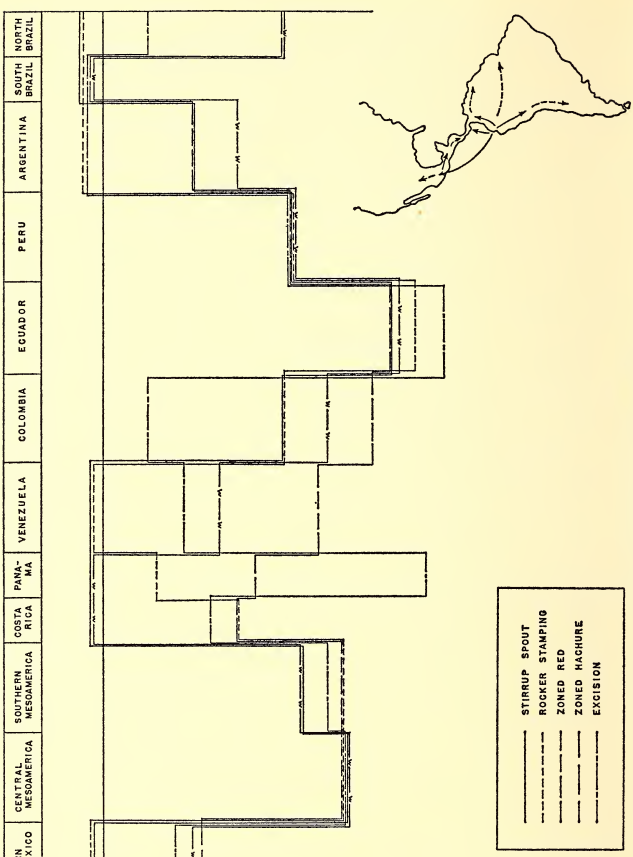

FIG. 17.—(For explanation, see opposite page.)

merly agricultural groups repeatedly reverted to a major dependence on the sea when they moved from the interior to the coast.

Indirect evidence similar to that used to infer the introduction of maize onto the coast of Ecuador supports the conclusion that maize was brought to the Caribbean coast of Colombia around 500 B.C. Here, in the complex designated as Momil II, appear a number of Mesoamerican ceramic traits representing both decoration and vessel shape, and including artifacts traditionally associated in the latter area with the preparation of maize. The appearance of polychrome decoration and vessel forms such as the tripod in the Tocuyano Culture of western Venezuela some 300 years later probably reflects diffusion of maize cultivation as well. Beyond this its dissemination eastward is not easily charted, but historical evidence attests to its presence in the Greater Antilles in pre-European times.

An attempt to trace the origin and spread of manioc cultivation forces us onto more shaky ground. Except for the coast of Peru, there is no place in the vast region over which manioc cultivation is historically attested where the climate permits its archeological preservation. One method of preparation of bitter manioc utilizes a distinctive artifact—the griddle—fortunately made of indestructible pottery, and this is almost the only direct evidence upon which we can draw. Sweet manioc, more widely distributed and by inference older in cultivation, is represented by no such ceramic counterpart.

Nevertheless, a review of the archeological evidence produces a picture worth considering.[1] Griddles are present at the mouth of the Orinoco in the Saladoid Complex, dated at about 800–1000 B.C. On the Caribbean coast of Colombia, they occur in Momil I and in the Malambo Culture, the latter with a date of 1200 B.C. After 1000 B.C. sweet manioc was present on the coast of Peru. The appearance of

[1] These reconstructions of the origin and diffusion of domesticated plants, based on archeological evidence unavailable in 1952, are strikingly parallel to Sauer's reconstruction of that date made from botanical inferences (Sauer, 1952).

FIG. 17—Relative antiquity of selected pottery traits suggesting direct contact by sea between Ecuador and central Mesoamerica around 1200 B.C. The appearance of the traits forms a random chronological distribution consistent with gradual and independent diffusion except in central Mesoamerica and later in Peru. In these two areas, a clustering pattern implies simultaneous introduction best explained as the result of direct influence. Since the only region where all of the traits are of greater antiquity is coastal Ecuador, this is presumably the source. In Mesoamerica, this influence appears to be the counterpart of a contact that brought maize, napkin ring earplugs, obsidian flake tools and certain pottery elements to coastal Ecuador between 1200 and 1500 B.C. Data were derived from Appendix Table 2. Lines above the A.D. 1500 marker indicate absence of the trait in the area involved.

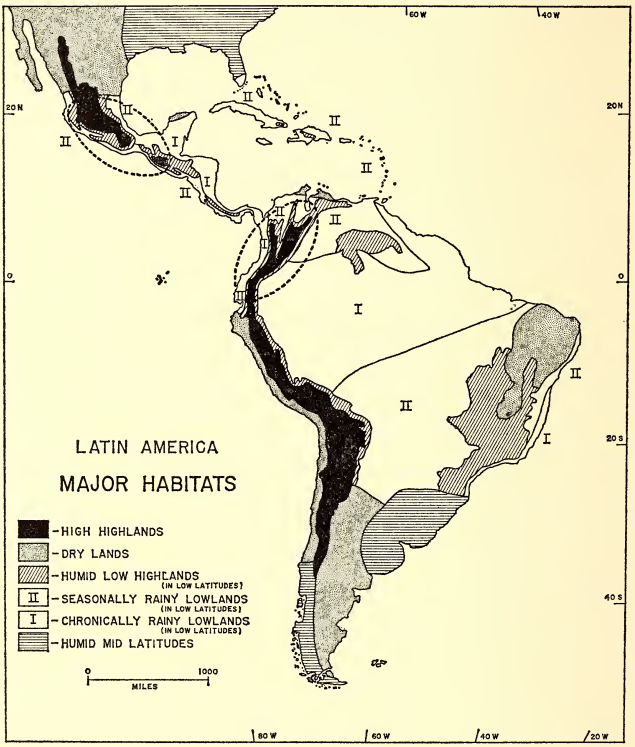

FIG. 18—Major habitat zones in Latin America (after Platt, 1942. fig. 491). A broken line surrounds the portion of Mesoamerica where the earliest evidence of plant domestication has been found, and that part of Colombia presenting a similar combination of habitat zones.

pottery griddles in the Amazon Basin is later by almost 2000 years, and the earliest examples are from the northern and western periphery. These cultural data seem to point to Colombia as the probable area for the domestication of manioc.

If we may postulate that the environmental diversity characteristic of Mesoamerica was a contributing factor to the rise of plant domestication, it may be significant that similar combinations of high highlands, humid low highlands, and seasonally to chronically rainy lowlands are present elsewhere in Latin America only in Colombia (fig. 18). We do not have sufficient evidence to determine whether similar environmental circumstances led to similar forms of experimentation with plants, or whether the stimulus to embark on this path was diffused from Mesoamerica. Unless the early manioc cultivators sought refuge in rock shelters and caves, as did the incipient agriculturists in Mesoamerica, we may never know how close these inferences are to being correct. Whether the domestication of potatoes and other "root" crops derives from this same center is a matter of even greater speculation at present.

About the same time that Mesoamerican contact brought maize to Momil, communications appear to have been reestablished with coastal Ecuador. By 200 B.C., and perhaps a few centuries earlier, Mexican types of figurines, pottery masks, flat and cylindrical stamps, and distinctive types of pottery decoration such as postfired painting in lime green, yellow, black, white, and red appear with great abundance in sites ranging from northern Manabí into southern Colombia. A number of other traits that later became more widely diffused in the Andean Area also make their appearance on the coast of Ecuador at this time, including white-on-red, negative, and polychrome painting, annular pedestal and tripod supports, and the bridge spout. All appear at our present state of knowledge to be older in Mesoamerica than in South America (fig. 19).

From this time onward, communication between Mesoamerica and the northwest coast of South America continued, perhaps with intermittent interruptions. These channels, most likely maintained by sea, brought the mold, metallurgy, ax money and other traits to Mexico, in exchange for the custom of drilling and inlaying the incisor teeth, secondary urn burial, and perhaps the construction of burial mounds and the manufacture of bark cloth. All these traits are earlier in Mesoamerica or in Ecuador than in the intervening or surrounding areas, where they form an erratic pattern consistent with their spread by random diffusion from the two primary sources (fig. 20).

In addition to influences resulting from interamerican contacts,

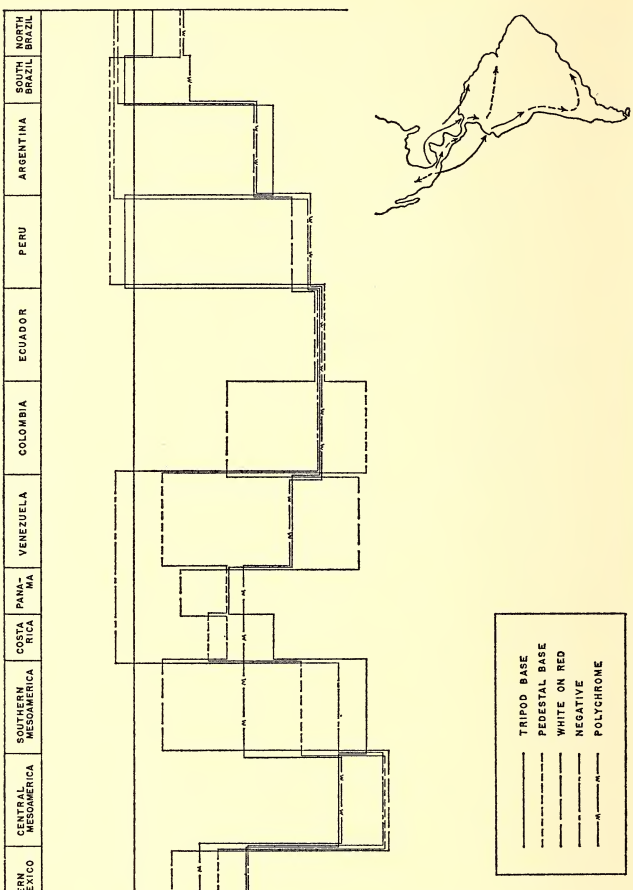

FIG. 19—(For explanation, see opposite page.)

there is the increasing probability—glossed over lightly by our Mesoamericanist contributors (and ignored by other recent synthesizers such as Willey, 1961)—of transpacific introductions. After many years of attempting to argue similarities away on the basis of lack of coincidence in dating, apparent random distribution of the traits cited, or as a last resort, the width of the ocean to be crossed, we are being forced to confront the probability. Recent investigation has shown that many of the traits and complexes in question are not only earlier in Asia than in America, but have no apparent New World antecedents. Given the advanced cultural development in the eastern hemisphere before the first millennium B.C., the large ships engaged in long-range sea commerce, the typhoons of southeast Asia and the ocean currents that would carry a drifting craft to the coasts of Mesoamerica and Ecuador, it stretches the imagination more to believe that accidental contacts did not occur than to suppose that they did. If we are objective, we must recognize that evidence of contact exists in the form of numerous detailed and complicated resemblances in religious concepts, architectural elements, art motifs, and other aspects of culture in no way explainable as independent solutions to similar problems. If we grant these connections, we must recognize that duplicate constellations of traits on the Formative level also imply transpacific introductions, as for example the already mentioned case of Valdivia on coastal Ecuador and possibly the zoned cordmarking of Ocós on coastal Guatemala (which is paralleled in Late Jomon pottery of Japan). Perhaps the significant step forward in recent years is our willingness to consider these as possibilities rather than dismiss them without investigation.

If the preceding reconstruction of aboriginal cultural development is basically correct, two important theoretical problems are raised: (1) In view of the facility with which not only ideas but groups of people apparently moved over long distances, why did the centers of civilization appear in the Andean Area and Mesoamerica? and (2) Is the rise of civilization in the New World independent of that in the Old World, or was it stimulated by ideas introduced from abroad?

FIG. 19.—Relative antiquity of selected pottery traits suggesting direct contact by sea between central Mexico and Ecuador around 500 B.C. The traits in question appear together on coastal Ecuador at the beginning of the Regional Developmental Period, implying outside influence. Their earliest occurrence according to our present knowledge is in central Mesoamerica. Except in Ecuador, and to a lesser extent in Colombia, their random distribution through space and time is consistent with the conclusion that they were spread independently by diffusion. Data on which this chart is based are provided in Appendix Table 2. Lines above the A.D. 1500 marker indicate absence of the trait in the area indicated.

FIG. 20.—(For explanation, see opposite page.)

The answer to the first question is to be sought at least partly in the environment. Where intensive and extensive agricultural production is prohibited or rendered difficult by features of the climate, soil, or terrain, a foundation cannot be laid that will support a highly elaborated culture, just as a skyscraper cannot be built in a swamp. Much of lowland South America and lower Central America has limited agricultural potential, and fails to be economically productive even today with the application of the most advanced scientific techniques. Leaving these areas aside, there remain in addition to the centers of high civilization in Central Mexico, Ecuador, and the Central Andes, portions of the intervening area included in highland Guatemala and Costa Rica, Colombia, and the Greater Antilles. All have rich soils capable of intensive agricultural exploitation and most support large populations today. If these additional areas have the potential for intensive exploitation, why was it not realized in aboriginal times?

A great deal more work must be done before we can provide a complete answer, but one important factor should be considered as we interpret the evidence. It must be recognized that our evaluation of the level of civilization attained by the Inca, the Maya, and the Aztec depends to a large extent on special archeological and historical circumstances. We would know much less about the sociopolitical organization, religious pantheon, militarism, systems of tribute, and the other multiple but intangible details were it not for descriptions recorded at the time of the European conquest. Secondly, particularly on coastal Peru, but also in the cenotes of Yucatan and the caves of Mexico, conditions favor the preservation of wood, bone, cloth, basketry, and vegetal remains, even a small sample of which adds infinitely to the cultural reconstruction. Thirdly, the people of Mesoamerica and Peru chose to build in stone, leaving monuments that impress us as feats of engineering skill.

FIG. 20.—Relative antiquity of selected traits suggesting maintenance of direct contact between Mesoamerica and northwestern South America after the beginning of the Christian era. In South America, their greatest antiquity (with the possible exception of the shaft tomb) is in Ecuador, which can be seen as a center of diffusion to other parts of that continent. In Mesoamerica, their earliest occurrence is in the central portion of the area, from which they appear to have spread north and south. The fact that the South American center of dispersal provides the earliest occurrence of all the traits, together with the fact that their appearance in Mesoamerica is sequential rather than simultaneous, leads to the inference of long-term direct contact by sea between the two centers. During this contact, other traits also moved from north to south. Data on which the chart is based are provided in Appendix Table 2. Lines above the A.D. 1500 marker reflect absence of the trait.

If these three sources of information were not available to us, how much could we infer from the remainder of the archeological record? Would the pattern look very different from what we find on the coast of Ecuador or the highland valleys of Colombia or Costa Rica? Is there a possibility that in asking why high civilization was not present in the intervening area between the two major centers we are posing a false problem, misled by lack of uniformity in the data available to us? Our improving techniques for making inferences from the archeological record, and systematic analysis of the nonperishable village refuse associated with the late cultures in Peru and Mexico should give us the means of answering this question. Perhaps the outcome will lay the foundation for better understanding of why civilization developed where, when, and as it did.

Turning to the question of the independence of New World cultural evolution brings us face to face with one of the most significant theoretical problems in anthropology. It has been argued by some that the parallel course from savagery to civilization in the eastern and western hemispheres is evidence that cultural development is determined by laws of cause and effect. To others, these achievements arrived at independently prove that ingenuity and inventiveness are not limited to one branch of the human race, but universally prevalent. Now that we are confronted with evidence of transpacific introductions beginning with the early Formative, we need to assess the effect on New World cultural development. Are they merely embroidery, or did they play a determining role? The answer to this question presupposes the ability to separate primary or determining elements from secondary or embroidering ones. As if this were not difficult enough, we must then decide whether the primary elements have been invented more than once in human history.

It is readily evident that the bulk of the elements attributed to transpacific origin fall into the category of embroidery. Symbols of status like the litter, art motifs like the lotus and the tree of life, items of religious belief and forms of worship, games like patolli, and even intellectual achievements like the much admired concept of the zero or architectural elements like the corbelled arch, are like frosting on the cake. They make it more exciting, alter its appearance in a variety of ways, appeal to the esthetic sense and provide psychological satisfaction, but exist only because the foundation is firm and sound. There is no doubt that New World civilization would have had a different appearance without such elements, but their existence depends on subsistence sufficiency and sociopolitical complexity, in other words, on a productive and stable form of agriculture.

Once the idea of plant domestication has taken root, we can account for most of the general pattern of New World cultural evolution as an indigenous development. After the basic staples—maize and manioc—became established and began to diffuse, differential regional histories can be largely understood as the product of traits spread by diffusion and local environmental situations, as the participants of this symposium have attempted to show. We know that intensification of agricultural production permits population concentration, which in turn makes possible increasing division of labor, social stratification, elaboration of religious belief and paraphernalia, including architectural forms for its observance. When a certain level of competence in subsistence control is reached, the foundation will support a great deal of embroidery. This undoubtedly accounts for the blossoming of evidence of transpacific contact around the beginning of the Christian era. Prior to this time, when the Formative was still in progress, the foundation was not yet firm enough for the embroidery to remain in place if it was made available.

What about the origin of agriculture? Suggestion of transpacific influence comes from the appearance of cotton and bottle gourds on coastal Peru around 3000 B.C. However, at this time, agricultural beginnings in Mesoamerica were already 2000 or more years in the past. Evidence has not yet come to light to indicate that here at least the domestication of plants is anything but an independent invention, although the possibility exists that in the future some may be found. These Mesoamerican gropings toward plant domestication are so early that the cultivation of all other New World plants, including manioc, can be explained as the effects of diffusion either of the idea of improving on nature or of one of the early domesticates such as beans or squash from this center.

Surprisingly, in view of its much greater durability, we know less about the origin of pottery than of plant domestication in the New World. Disconcertingly, the farther back we trace its history, the better in quality it generally becomes. There seems to be a sudden jump from the preceramic to well-made and simply but tastefully decorated pottery, to the eye of the archeologist at least, less comparable to what might be expected of the first potters than the wares of some later and presumably more knowledgeable groups. On the west coast of South America, it appears on the basis of present evidence that the first pottery was brought to shellfish-gathering and possibly preagricultural groups from across the Pacific some 3000 years before Christ. The effect is difficult to assess, but no alteration in the preexisting way of life seems to have resulted. The new invention may have

spread slowly north as far as Panama and south to the north coast of Peru, but the impression is left that it was more in the nature of a luxury than a basic utilitarian trait. There is a possibility that this early ceramic tradition, characterized by incised, punctate, and applique decoration, is ancestral to the modeled and incised styles later represented by Malambo in Colombia and Barrancas in eastern Venezuela, styles that have little in common with the characteristic Formative ceramics of the Mesoamerican and Andean Areas.

The first appearance of pottery making in Mesoamerica seems to be independent and perhaps slightly later than in South America, although it is dangerous to accept present evidence as final. The lack of comparability both in vessel shape and in technique and motif of decoration suggests that the source is not South America. Some archeologists favor an origin by diffusion from Asia either overland via North America, or directly, by sea. If this hypothesis is supported by future work, we may never be in a position to know whether or not pottery making would have been independently invented in the New World if the idea had not been forthcoming from elsewhere at the appropriate time.

These problems that elude solution constitute part of the challenge of archeological research. We are engaged in solving a vastly complicated puzzle, and many of the pieces are still missing. We nevertheless are impatient to know what the completed picture will be like. The versions presented in this volume may or may not continue to be believeable as more pieces are set in place. We hope that they will prove to be generally correct, but will be disappointed if those who see the pattern differently do not try to find the evidence that will prove us wrong, or to resolve some of the contradictions in interpretation that will become apparent to a careful reader. There is much still waiting to be discovered in spite of the intensified fieldwork of recent years.

One conclusion is so overwhelmingly documented that future research can only add to its support, namely, that a tremendous amount of contact existed aboriginally between widely separated geographical areas, not only by diffusion from group to group, but in the form of long-range commerce and migration by land and sea. From the early Formative, if not before, there is evidence of direct communication between Mesoamerica and the west coast of South America, and from these primary centers influences passed in all directions. Not only this, but voyagers from Asia were apparently repeatedly cast upon the shores of the New World, constituting a continuing source of ideas that were incorporated at various times and places, with more or less

modification, into the fabric of New World culture. The more we learn about the archeological picture, the more apparent it is becoming that the 20th century has brought no real revolution in lessening the isolation between people and places; on the contrary, it can be truly said that for many thousands of years our ancestors have lived in a "small world."

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APPENDIX (Tables 1 and 2)

Table 1. Comparative alinement of developmental sequence terminology in 12 Latin American archeological areas. The preceramic portion of the chart is stippled for easier recognition.

Lack of uniformity in terminology is noteworthy, and it should be observed that when the same term is employed, it may not label a comparable cultural situation in two different areas. Half of the areas are represented by developmental terms, such as "horticultural villages," "regional developmental," "classic," etc. Two use pottery-style distinctions. Three are divided into "preceramic" and "ceramic" segments, the latter subdivided into numbered periods, and one uses numbered periods exclusively. In the case of Colombia, the complexity of areal differentiation and paucity of systematic and intensive archeological survey and excavation makes developmental terminology premature. In southern Brazil, Venezuela, and Argentina, the choice of the numbered period framework seems to be motivated by the fact that the introduction of pottery making and agriculture does not set in motion the type of cultural elaboration characteristic of the nuclear areas. Level of development remains considerably more uniform, and distinctions are most readily made by reference to the appearance of new styles of pottery or combinations of other material traits. Such varying local situations illustrate the difficulty in finding a framework of sequence terminology applicable to all of Latin America.

1500

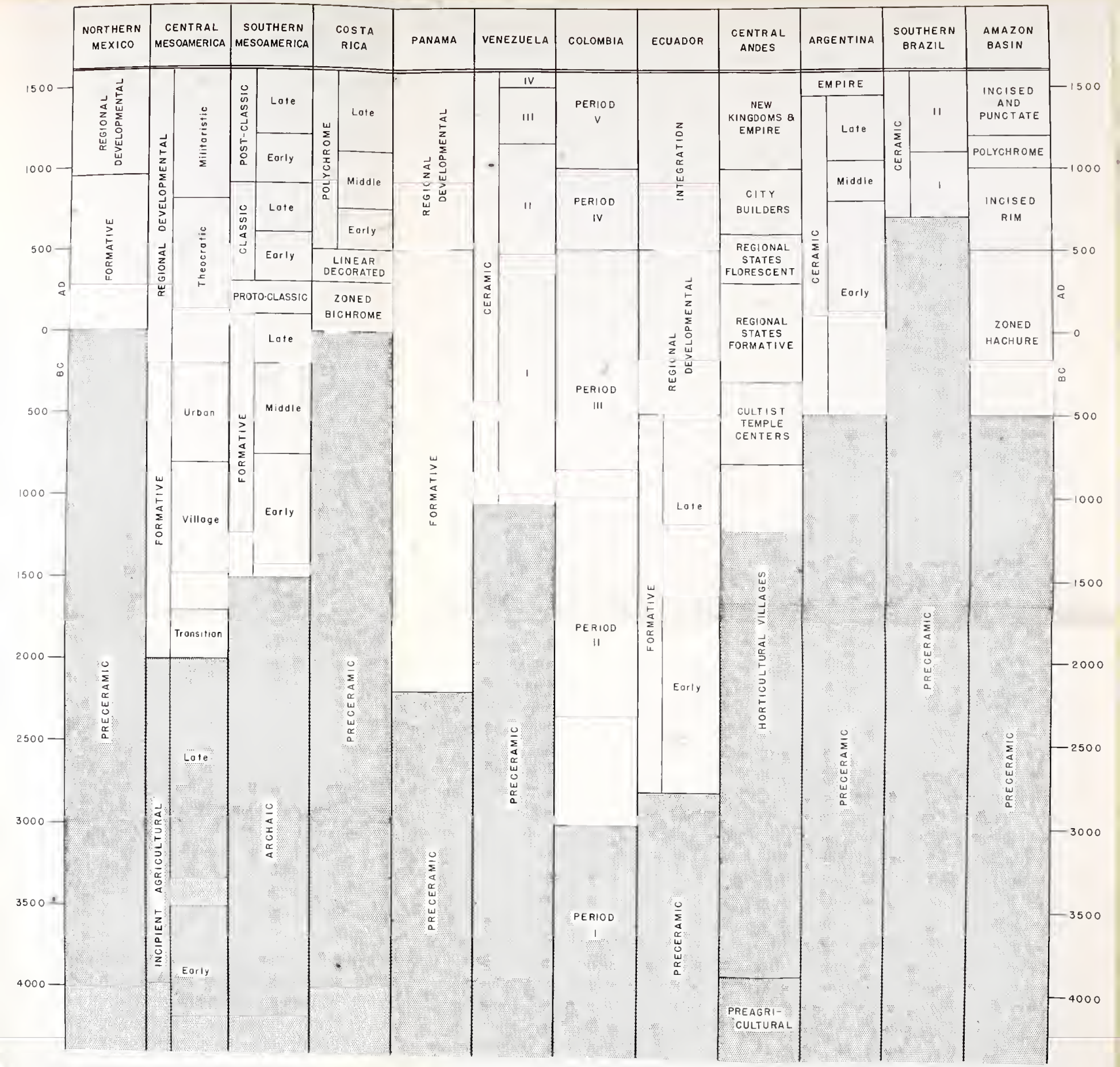

NORTHERN MEXICO
CENTRAL MESOAMERICA
SOUTHERN MESOAMERICA
COSTA RICA
PANAMA
VENEZUELA
COLOMBIA
ECUADOR
CENTRAL ANDES
ARGENTINA
SOUTHERN BRAZIL
AMAZON BASIN
REGIONAL DEVELOPMENTAL
FORMATIVE
PRECERAMIC
REGIONAL DEVELOPMENTAL
Militaristic
Theocratic
Urban
Village
Transition
Late
Early
INCIPIENT AGRICULTURAL
FORMATIVE
POST-CLASSIC
CLASSIC
PROTO-CLASSIC
Late
Early
Late
Middle
Early
Late
Middle
Early
ARCHAIC
POLYCHROME
LINEAR DECORATED
ZONED BICHROME
Late
Middle
Early
PRECERAMIC
REGIONAL DEVELOPMENTAL
FORMATIVE
PRECERAMIC
CERAMIC
IV
III
II
I
PERIOD V
PERIOD IV
PERIOD III
PERIOD II
PERIOD I
PRECERAMIC
INTEGRATION
REGIONAL DEVELOPMENTAL
FORMATIVE
Late
Early
PRECERAMIC
NEW KINGDOMS & EMPIRE
CITY BUILDERS
REGIONAL STATES FLORESCENT
REGIONAL STATES FORMATIVE
CULTIST TEMPLE CENTERS
HORTICULTURAL VILLAGES
PREAGRI-CULTURAL
EMPIRE
CERAMIC
Late
Middle
Early
PRECERAMIC
CERAMIC
II
I
PRECERAMIC
INCISED AND PUNCTATE
POLYCHROME
INCISED RIM
ZONED HACHURE
PRECERAMIC
1500
1000
500
AD
0
BC
500
1000
1500
2000
2500
3000
3500
4000

Table 1

Table 2. Earliest occurrence of traits in 12 geographical regions of Latin America. The list was kept within reasonable bounds by eliminating traits restricted to a single region or contiguous regions, and traits too simple to be useful as indicators of diffusion.

Traits included vary widely in their reliability as a basis for comparative analysis. Even simple terms such as "zoned red painting" may describe quite different things. Settlement pattern designations are subject to far greater interpretive variability. The requirement of reporting first occurrence also involves value judgments. Should an isolated early appearance be reported, or a later complex where the trait is typical? Other difficulties result from incompleteness of information about association or inexactness of dating. Nevertheless, the attempt seemed worthwhile to present the information available to us at present as a foundation to be improved and corrected by fuure work, and as a basic for tentative interareal correlations of the kind suggested in figures 17, 19–20.

Procedure for designating first occurrence has been generally as follows: If the trait was found in a single site or complex, this is listed; if it is present in several contemporary complexes or characteristic of a developmental period, the period terminology is used. Where dates are not provided, they can be found by referring to the chronological sequence charts for each area or to appendix table 1. A dash indicates the trait is absent or unreported to date.

Information contained in the table has been provided by the following individuals:

Northern Mexico: Charles C. Di Peso
Central Mesoamerica: Román Piña Chán
Southern Mesoamerica: Michael D. Coe
Costa Rica: Claude F. Baudez
Panama: Charles R. McGimsey III
Colombia: Carlos Angulo Valdés
Venezuela: Mario Sanoja
Ecuador: Emilio Estrada, Clifford Evans, Betty J. Meggers
Central Andes: Alfred Kidder II, Luis G. Lumbreras S., David B. Smith
Argentina: Alberto Rex Gonzalez
South Brazil: Fernando Altenfelder Silva
Amazon Basin (North Brazil): Betty J. Meggers, Clifford Evans

	NORTHERN MEXICO	CENTRAL MEXICO	SOUTHERN MESOAMERICA	COSTA RICA	PANAMA
SUBSISTENCE (continued):					
Agriculture: Primary food source	ca. A.D. 500	Early Village Formative	Cuadros & Chiapa I	Zoned Bichrome (A.D. 1—300)	Santa Maria (ca. A.D. 300)
Agriculture: Irrigation	ca. A.D. 500?	——	——	——	——
Agriculture: Terracing	ca. A.D. 900?	Urban Formative	Tepeu	——	Very late pre-Conquest
Plant remains: Cotton	ca. A.D. 900?	Urban Formative	Ocos (inferred) (850—750 B.C.)	——	Cocle (inferred) (A.D. 500)
Plant remains: Maize	ca. A.D. 1?	Coxcatlán (3000 B.C.)	Chiapa I, & Cuadros	——	Santa Maria (inferred)
Manioc	——	Village Formative?	——	——	——
HUNTING AND WARFARE:					
Stone projectile points	Preceramic	Preagricultural	Archaic	Palo Blanco	Western Panama (post A.D. 1)
Atlatl	Preceramic	Preagricultural	Archaic	——	Parita Bay
Bow	Preceramic	Regional Developmental: Early Militaristic	Late Post Classic (A.D. 1200—1520)	——	——
Stone club heads	——	Regional Developmental: Early Militaristic	——	Early Polychrome	——
COMMUNITY PATTERN:					
Central based wandering	Preceramic	Preagricultural	Archaic	——	Cerro Mangote?
Semipermanent sedentary	Preceramic?	Early Incipient Agricultural	Archaic	——	——
Simple nuclear centered	Alta Vista	Urban Formative	Cuadros & Chiapa I	Catalina	Santa Maria
Advanced nuclear centered	Ayala & Buena Fe	Regional Developmental: Early Theocratic	Late Formative (300 B.C.—A.D. 300)	——	Cocle
Supranuclear integrated	Rio Tunal & Paquime	Regional Developmental: Late Militaristic	Toltec-Chichen Itza (A.D. 970—1170)	——	——
METALLURGY:					
Gold	——	Regional Developmental: Early Militaristic	Early Post Classic	Late Polychrome?	Venado Beach
Silver	——	Regional Developmental: Late Militaristic	——	Late Polychrome?	——
Copper	Rincon-Sacaton	Regional Developmental: Early Militaristic	Early Post Classic	Late Polychrome?	Cocle
Bronze	——	——	——	——	——
Lead	——	——	Early Post Classic	——	——
Platinum	——	——	——	——	——
Technique: Casting (Cire Perdue)	Post A.D. 950	Regional Developmental: Late Militaristic	Toltec-Chichen Itza	Late Polychrome	Cocle
Smelting	Post A.D. 950	Regional Developmental: Late Militaristic	Early Post Classic	Late Polychrome	Cocle
Alloying	——	Regional Developmental: Late Militaristic	Toltec-Chichen Itza (copper-lead)	Late Polychrome	Cocle (copper-gold)
Repousee	Paquime (ca. A.D. 1200)	——	Early Post Classic	Late Polychrome	Cocle
Hammering	Post A.D. 950	Regional Developmental: Late Militaristic	Early Post Classic	Late Polychrome	Cocle
Gilding	——?——	——	Early Post Classic	Late Polychrome	Cocle
Plating	——	——	——	——	Cocle
MEDIUM OF EXCHANGE:					
Ingots	Paquime	——	——	——	——
Copper axe-money	——	Regional Developmental: Late Militaristic	——	——	——
Other	——	Gold dust, cacao, quetzal feathers Regional Developmental: Late Militaristic	——	——	——
STAMPS OR SEALS:					
Material: Pottery	Yebalito and Chalchihuites	Early Village Formative	Conchas, Las Charcas	Matapalo	Cocle
Material: Wood	——	——	——	——	——
Form: Cylindrical	Yebalito and Chalchihuites	Early Village Formative	Conchas	Matapalo	Cocle

TABLE 2

	NORTHERN MEXICO	CENTRAL MEXICO	SOUTHERN MESO-AMERICA	COSTA RICA	PANAMA	COLOMBIA	VENEZUELA	ECUADOR	CENTRAL ANDES	SOUTHERN SOUTH AMERICA	SOUTHERN BRAZIL	NORTHERN BRAZIL
ARCHITECTURAL FEATURES:												
Mounds for burial	Yebalito (A.D. 1150—1350)	Remojadas	—	—	Parita Bay (after A.D. 1)	San Agustin	Valencia (A.D. 1150—1500)	La Tolita (A.D.300)	—	Inca	—	Marajoara
Mounds as building substructures	Alta Vista (A.D. 300—400)	Cuicuilco	800—300 B.C.	—	Parita Bay—Late	Betanci (A.D. 1000—1500)	Guadalupe (A.D. 1150—1500)	Bahia (500 B.C.—A.D. 500)	Cultist Temple Centers (800 B.C.)	Cienaga—Aguada (A.D. 300—750)	—	Marajoara
Stone faced platforms	ca. A.D. 300—1500	Cuicuilco	Chiapa VI	Middle Polychrome	—	—	—	Bahia	Cerro Sechin (800 B.C.)	Cienaga	—	—
Ceremonial structures (other kinds)	Formative (A.D. 300—400)	Urban Formative	Chiapa III	—	Parita Bay—just pre-Conquest	San Agustin	—	Chirije	—	Tafi (300 B.C.—A.D. 500)	—	Aruã
Urban centers: Large mound groups	A.D. 900—1350	Regional Developmental: Early Theocratic	—	—	—	—	Guadalupe & Valencia	Milagro	—	—	—	—
Urban centers: Large habitation areas. (several square kilometers)	A.D. 900—1350	Regional Developmental: Early Theocratic	Mayapan	—	—	—	—	Manteño	Wari (A.D. 800—1000)	Beten II (ca A.D. 1300)	—	—
Stone faced sunken areas	—	Monte Alban I	—	—	—	—	—	—	Chavin (600 B.C.)	—	—	—
Stone masonry	A.D. 900—1350	Cuicuilco	Chiapa IV	—	—	—	—	Inca	Cerro Sechin	Tafi	—	—
BURIAL PRACTICES:												
Sub-floor burial	Rio Tunal and Reyes (ca A.D. 1150)	Late Village Formative	Dcos (850—750 B.C.)	La Cruz (A.D. 1100—1520)	—	Barlovento (1500 B.C.)	Manicuare (2000 B.C.)	Valdivia	Chiripa (300 B.C.)	Alamito (A.D. 300)	—	—
Earth burial in cemeteries: Extended	—	El Arbotillo I	Playa de los Muertos	Palo Blanco (A.D. 700—1100)	Santa Maria (A.D. 300)	San Agustin	La Cabrera	—	Horticultural Village (2000 B.C.)	Pichalo I	—	—
Earth burial in cemeteries: Flexed	—	Tlatilco	Playa de los Muertos	Ciruetas (A.D. 300—500)	Santa Maria	San Agustin	—	—	Horticultural Village	Cienaga	Estirão Comprido II	—
Earth burial in cemeteries: Secondary	—	Tlatilco	Chicanel	Ciruelas	—	Tierradentro?	La Pitia	Milagro	—	—	—	Marajoara
Urn burial: Secondary	—	—	Chicanel (heads only)	La Cruz	—	Tierradentro	La Pitia & Valencia	Integration	—	—	—	Marajoara
Urn burial: Primary	Yebalito	Urban Formative	Chicanel (infants)	Monte Fresco (infants) (0—A.D. 300)	Venado Beach (A.D. 300)	—	—	— ? —	—	Candelaria (A.D. 300?)	—	—
Cremation	—	Remojadas	Late Qankyak	—	—	Tierradentro	La Cabrera (1000 B.C.—A.D. 350)	Manteño	—	—	—	Late Marajoara
Differential treatment of the dead	Paquime	Urban Formative	Miraflores	Early Polychrome (A.D. 500—750)	Venado Beach	San Agustin	—	Milagro	Cultist Temple Centers (600 B.C.)	Aguada (ca. A.D. 800)	—	Marajoara
Shaft tombs	—	El Arenal	—	—	Parita Bay (A.D. 500)	San Agustin	—	Manteño	—	Atacameño	—	Aristé
Tombs lined with stone or other materials	Paquime	Late Village Formative	Miraflores	Doscientos (A.D. 700—1100)	Barriles (0—A.D. 500)	San Agustin	Chipepe (A.D. 1150—1500)	—	Cupisnique (600 B.C.)	Tafi II (A.D. 500)	—	—
SOCIAL ORGANIZATION:												
Occupational division of labor	A.D. 900—1350	Village Formative	Archaic (7000—1500 B.C.)	Linear Decorated	ca. A.D. 1	Momil II (ca. 500 B.C.)	—	Chorrera	Cultist Temple Centers (800 B.C.)	Aguada	—	Marajoara
Social stratification into classes	A.D. 900—1350	Village Formative	Middle Formative (1000—300 B.C.)	Linear Decorated	ca. A.D. 1	San Agustin	—	Bahia	Cultist Temple Centers	Aguada	—	Marajoara
Theocratic control	A.D. 900—1350	Urban Formative	Middle Formative (1000—300 B.C.)	—	—	Tairona I (ca. A.D. 1250)	—	Bahia?	Cultist Temple Centers	—	—	—
Militarism	A.D. 900—1350	Regional Developmental: Late Militaristic	Toltec (A.D. 900—1200)	—	—	Tairona II (A.D. 1250—1500)	—	—	Mochica (A.D. 400)	Late Pre-Inca: Aguada	—	—
RELIGION:												
Split-face representations	—	Tlatilco II	—	—	—	—	—	—	Cupisnique	Tafi II	—	—
"Alter ego" representations	—	Late Village Formative	—	Middle Polychrome	Chiriqui (A.D. 500?)	—	—	Milagro	Mochica	Alamito (ca. A.D. 300)	—	—
Feline deities	—	Late Village Formative	Chiapa II (1000—550 B.C.)	—	—	Momil II	—	Jama-Coaque?	Chavin	Condorhuasi-Cienaga II	—	—
Figurines: Hand made	—	Early Village Formative	Chiapa I (1500—1000 B.C.)	Early Polychrome	Gross Red Line (A.D. 1000)	Momil I	Barrancas	Valdivia	Huaca Prieta (1100 B.C.)	Cienaga-Candelaria	—	Mangueiras
Figurines: Mold made	Mazapan	Regional Developmental: Late Theocratic	Tepeu (A.D. 600—900)	Matapalo (A.D. 500—700)	—	—	—	Bahia	Mochica	—	—	—
Figurines: Anthropomorphic	—	Early Village Formative	Chiapa I	Early Polychrome	Gross Red Line	Momil I	Barrancas	Valdivia	Huaca Prieta	Cienaga-Candelaria	—	Mangueiras
Figurines: Zoomorphic	—	Late Village Formative	Dcos (850—750 B.C.)	Early Polychrome	Gross Red Line	Malambo (ca. 1000 B.C.)	Ronquin	Regional Developmental	—	—	—	—
Figurines: Double Headed	Alta Vista & Paquime	Tlatilco II	—	—	—	Momil II	—	Valdivia	—	Aguada	—	—
SUBSISTENCE:												
Shell Middens	Northwest Sonora (date unknown)	—	Conchas (750—200 B.C.)	Early Polychrome	Cerro Mangote (5000 B.C.)	Puerto Hormiga (3000 B.C.)	Cubagua (2200 B.C.)	Valdivia	Horticultural Villages	Pichalo I	Preceramic	—
Shell fish hooks	—	—	—	Bebedero (A.D. 1100—1520)	—	Loma de Lopez (400 B.C.)?	—	Valdivia	Horticultural Villages	Pichalo I	—	—
Agriculture: Incipient	ca. A.D. 1	Late Incipient Agricultural (3500—2000 B.C.)	Archaic (7000—1500 B.C.)	—	—	Malambo	—	Valdivia?	Horticultural Villages	—	—	Ananatuba?

TABLE 2 (Continued)

	NORTHERN MEXICO	CENTRAL MEXICO	SOUTHERN MESOAMERICA	COSTA RICA	PANAMA	COLOMBIA	VENEZUELA	ECUADOR	CENTRAL ANDES	SOUTHERN SOUTH AMERICA	SOUTH-ERN BRAZIL	NORTH-ERN BRAZIL
SUBSISTENCE (continued):												
Agriculture: Primary food source	ca. A.D. 500	Early Village Formative	Cuadros & Chiapa I	Zoned Bichrome (A.D. 1—300)	Santa Maria (ca. A.D. 300)	Momil I	Barrancas and Saladero	Chorrera	Cultist Temple Centers	Tafi (inferred)	—	Marajoara
Agriculture: Irrigation	ca. A.D. 500?	—	—	—	—	Tairona I	Andean zone (date unknown)	—	Coast Chavin	Belen-Santa Maria	—	—
Agriculture: Terracing	ca. A.D. 900?	Urban Formative	Tepeu	—	Very late pre-Conquest	Tubará (A.D. 1000?)	Andean zone (date unknown)	Manteño	Chanapata (500 B.C.)	Cienaga-Condorhuasi	—	—
Plant remains: Cotton	ca. A.D. 900?	Urban Formative	Dcos (inferred) (850—750 B.C.)	—	Cocle (inferred) (A.D. 500)	Malambo (inferred)	Barrancas (inferred)	Valdivia (inferred)	Horticultural Villages (3000 B.C.)	Pichalo III	—	—
Plant remains: Maize	ca. A.D. 1?	Coxcatlán (3000 B.C.)	Chiapa I. & Cuadros	—	Santa Maria (inferred)	Momil II (inferred)	Tocuyano (inferred)	Chorrera (inferred)	Horticultural Villages (1400 B.C.)	Aguada	—	Ananatuba? (inferred)
Manioc	—	Village Formative?	—	—	—	Malambo (inferred)	Barrancas (inferred)	—	Chavin (800 B.C.)	—	—	Aruã
HUNTING AND WARFARE:												
Stone projectile points	Preceramic	Preagricultural	Archaic	Palo Blanco	Western Panama (post A.D. 1)	Momil I?	Preceramic	El Inga	Preagricultural (8000 B.C.?)	Ayampitin	—	—
Atlatl	Preceramic	Preagricultural	Archaic	—	Parita Bay	—	—	Regional Developmental	Horticultural Villages (2000 B.C.)	Aguada	—	—
Bow	Preceramic	Regional Developmental: Early Militaristic	Late Post Classic (A.D. 1200—1520)	—	—	—	—	—	Early Tiahuanaco (100 B.C.—?)	Belen-Santa Maria	—	—
Stone club heads	—	Regional Developmental: Early Militaristic	—	Early Polychrome	—	—	—	Integration	Coast Chavin	Pozuelos	—	—
COMMUNITY PATTERN:												
Central based wandering	Preceramic	Preagricultural	Archaic	—	Cerro Mangote?	San Nicolas? (ca. 3000 B.C.)	El Mayal?	Valdivia?	Horticultural Villages	Intihuasi	Preceramic	Ananatuba?
Semipermanent sedentary	Preceramic?	Early Incipient Agricultural	Archaic	—	—	—	Barrancas?	—	—	—	Tupi-guaranI	Mangueiras
Simple nuclear centered	Alta Vista	Urban Formative	Cuadros & Chiapa I	Catalina	Santa Maria	Momil	Guadalupe	Chorrera	Cultist Temple Centers	Cienaga-Condorhuasi	—	Marajoara
Advanced nuclear centered	Ayala & Buena Fe	Regional Developmental: Early Theocratic	Late Formative (300 B.C.—A.D. 300)	—	Cocle	Tairona	Valencia?	Integration	Regional States—Formative	Late pre-Conquest	—	—
Supranuclear integrated	Rio Tunal & Paquime	Regional Developmental: Late Militaristic	Toltec-Chichen Itza (A.D. 970—1170)	—	—	—	—	Integration?	Regional States—Florescent	—	—	—
METALLURGY:												
Gold	—	Regional Developmental: Early Militaristic	Early Post Classic	Late Polychrome?	Venado Beach	San Agustin	—	Bahia	Cultist Temple Centers	Tafi	—	—
Silver	—	Regional Developmental: Late Militaristic	—	Late Polychrome?	—	—	—	Integration	Mochica	Cienaga	—	—
Copper	Rincon-Sacaton	Regional Developmental: Early Militaristic	Early Post Classic	Late Polychrome?	Cocle	—	—	Tejar	Chiripa	Tafi	—	—
Bronze	—	—	—	—	—	—	—	Late Milagro	New Kingdoms & Empire (A.D. 1200)	Aguada	—	—
Lead	—	—	Early Post Classic	—	—	—	—	La Tolita	Chiripa	—	—	—
Platinum	—	—	—	—	—	—	—	La Tolita	—	—	—	—
Technique: Casting (Cire Perdue)	Post A.D. 950	Regional Developmental: Late Militaristic	Toltec-Chichen Itza	Late Polychrome	Cocle	San Agustin	—	Milagro	Mochica	Cienaga	—	—
Smelting	Post A.D. 950	Regional Developmental: Late Militaristic	Early Post Classic	Late Polychrome	Cocle	San Agustin	—	Milagro	Mochica	Cienaga	—	—
Alloying	—	Regional Developmental: Late Militaristic	Toltec-Chichen Itza (copper-lead)	Late Polychrome	Cocle (copper-gold)	San Agustin (copper-gold)	—	Milagro (copper-gold)	Salinar—? (copper-gold)	—	—	—
Repousee	Paquime (ca. A.D. 1200)	—	Early Post Classic	Late Polychrome	Cocle	—	—	Milagro	Cultist Temple Centers	—	—	—
Hammering	Post A.D. 950	Regional Developmental: Late Militaristic	Early Post Classic	Late Polychrome	Cocle	Tierra Alta (ca. A.D. 1000)	—	Bahia	Cultist Temple Centers	—	—	—
Gilding	—?—	—	Early Post Classic	Late Polychrome	Cocle	—	—	Milagro	Mochica	—	—	—
Plating	—	—	—	—	Cocle	—	—	Milagro?	—	—	—	—
MEDIUM OF EXCHANGE:												
Ingots	Paquime	—	—	—	—	—	—	—	—	—	—	—
Copper axe-money	—	Regional Developmental: Late Militaristic	—	—	—	—	—	Milagro	—	—	—	—
Other	—	Gold dust, cacao, quetzal feathers Regional Developmental: Late Militaristic	—	—	—	—	—	—	—	—	—	—
STAMPS OR SEALS:												
Material: Pottery	Yebalito and Chalchihuites	Early Village Formative	Conchas, Las Charcas	Matapalo	Cocle	Momil I	Arauquin	Late Chorrera (800—500 B.C.)	Horticultural Villages	—	—	Acauan
Material: Wood	—	—	—	—	—	—	—	—	—	—	—	—
Form: Cylindrical	Yebalito and Chalchihuites	Early Village Formative	Conchas	Matapalo	Cocle	Momil I	Arauquin	Regional Developmental	Horticultural Villages	—	—	—

(Continued)

COLOMBIA	VENEZUELA	ECUADOR	CENTRAL ANDES	SOUTHERN SOUTH AMERICA	SOUTH-ERN BRAZIL	NORTH-ERN BRAZIL
Momil I	Barrancas and Saladero	Chorrera	Cultist Temple Centers	Tafi (inferred)	——	Marajoara
Tairona I	Andean zone (date unknown)	——	Coast Chavin	Belen-Santa Maria	——	——
Tubará (A.D. 1000?)	Andean zone (date unknown)	Manteño	Chanapata (500 B.C.)	Cienaga-Condorhuasi	——	——
Malambo (inferred)	Barrancas (inferred)	Valdivia (inferred)	Horticultural Villages (3000 B.C.)	Pichalo III	——	——
Momil II (inferred)	Tocuyano (inferred)	Chorrera (inferred)	Horticultural Villages (1400 B.C.)	Aguada	——	Ananatuba? (inferred)
Malambo (inferred)	Barrancas (inferred)	——	Chavin (800 B.C.)	——	——	Aruã
Momil I?	Preceramic	El Inga	Preagricultural (8000 B.C.?)	Ayampitin	——	——
——	——	Regional Developmental	Horticultural Villages (2000 B.C.)	Aguada	——	——
——	——	——	Early Tiahuanaco (100 B.C.—?)	Belen-Santa Maria	——	——
——	——	Integration	Coast Chavin	Pozuelos	——	——
San Nicolas? (ca. 3000 B.C.)	El Mayal?	Valdivia?	Horticultural Villages	Intihuasi	Preceramic	Ananatuba?
——	Barrancas?	——	——	——	Tupí-guaraní	Mangueiras
Momil	Guadalupe	Chorrera	Cultist Temple Centers	Cienaga-Condorhuasi	——	Marajoara
Tairona	Valencia?	Integration	Regional States—Formative	Late pre-Conquest	——	——
——	——	Integration?	Regional States—Florescent	——	——	——
San Agustin	——	Bahia	Cultist Temple Centers	Tafi	——	——
——	——	Integration	Mochica	Cienaga	——	——
——	——	Tejar	Chiripa	Tafi	——	——
——	——	Late Milagro	New Kingdoms & Empire (A.D. 1200)	Aguada	——	——
——	——	La Tolita	Chiripa	——	——	——
——	——	La Tolita	——	——	——	——
San Agustin	——	Milagro	Mochica	Cienaga	——	——
San Agustin	——	Milagro	Mochica	Cienaga	——	——
San Agustin (copper-gold)	——	Milagro (copper-gold)	Salinar—? (copper-gold)	——	——	——
——	——	Milagro	Cultist Temple Centers	——	——	——
Tierra Alta (ca. A.D. 1000)	——	Bahia	Cultist Temple Centers	——	——	——
——	——	Milagro	Mochica	——	——	——
——	——	Milagro?	——	——	——	——
——	——	——	——	——	——	——
——	——	Milagro	——	——	——	——
——	——	——	——	——	——	——
Momil I	Arauquin	Late Chorrera (800—500 B.C.)	Horticultural Villages	——	——	Acauan
——	——	——	——	——	——	——
Momil I	Arauquin	Regional Developmental	Horticultural Villages	——	——	——

	NORTHERN MEXICO	CENTRAL MEXICO	SOUTHERN MESOAMERICA	COSTA RICA	PANAMA
POTTERY FEATURES (continued):					
Multiple brush painting: Negative	——	——	Miraflores	——	——
Painted "stucco"	——	Urban Formative	Chiapa IV	——	——
Zoned decoration:					
Zoned polishing	Chametla	Tlatilco II	Ocos	——	——
Zoned red	ca. A.D. 400	Tlatilco II	Ocos	Catalina	Scarified Ware
Zoned brushing	ca. A.D. 400	Late Village Formative	Chiapa I & Cuadros	——	——
Zoned cordmark	Convento (ca. A.D. 500)	——	Ocos	——	——
Zoned hachure	Convento	Late Village Formative	Mamom	——	——
Zoned rocker stamping	——	Tlatilco II	Cuadros	Catalina	Sarigua
Rocker stamping: Plain	——	Tlatilco II	Cuadros	——	——
Rocker stamping: Dentate	——	——	Ocos	Catalina	Sarigua
Cord Marking	Convento	El Trapiche	Ocos	——	——
Fabric impression	——	——	Ocos	——	——
Stamping	——	Regional Developmental: Militaristic	Tepeu	——	——
Molded decoration	Paquime & Las Joyas	Regional Developmental: Late Theocratic	Tepeu 3	——	Cocle?
Excision	Alta Vista	Late Village Formative	Conchas 1	Ciruelas	Monagrillo
Engraving (postfired incision)	Alta Vista	Tlatilco II?	——	Catalina	——
Applique fillet	ca. A.D. 1150	Urban Formative	Cuadros	Early Polychrome	Sarigua
Rim adornos: Anthropomorphic	post A.D. 900	Late Village Formative	Ocos	Tamarindo	——
Rim adornos: Zoomorphic	post A.D. 900	Late Village Formative	Ocos	Matapalo	Gross Red Line
Rim adornos: Geometric	——	Late Village Formative	——	——	——
Body adornos: Anthropomorphic	post A.D. 900	Late Village Formative	Cuadros	——	——
Body adornos: Zoomorphic	post A.D. 900	Late Village Formative	Ocos	Ciruelas	Gross Red Line
Body adornos: Geometric	——	Late Village Formative	——	——	——
MISCELLANEOUS ARTIFACTS:					
Pipes: Tubular	ca. A.D. 900	Regional Developmental Early Militaristic	——	——	——
Pipes: Elbow	ca. A.D. 900	Regional Developmental Late Militaristic	Toltec-Chichen Itza	——	——
Pipes: Pottery	ca. A.D. 900	Regional Developmental Early Militaristic	Toltec-Chichen Itza	——	——
Pipes: Stone	ca. A.D. 900	Regional Developmental Late Militaristic	——	——	——
Metates and manos	ca. A.D. 1?	Coxcatlán	Archaic	Catalina	Cerro Mangote
Earplugs: Stone	——	Urban Formative	Miraflores	——	Early Cocle
Earplugs: Pottery	——	Urban Formative	Middle Formative	Matapalo	——
Earplugs: Napkin ring	——	Late Village Formative	Middle Formative	Matapalo	——
Earplugs: Spool	——	Late Village Formative	Middle Formative	Matapalo	Early Cocle (metal)
Earplugs: Other	——	——	——	——	——
Labrets	——	——	——	——	——
Pottery Masks	Yebalito	Tlatilco II	——	——	——
Spindle whorls: Hand made	ca. A.D. 900	Regional Developmental Late Theocratic	Late Formative	Ciruelas	Guacamayo
Spindle whorls: Mold made	——	Regional Developmental Late Theocratic	Early Post-Classic	——	——

TABLE 2 (Continued)

	NORTHERN MEXICO	CENTRAL MEXICO	SOUTHERN MESOAMERICA	COSTA RICA	PANAMA	COLOMBIA	VENEZUELA	ECUADOR	CENTRAL ANDES	SOUTHERN SOUTH AMERICA	SOUTHERN BRAZIL	NORTHERN BRAZIL
STAMPS OR SEALS (continued)												
Form: Flat with handle	—	Early Village Formative	Las Charcas	—	Chiriqui	Momil I	—	Late Chorrera	Horticultural Villages	—	—	Acauan
Form: Hollow ring	—	Early Village Formative	—	—	—	Momil II	—	Chorrera	Aldas (1200 B.C.)	—	—	—
"SCIENCE":												
Mathematical devices: abaccus	—	—	—	—	—	—	—	—	Inca?	—	—	—
Mathematical devices: quipu	—	—	—	—	—	—	—	—	Inca	Inca	—	—
Astronomical devices	Paquime	Regional Developmental: Early Theocratic	—	—	—	—	—	—	Inca	—	—	—
Writing	—	Monte Alban I	Late Formative	—	—	—	—	—	—	—	—	—
Formal Calendar	—?—	Monte Alban I	Late Formative	—	—	—	—	—	—	—	—	—
POTTERY FEATURES:												
First Occurrence	ca. A.D. 1	Late Village Formative	Chiapa I	Zoned Bichrome	Monagrillo (ca. 2000 B.C.)	Puerto Hormiga	Saladero, Barrancas	Valdivia	Horticultural Villages	Tafr (ca. 300 B.C.)	Estirão Comprido I	Ananatuba
Technique of Manufacture:												
Coiling	ca. A.D. 1	Late Village Formative	Chiapa I	Calalina	Monagrillo	Barlovento	Saladero, Barrancas	Valdivia	Early Guañape (1000 B.C.)	Tafi	Estirão Comprido I	Ananaluba
Paddle and anvil	—	—	—	—	—	—	—	—	—	—	—	—
Mold made (completely)	—	Regional Developmental: Late Theocratic	—	—	Cocle?	—	—	—	Wari	—	—	—
Mold made (partly)	—	—	Tepeu 2	—	—	—	—	Manteño	Cupisnique	—	—	—
Form:												
Stirrup spout	—	Tlatilco	Playa de los Muertos (t000—300 B.C.)	—	—	San Agustin	—	Machalilla	Cupisnique	Molle II	—	—
Bridge spout	—	Monte Alban I	Holmul I	Matapalo	Cocle	—	Barrancas	Jama-Coaque	Cupisnique	Molle II—?	—	Santarem
Double spout	—	Regional Developmental: Early Theocratic	—	—	—	San Agustin	—	—	Early Paracas	Molle II	—	—
Tripod Legs: Nubbin	ca. A.D. 300?	Teolihuacan II	Mamom	Catalina	Cocle	—	—	—	—	—	—	—
Tripod Legs: Strap	ca. A.D. 300?	—	—	La Cruz	Thin Red Ware	—	—	Jama-Coaque	—	—	—	—
Tripod Legs: Conical	ca. A.D. 300?	Urban Formative	Conchas I	Catalina	Thin Red Ware	Momil II	Tocuyano	Regional Developmental	Playa Grande (A.D. 100)	Candelaria II	—	Konduri
Tripod Legs: Cylindrical	—	Early Village Formative	Chicanel	—	—	—	—	—	—	—	—	—
Mammiform legs	—	Village Formative	Proto-Classic	Santa Elena	Armadillo	Momil II	—	Jama-Coaque	—	—	—	—
Tetrapod legs (feet)	—	Late Village Formative	Miraflores	—	Scarified Ware	Momil I	—	Valdivia	—	Candelaria	—	—
Annular Base: Tall Pedestal	Baluarte & Ayala (A.D. 550—750)	Monte Alban II	Miraflores	Palo Blanco	El Hatillo	Momil I	Guadalupe	Tejar-Jambell	—	—	—	Marajoara
Annular Base: Low ring	Baluarte & Ayala	Urban Formative	—	San Bosco	El Hatillo	Momil I	Barrancas	Chorrera	Late Guañape	—	—	Marajoara
Handle spanning mouth	—	Regional Developmental: Militaristic	Mamom	Catalina	Armadillo	—	—	Jambelí	—	—	—	Konduri
Strap Handle	Las Joyas (ca. A.D. 900)	Late Village Formative	Las Charcas	Ciruelas	El Hatillo?	Momil I	Saladero	Regional Developmental	Cupisnique	Cienaga	—	—
Form:												
Whistling jar	—	Tlatilco II	Chiapa III	—	—	—	—	Chorrera	Salinar 200 B.C.	—	—	—
Hollow rim	—	—	—	—	—	—	Barrancas	—	—	—	—	Marajoara
Effigy: Anthropomorphic	ca. A.D. 900	Tlatilco II	Miraflores	San Bosco	Early Cocle	Betanci?	Los Barrancos	Chorrera	Cupisnique	Candelaria-Condorhuasi	—	Marajoara
Effigy: Zoomorphic	ca. A.D. 900	Tlatilco II	Conchas	Ciruelas	Early Cocle	Tairona	Santa Ana	Chorrera	Cupisnique	Condorhuasi	—	—
Effigy: Plant	ca. A.D. 900	—	—	—	—	—	—	—	Cupisnique	—	—	—
Basal Flange	ca. A.D. 900	Urban Formative	Tzakol	Ciruelas	—	Momil II	—	—	—	—	—	Tutishcainyo
Incensario	—	Urban Formative	Chiapa II	—	—	—	—	Jama-Coaque	—	—	—	—
Decoration:												
Negative Painting	Alta Vista	Tlatilco II	Conchas 2	—	Armadillo	Momil II	Nericagua (A.D. 1200)	Regional Developmental	Early Paracas (400 B.C.)	—	—	Napo
White-on-red painting	Calera (A.D. t150—1350)	Late Village Formative	Chinautla	Santa Elena	Armadillo	Quimbaya	Saladero	Regional Developmental	Salinar	Condorhuasi	—	Napo
Red painting on unslipped surface	ca. A.D. 300	Tlatilco II	Cuadros & Chiapa I	Chombo	Monagrillo	Momil I	Saladero	Machalilla	Cupisnique	Cienaga	Estrão Comprido I	Ananatuba
Polychrome (two colors on slipped surface)	ca. A.D 800—t000	Village Formative	Holmul t	Ciruelas	Santa Maria	Momil II	Saladero	Guangala, & Bahia	Early Paracas	Condorhuasi	Estirão Comprido II	Marajoara
Multicolor painting (three or more colors)	—	Urban Formative	Tzakol 2	Palo Blanco	Early Cocle	—	—	—	Early Paracas	—	—	—
Postfired painting	Paquime	Urban Formative	—	—	—	San Agustin?	—	Bahia	Early Paracas	Molle II	—	—
Multiple brush painting: Positive	—	—	Chicanel	Catalina	—	—	—	Guangala	—	—	—	—

TABLE 2 (Continued)

	NORTHERN MEXICO	CENTRAL MEXICO	SOUTHERN MESOAMERICA	COSTA RICA	PANAMA	CO-LOMBIA	VENEZUELA	ECUADOR	CENTRAL ANDES	SOUTHERN SOUTH AMERICA	SOUTHERN BRAZIL	NORTH-ERN BRAZIL
POTTERY FEATURES (continued):												
Multiple brush painting: Negative	—	—	Miraflores	—	—	—	—	—	—	—	—	—
Painted "stucco"	—	Urban Formative	Chiapa IV	—	—	—	—	—	—	—	—	—
Zoned decoration:												
Zoned polishing	Chamella	Tlatilco II	Ocos	—	—	—	Barrancas	Chorrera	Cultist Temple Centers (600 B.C.)	Molle II?	—	—
Zoned red	ca. A.D. 400	Tlatilco II	Ocos	Catalina	Scarified Ware	Barlovento	Barrancas	Chorrera	Cupisnique	Molle II	—	—
Zoned brushing	ca. A.D. 400	Late Village Formative	Chiapa I & Cuadros	—	—	—	—	—	Cultist Temple Centers	—	—	Tulishcanyo
Zoned cordmark	Convento (ca. A.D. 500)	—	Ocos	—	—	—	—	—	—	—	—	—
Zoned hachure	Convento	Late Village Formative	Mamom	—	—	Momil I	Saladero?	Valdivia	Cultist Temple Centers	Cienaga-Candelaria	—	Ananatuba
Zoned rocker stamping	—	Tlatilco II	Cuadros	Catalina	Sarigua	Loma de los Indios	—	—	Cultist Temple Centers	—	—	—
Rocker stamping: Plain	—	Tlatilco II	Cuadros	—	—	—	—	Valdivia	Cultist Temple Centers	—	—	—
Rocker stamping: Dentate	—	—	Ocos	Catalina	Sarigua	Momil I	—	—	—	—	—	—
Cord Marking	Convento	El Trapiche	Ocos	—	—	—	—	Valdivia	—	—	—	—
Fabric impression	—	—	Ocos	—	—	—	La Prita	—	—	—	—	—
Stamping	—	Regional Developmental: Militaristic	Tepeu	—	—	—	—	Chirije	Cultist Temple Centers	—	—	—
Molded decoration	Paquime & Las Joyas	Regional Developmental: Late Theocratic	Tepeu 3	—	Cocle?	—	—	Manteño	Mochica	—	—	—
Excision	Alta Vista	Late Village Formative	Conchas 1	Cruelas	Monagrillo	Betanci	Los Barrancos	Valdivia	Cultist Temple Centers	—	—	Acauan
Engraving (postfired incision)	Alta Vista	Tlatilco II?	—	Catalina	—	—	—	—	Cultist Temple Centers	—	—	—
Applique fillet	ca. A.D. 1150	Urban Formative	Cuadros	Early Polychrome	Sarigua	Malambo	Arauquin	Valdivia	Cultist Temple Centers	Tafi	—	Aruã
Rim adornos: Anthropomorphic	post A.D. 900	Late Village Formative	Ocos	Tamarindo	—	Malambo	Saladero, Barrancas	—	—	Candelaria	—	Marajoara
Rim adornos: Zoomorphic	post A.D. 900	Late Village Formative	Ocos	Malapalo	Gross Red Line	Malambo	Barrancas	—	—	Candelaria	—	Marajoara
Rim adornos: Geometric	—	Late Village Formative	—	—	—	Malambo	Saladero	—	—	Molle II	—	Marajoara
Body adornos: Anthropomorphic	post A.D. 900	Late Village Formative	Cuadros	—	—	Malambo	Barrancas	Jambelí	—	Candelaria	—	Santarem
Body adornos: Zoomorphic	post A.D. 900	Late Village Formative	Ocos	Cruelas	Gross Red Line	Malambo	Barrancas	Jambelí	—	—	—	Santarem
Body adornos: Geometric	—	Late Village Formative	—	—	—	Malambo	Saladero	—	—	Candelaria	—	Santarem
MISCELLANEOUS ARTIFACTS:												
Pipes: Tubular	ca. A.D. 900	Regional Developmental Early Militaristic	—	—	—	—	La Cabrera (600 B.C.)	—	—	—	—	Mangueiras
Pipes: Elbow	ca. A.D. 900	Regional Developmental Late Militarstic	Toltec-Chichen Itza	—	—	—	—	Jama-Coaque	—	Candelaria-Cienaga; Condorhuasi	Estirão Comprido II ?	—
Pipes: Pottery	ca. A.D. 900	Regional Developmental Early Militaristic	Toltec-Chichen Itza	—	—	—	La Cabrera	Jama-Coaque	—	Candelaria-Cienaga	Estirão Comprido II ?	Mangueiras
Pipes: Stone	ca. A.D. 900	Regional Developmental Late Militaristic	—	—	—	—	—	—	—	Condorhuasi	—	—
Metates and manos	ca. A.D. 1?	Coxcallán	Archaic	Catalina	Cerro Mangote	Momil II	El Mayal	Valdivia	Horticultural Villages	Ayampitín	—	—
Earplugs: Stone	—	Urban Formative	Mirallores	—	Early Cocle	—	—	Formative (Cañar-Azuay)	Cupisnique	—	—	—
Earplugs: Pottery	—	Urban Formative	Middle Formative	Matapalo	—	—	—	Chorrera	—	Srerras Centrales (A.D. 1000)	—	Marajoara
Earplugs: Napkin ring	—	Late Village Formative	Middle Formative	Matapalo	—	—	—	Chorrera	Cultist Temple Centers	Sierras Centrales	—	—
Earplugs: Spool	—	Late Village Formative	Middle Formative	Malapalo	Early Cocle (metal)	—	—	—	Cupisnique (bone)	—	—	Marajoara
Earplugs: Other	—	—	—	—	—	—	—	Golf-tee: Bahia	—	—	—	—
Labrets	—	—	—	—	—	—	—	Regional Developmental	—	Condorhuasi	—	Mangueiras?
Pottery Masks	Yebalito	Tlatilco II	—	—	—	—	—	Jama-Coaque	Early Paracas?	—	—	—
Spindle whorls: Hand made	ca. A.D. 900	Regional Developmental Late Theocratic	Late Formative	Ciruelas	Guacamayo	Malambo	Barrancas	Regional Developmental	Cultist Temple Centers (500 B.C.)	Early Ceramic Period	—	Marajoara
Spindle whorls: Mold made	—	Regional Developmental Late Theocratic	Early Post-Classic	—	—	—	—	—	Mochica	—	—	—

(Continued)

CO- .OMBIA	VENEZUELA	ECUADOR	CENTRAL ANDES	SOUTHERN SOUTH AMERICA	SOUTHERN BRAZIL	NORTH-ERN BRAZIL
—	—	—	—	—	—	—
—	—	—	—	—	—	—
—	Barrancas	Chorrera	Cultist Temple Centers (600 B.C.)	Molle II?	—	—
arlovento	Barrancas	Chorrera	Cupisnique	Molle II	—	—
—	—	—	Cultist Temple Centers	—	—	Tutishcainyo
—	—	—	—	—	—	—
Momil I	Saladero?	Valdivia	Cultist Temple Centers	Cienaga-Candelaria	—	Ananatuba
Loma de os Indios	—	—	Cultist Temple Centers	—	—	—
—	—	Valdivia	Cultist Temple Centers	—	—	—
Momil I	—	—	—	—	—	—
—	—	Valdivia	—	—	—	—
—	La Pitia	—	—	—	—	—
—	—	Chirije	Cultist Temple Centers	—	—	—
—	—	Manteño	Mochica	—	—	—
Betancí	Los Barrancos	Valdivia	Cultist Temple Centers	—	—	Acauan
—	—	—	Cultist Temple Centers	—	—	—
Malambo	Arauquin	Valdivia	Cultist Temple Centers	Tafi	—	Aruã
Malambo	Saladero, Barrancas	—	—	Candelaria	—	Marajoara
Malambo	Barrancas	—	—	Candelaria	—	Marajoara
Malambo	Saladero	—	—	Molle II	—	Marajoara
Malambo	Barrancas	Jambelí	—	Candelaria	—	Santarem
Malambo	Barrancas	Jambelí	—	—	—	Santarem
Malambo	Saladero	—	—	Candelaria	—	Santarem
—	La Cabrera (600 B.C.)	—	—	—	—	Mangueiras
—	—	Jama-Coaque	—	Candelaria-Cienaga; Condorhuasi	Estirão Comprido II ?	—
—	La Cabrera	Jama-Coaque	—	Candelaria-Cienaga	Estirão Comprido II ?	Mangueiras
—	—	—	—	Condorhuasi	—	—
Momil II	El Mayal	Valdivia	Horticultural Villages	Ayampitin	—	—
—	—	Formative (Cañar-Azuay)	Cupisnique	—	—	—
—	—	Chorrera	—	Sierras Centrales (A.D. 1000)	—	Marajoara
—	—	Chorrera	Cultist Temple Centers	Sierras Centrales	—	—
—	—	—	Cupisnique (bone)	—	—	Marajoara
—	—	Golf-tee: Bahia	—	—	—	—
—	—	Regional Developmental	—	Condorhuasi	—	Mangueiras?
—	—	Jama-Coaque	Early Paracas?	—	—	—
Malambo	Barrancas	Regional Developmental	Cultist Temple Centers (500 B.C.)	Early Ceramic Period	—	Marajoara
—	—	—	Mochica	—	—	—

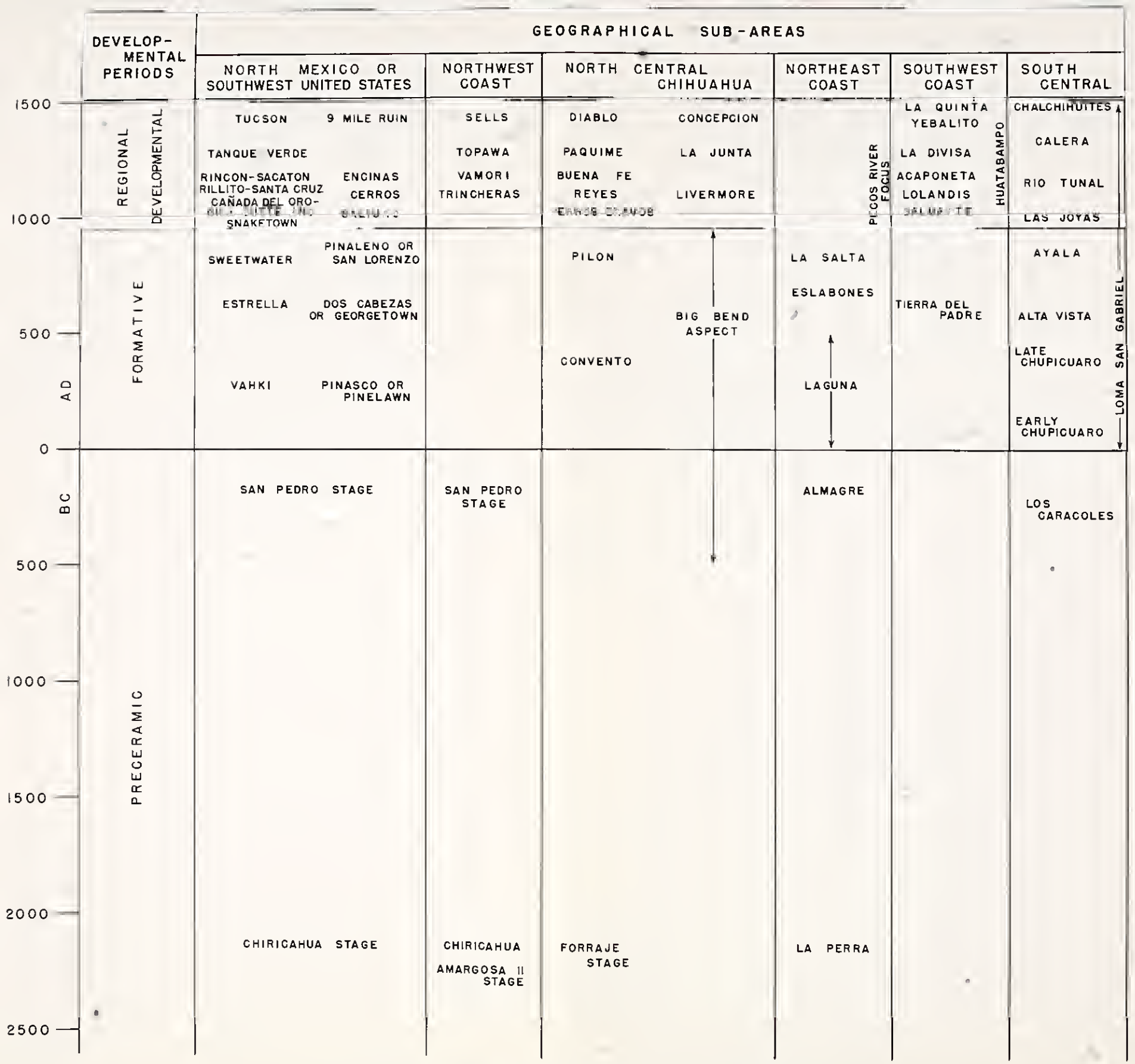


FIG. 1.—Mexico and Central America: political and geographical designations

FIG. 2.—Chronological sequences in northern Mexico

MEXICO AND CENTRAL AMERICA

ARCHEOLOGICAL SITES

FIG. 3.—Mexico and Central America: archeological sites

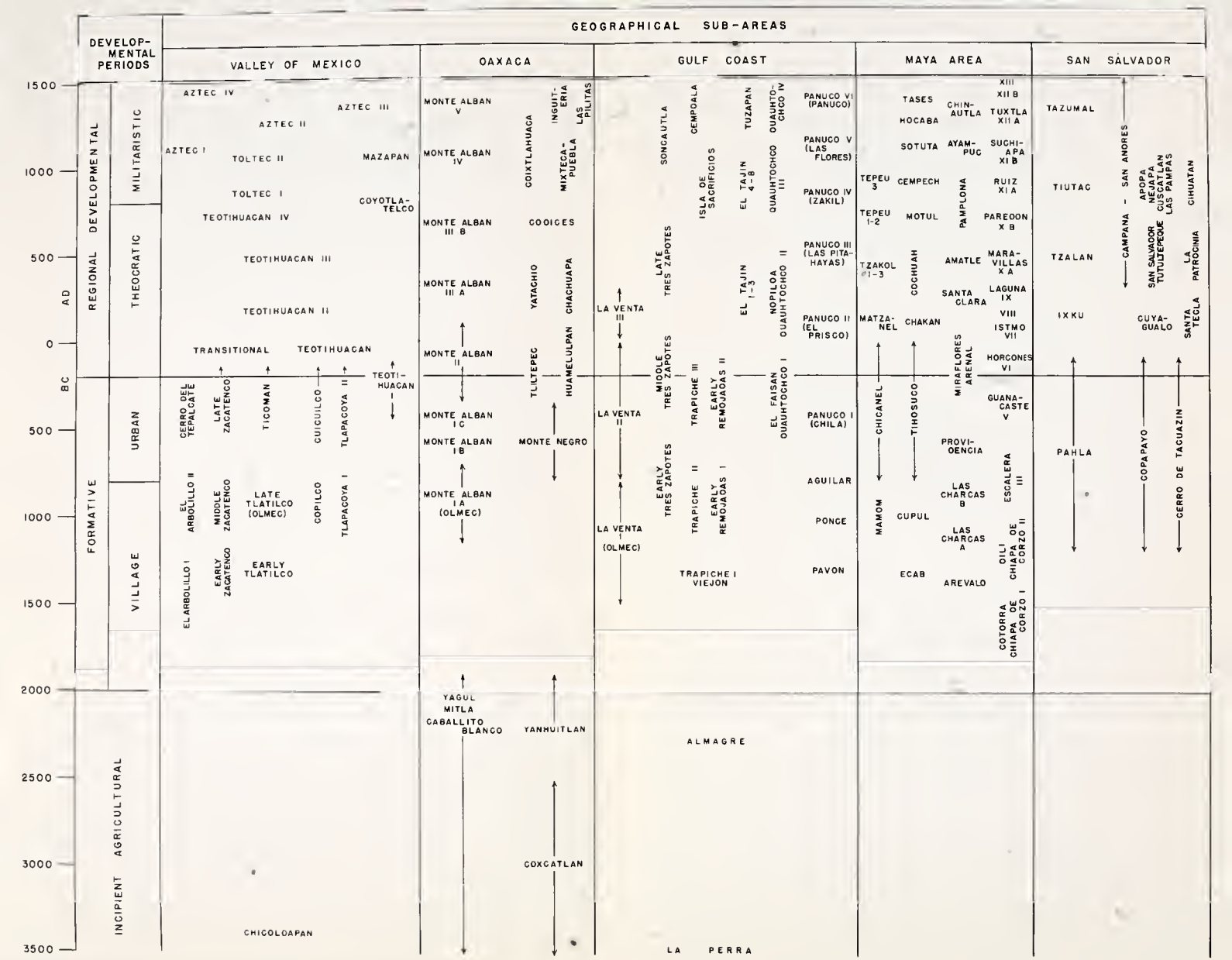


FIG. 4.—Chronological sequences in central Mesoamerica

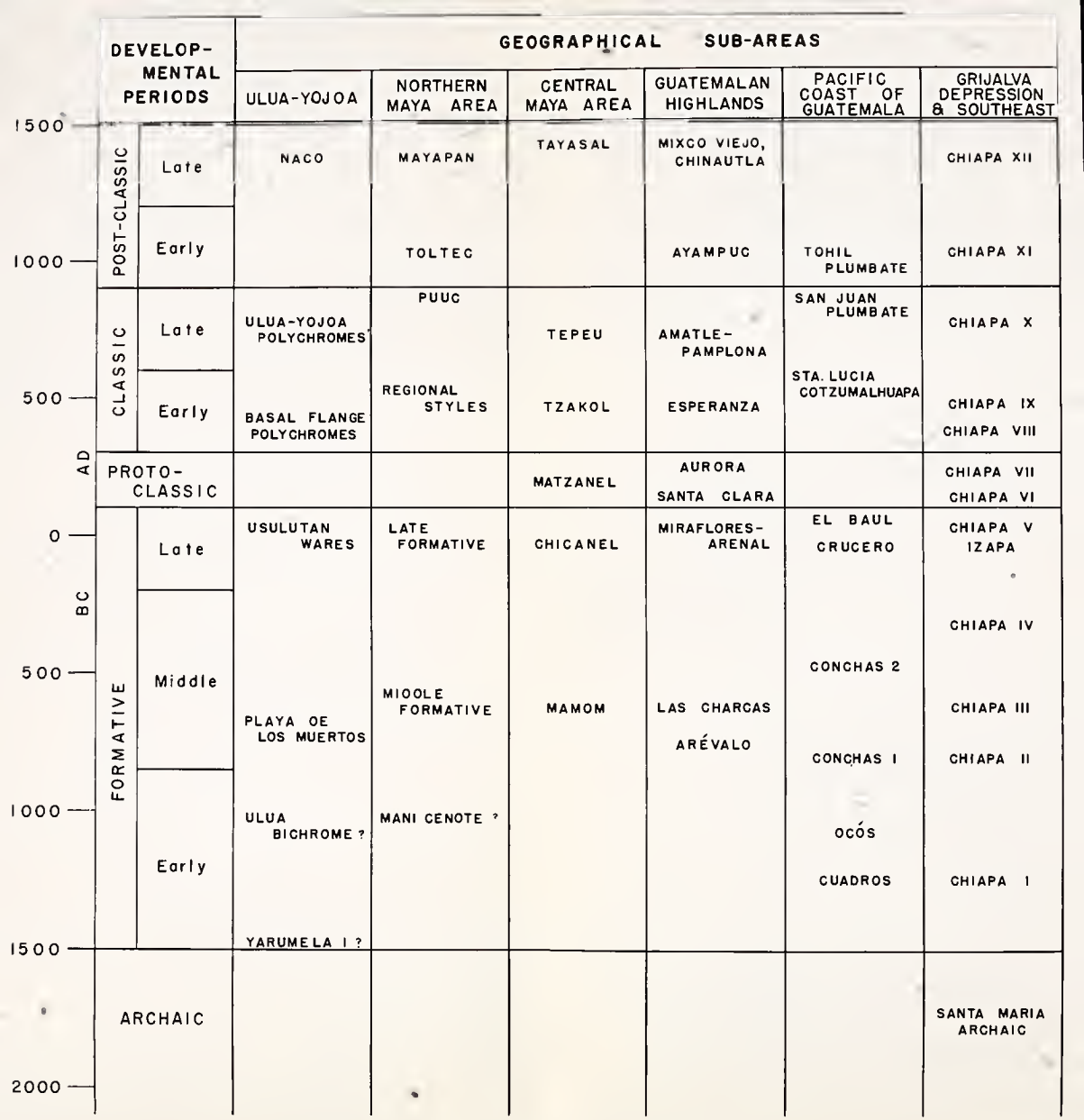


FIG. 5.—Chronological sequences in southeastern Mesoamerica

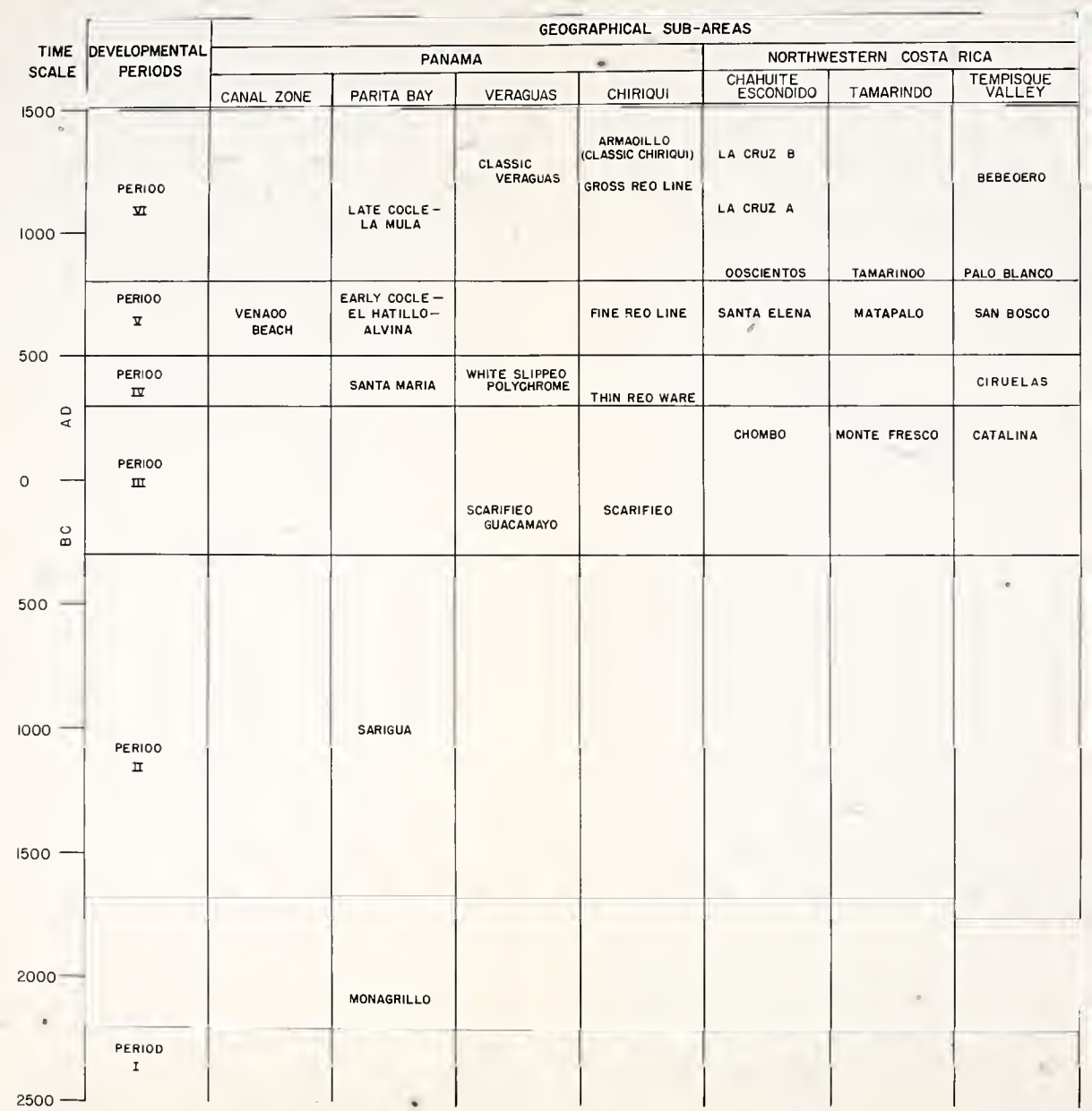
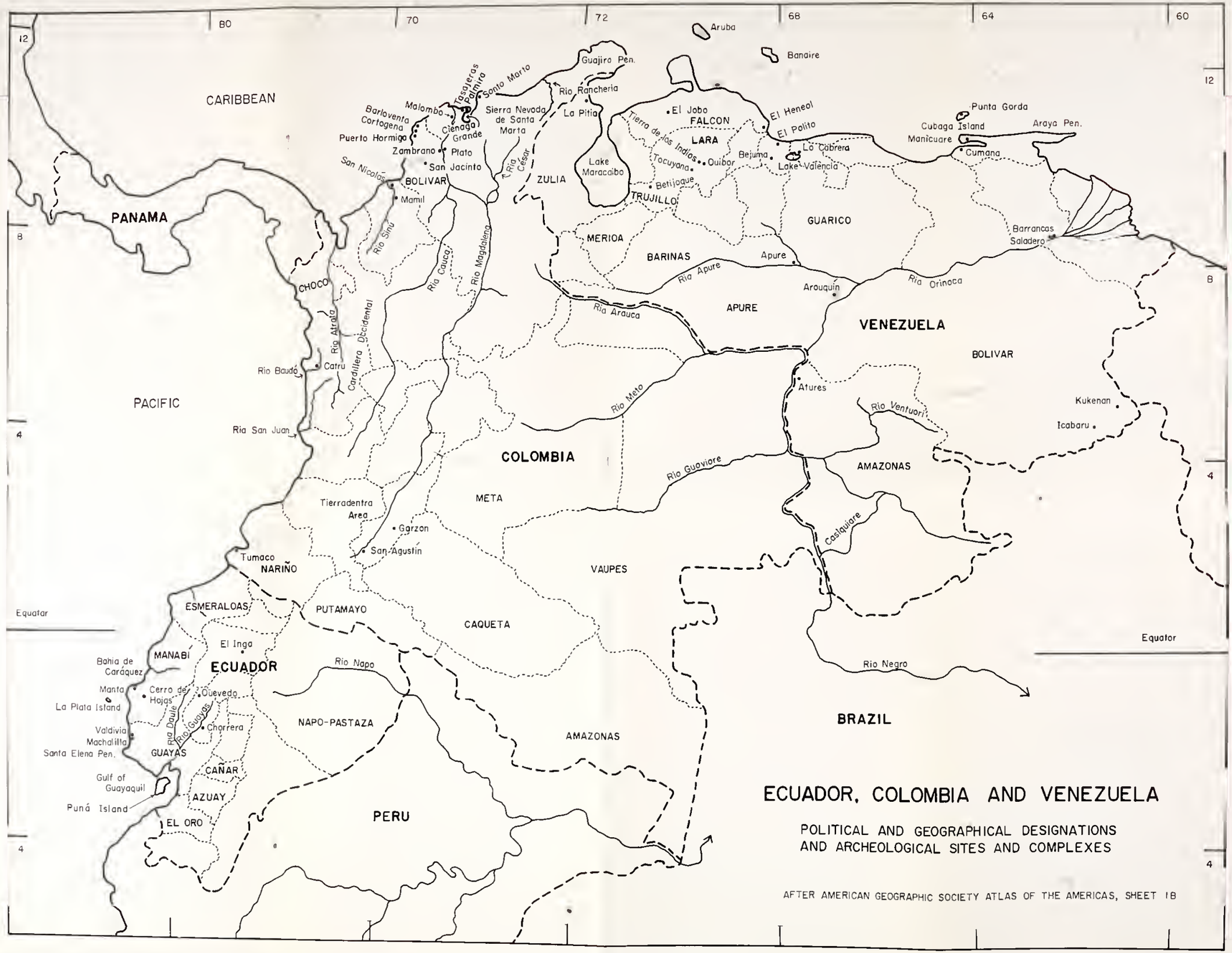


FIG. 6.—Chronological sequences in lower Central America



ECUADOR, COLOMBIA AND VENEZUELA

POLITICAL AND GEOGRAPHICAL DESIGNATIONS AND ARCHEOLOGICAL SITES AND COMPLEXES

AFTER AMERICAN GEOGRAPHIC SOCIETY ATLAS OF THE AMERICAS, SHEET 18

FIG. 7.—Ecuador, Colombia and Venezuela: political and geographical designations and archeological complexes

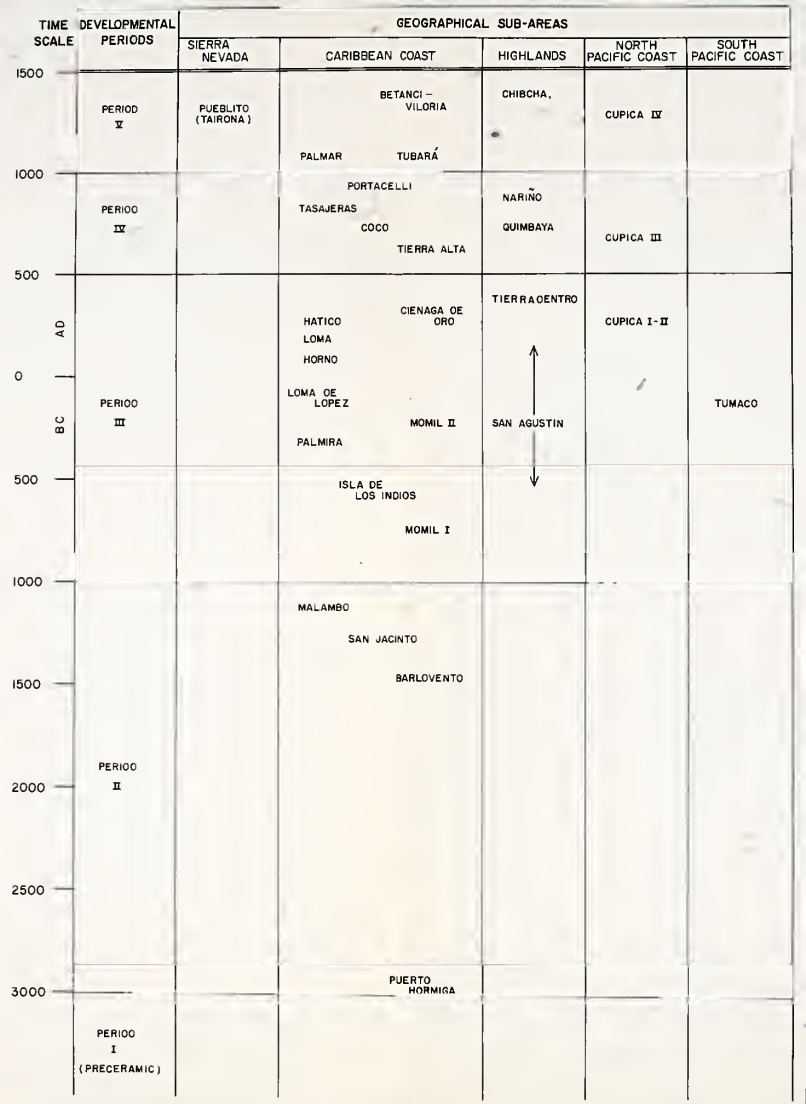


FIG. 8.—Chronological sequences in Colombia (complexes and sites not mentioned in the text have not been included)

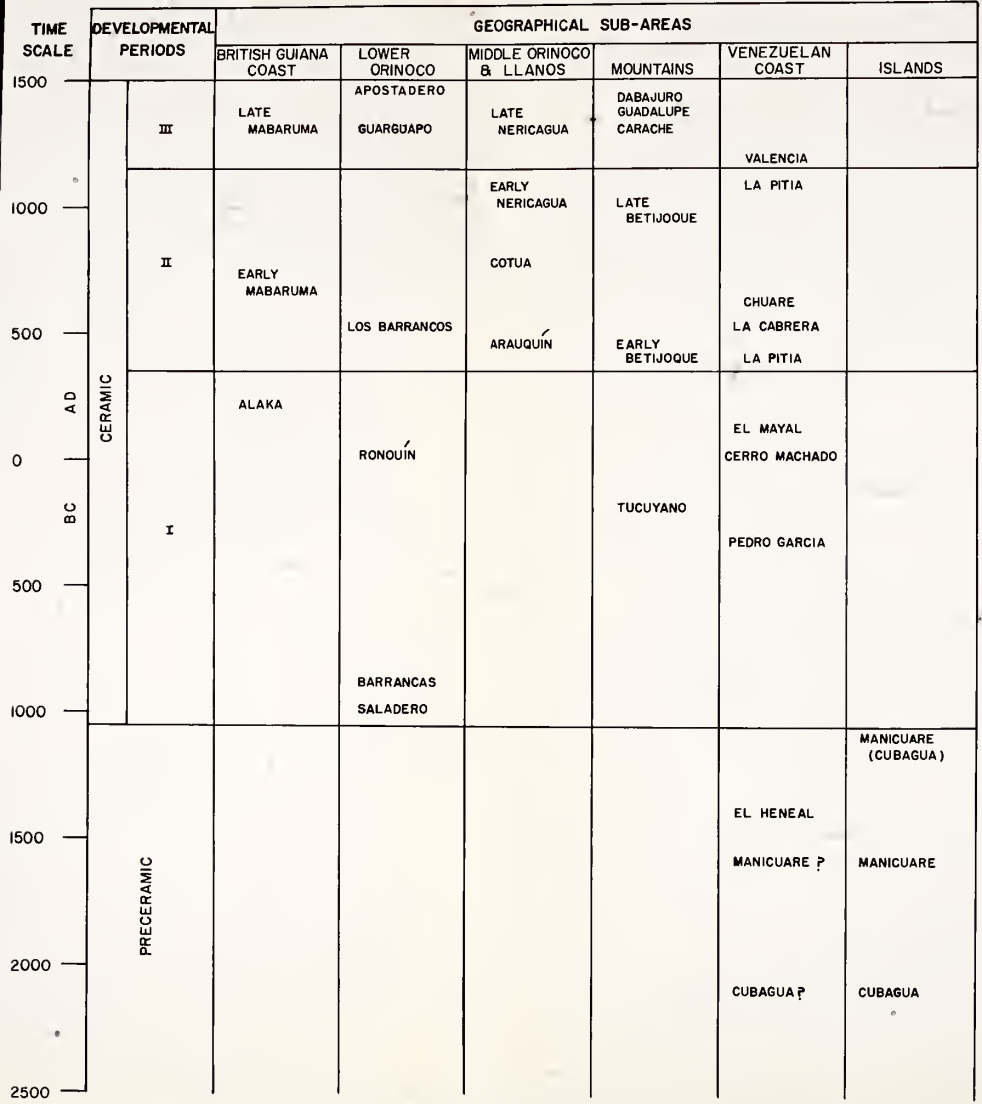


FIG. 9.—Chronological sequences in Venezuela (complexes and sites not mentioned in the text have not been included)

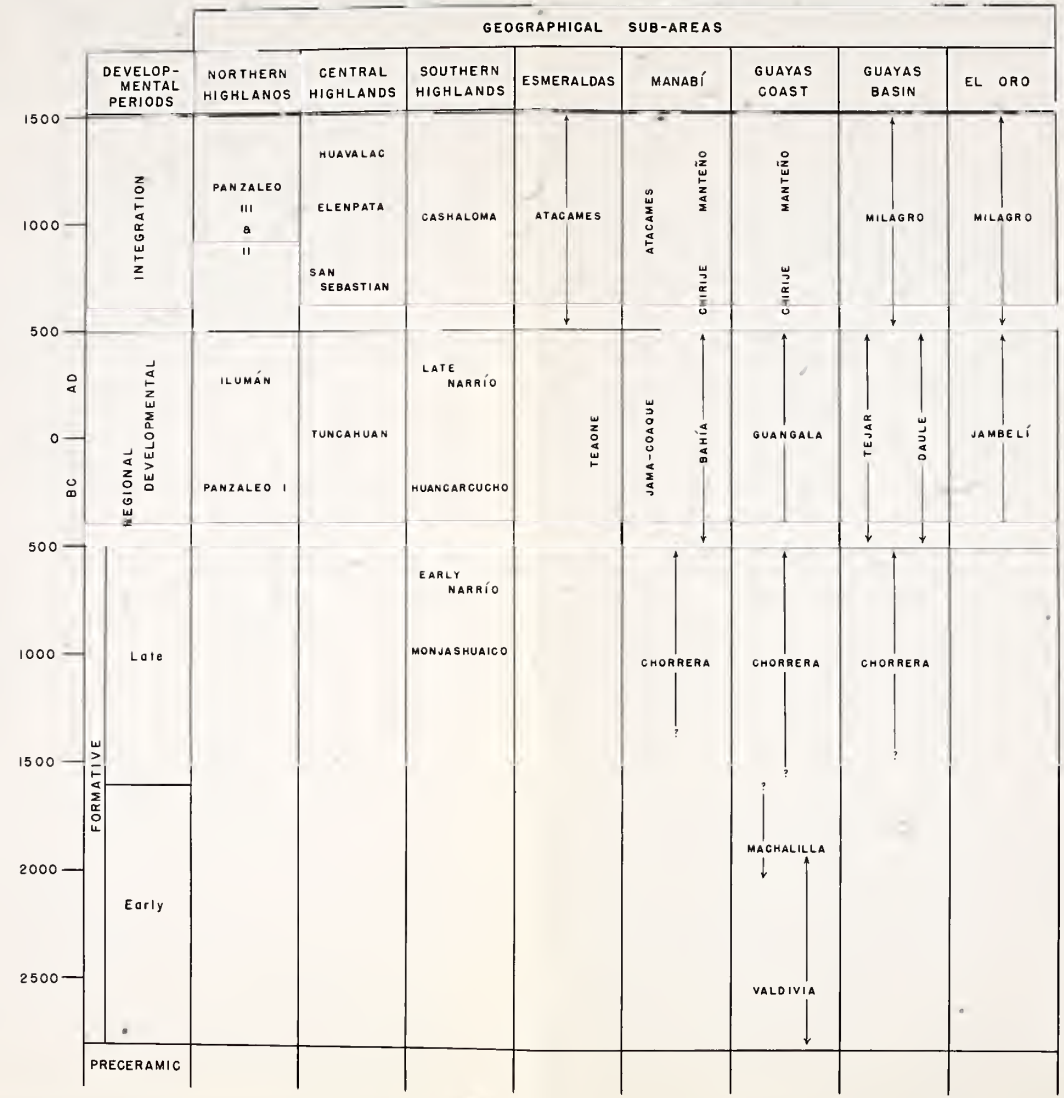


FIG. 10.—Chronological sequences in Ecuador

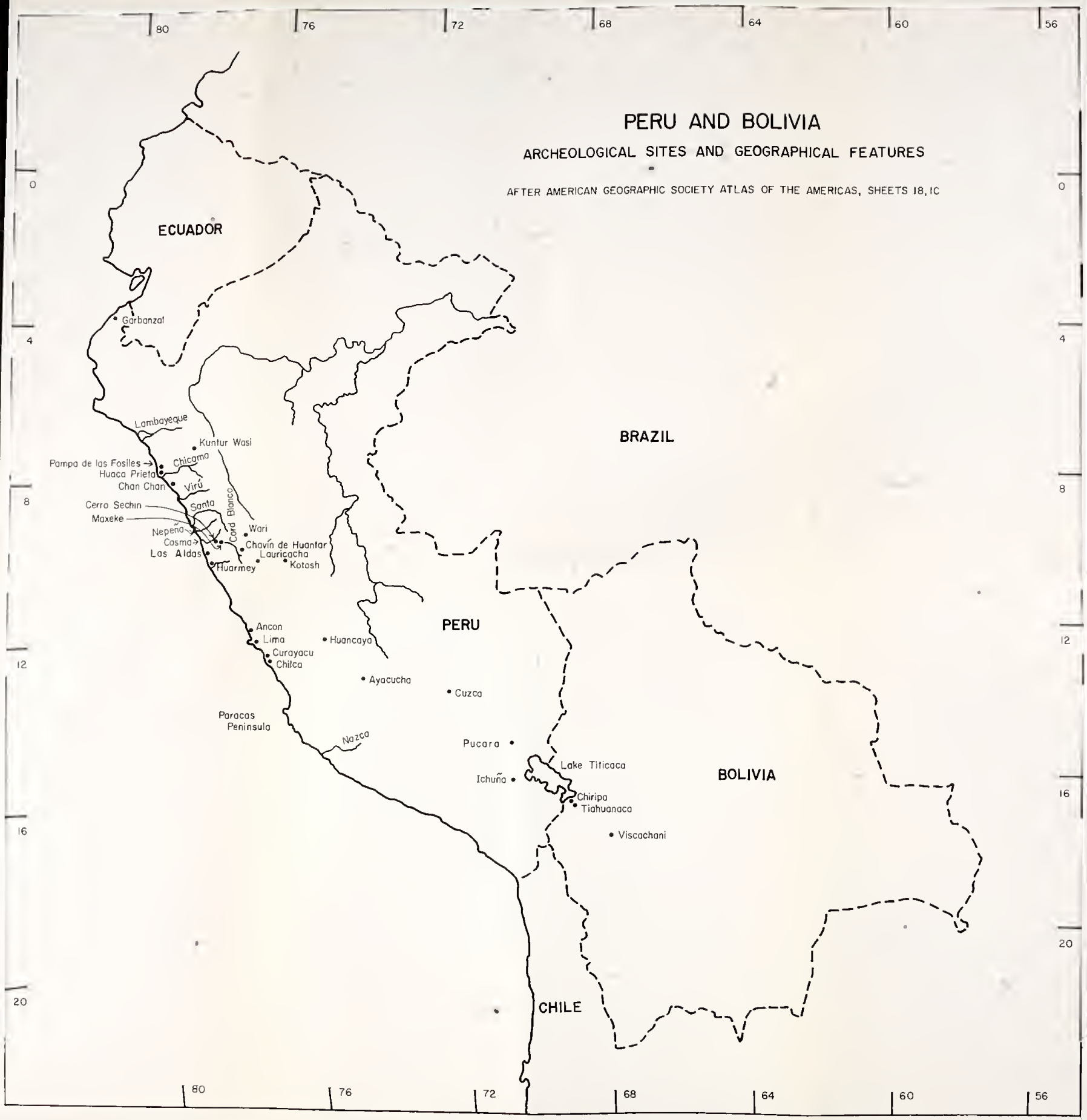


FIG. 11.—Peru and Bolivia: archeological sites and geographical features

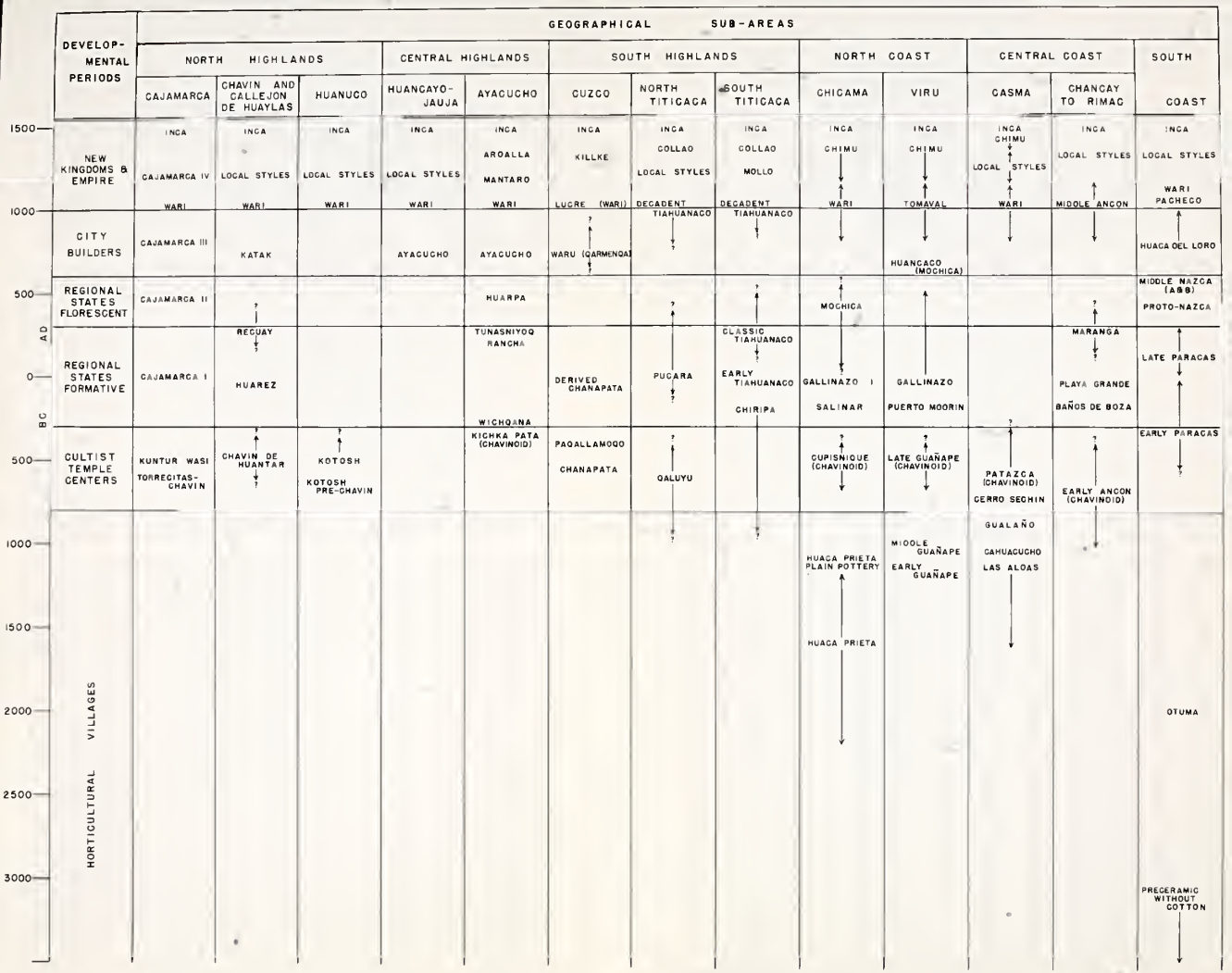


FIG. 12.—Chronological sequences in the Central Andes

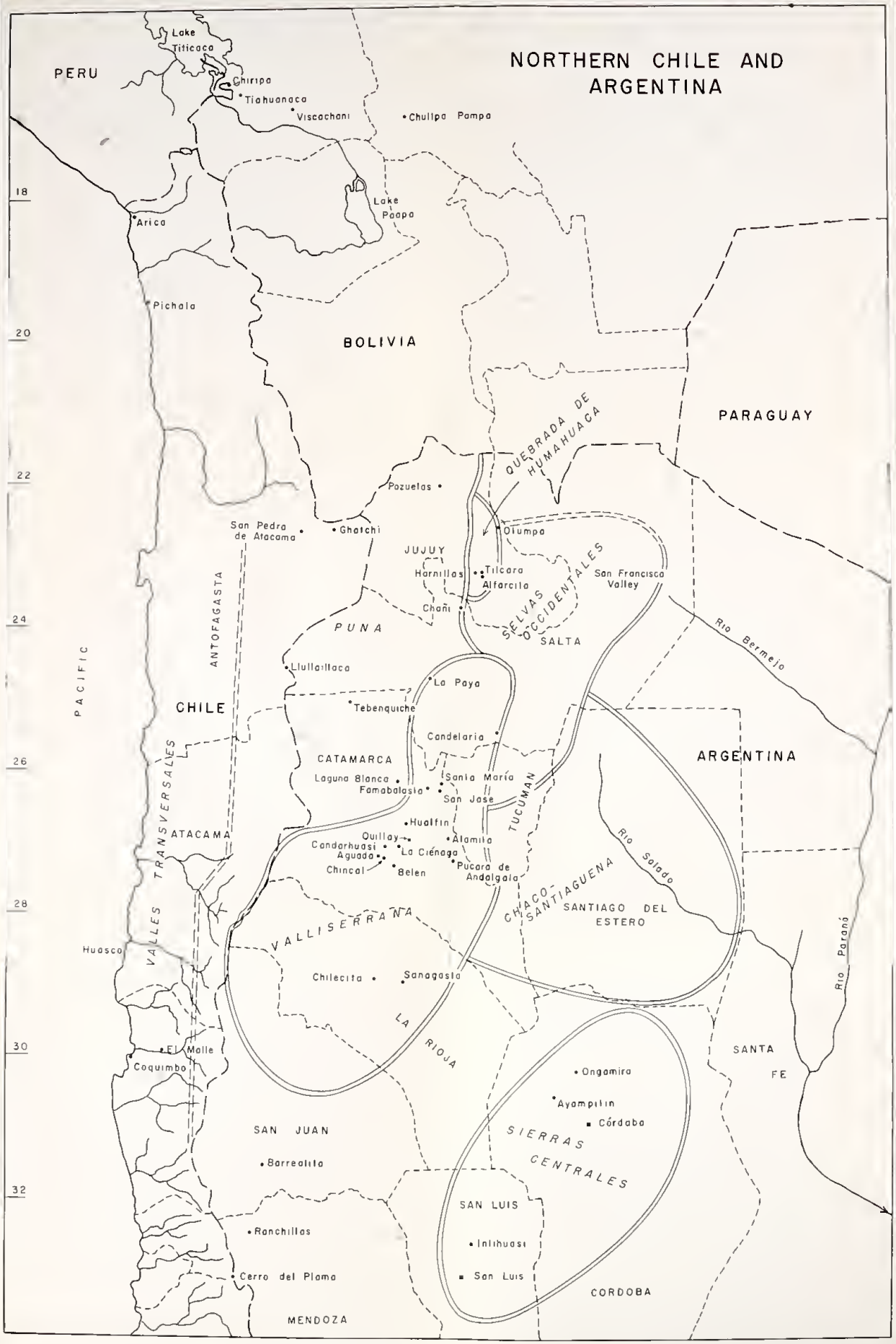


FIG. 13.—Northwestern Argentina and northern Chile: political and geographical designation and archeological sites

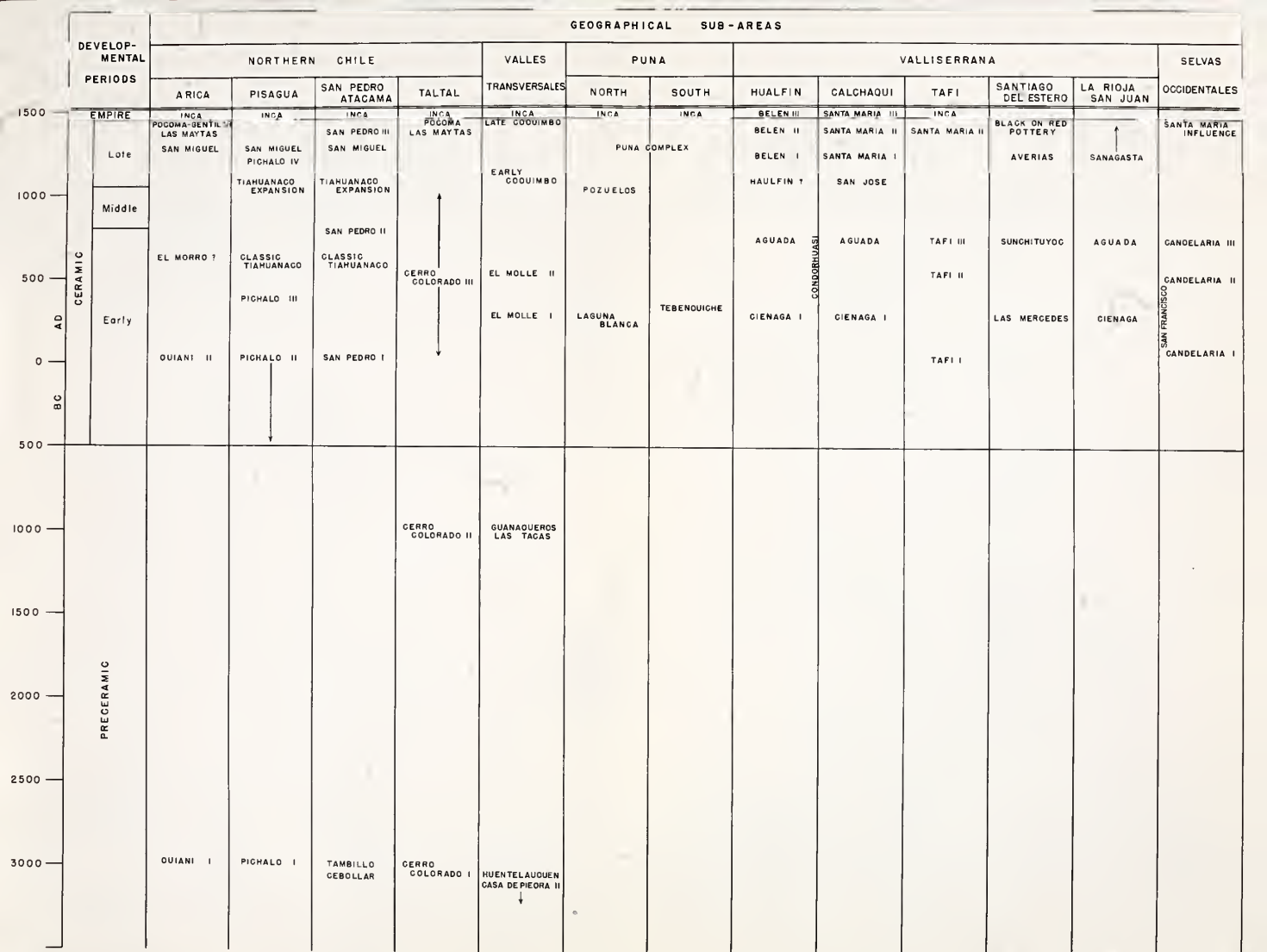


FIG. 14.—Chronological sequences in northern Chile and northwestern Argentina

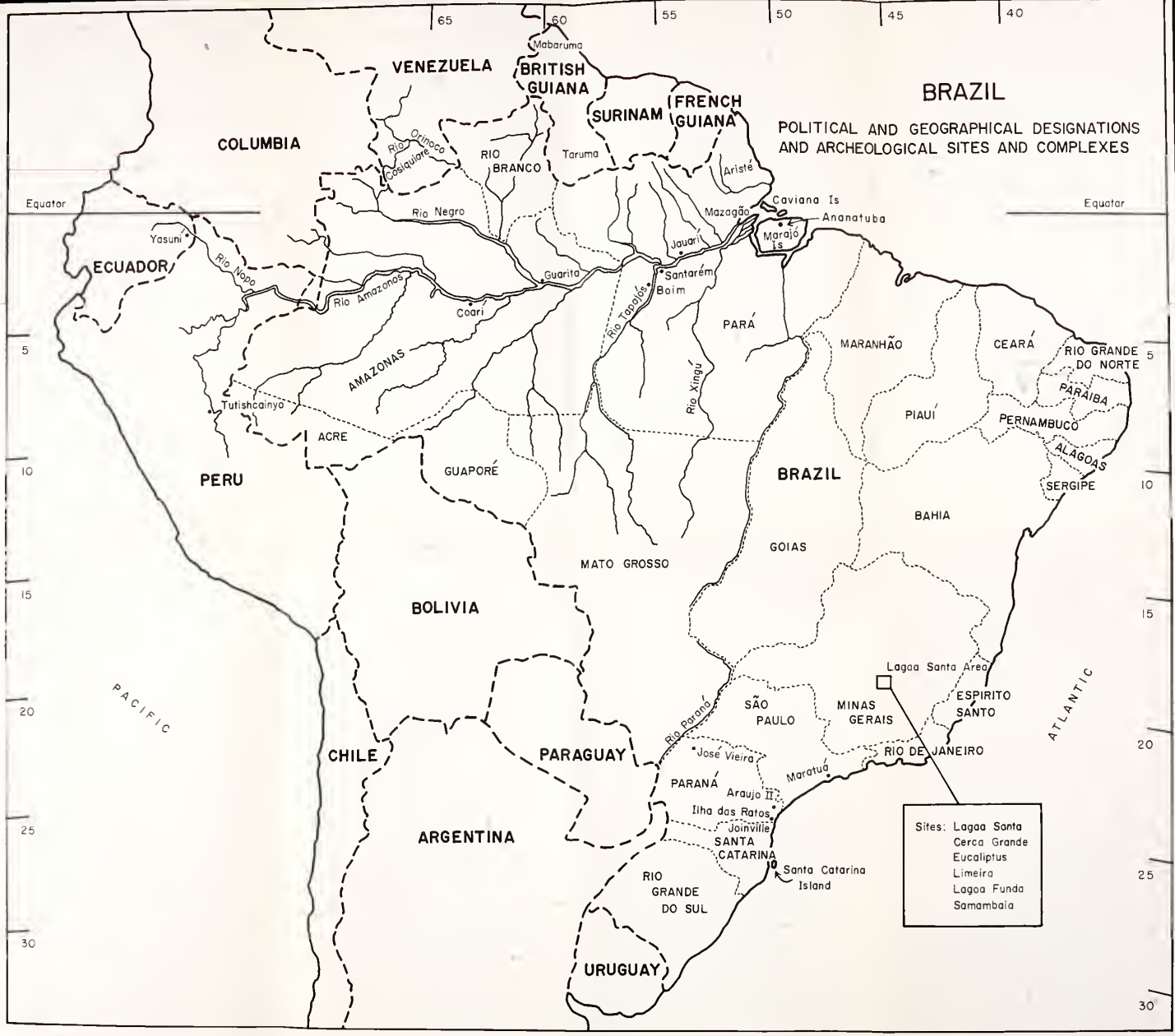


FIG. 15.—Brazil: political and geographical designations and archeological sites and complexes

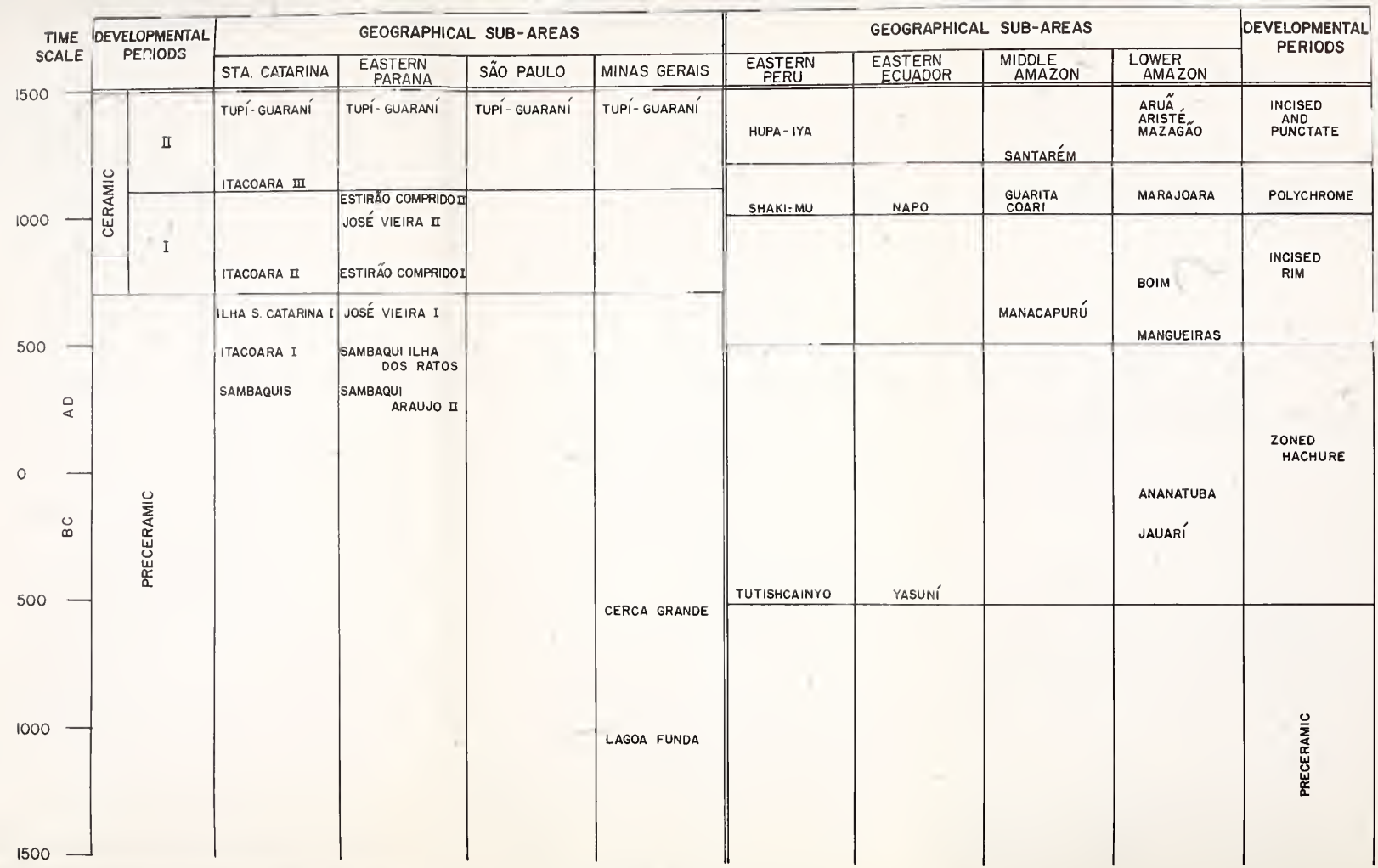


FIG. 16.—Chronological sequences in Brazil