

Speculations on Early Pottery Diffusion Routes Between South and Middle America¹

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ABSTRACT

Differences in vessel shape and decoration in the earliest ceramic complexes of Middle and South America permit the recognition of two generalized ceramic traditions: an earlier one featuring large rounded jars or tecomates, and a later one emphasizing flange-rim bowls and broad-line incised decoration. The earliest sites of the tecomate tradition are shell middens, suggesting primary diffusion in a nonagricultural context. Sites of the flange-rim tradition are associated with tropical forest vegetation, and its initial spread may be coupled with that of slash-and-burn agriculture. The tecomate tradition diffused between 3000 and 1500 B.C. from a source on the coast of Ecuador. The flange-rim tradition spread rapidly between 1200 and 1000 B.C., probably from a center on the Caribbean coast of Colombia.

ALTHOUGH THE PLACE where pottery first appeared in the New World and the paths of its subsequent diffusion are still largely a matter of speculation, recent investigations have provided new evidence that offers the opportunity for reappraisal of these problems. Their solution is important because pottery can be used as a tracer for recognizing paths of immigration or cultural diffusion and not because archeologists believe that pottery is in itself a particularly significant cultural trait. Pottery is ideal for this purpose because innumerable variations in vessel shape and decoration are compatible with its function, permitting the development of diagnostic regional styles. On the other hand, its manufacture follows culturally recognized norms, with the result that traditional forms and decoration tend to be preserved. Fortunately for the archeologist, potsherds are among the most durable ingredients of the archeological record because without this evidence reconstruction of the New World cultural history would be much more difficult than it is.

Reconstruction of the development and diffusion of cultural traits or complexes must take into account two factors: 1) the extent to which similarity in cultural traits is an indicator of common ancestry, and 2) the role of the environment in channeling or limiting cultural development. Since the manner in which these data are interpreted makes a great

deal of difference in the kinds of inferences that different archeologists are willing to make, it is appropriate to review the reasoning on which our own presentation will be based.

The significance of similarity in cultural traits as an indicator of common ancestry has been debated for as long as anthropologists have been involved in the problem of tracing cultural development and diffusion. Unfortunately, there are no simple rules for differentiating between diffusion and independent invention. Traits that in one part of the world or one temporal context serve as reliable indicators of contact are clearly traceable in other places and times to independent origins (cf. Meggers 1964). Efforts to formulate rules based on the complexity of a trait or the number of traits occurring together have failed to produce satisfactory results. Often a criterion of economy can be applied, by which two occurrences in different areas are judged to be related if they are of similar age, and if the existence of communication routes between them can be recognized or inferred. If such occurrences are widely separated geographically and associated with complexes of markedly different ages, difficulties of accounting for both transmission and differential survival make an inference of independent invention seem more economical. In the case of many early ceramic complexes in the New World, geographical distribution is incompletely known and chronological controls are poor, preventing conclusive demonstration that similarities are the result of common origin rather than independent invention.

Examination of the environment in which the cultural complexes occur may shed light on the cor-

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rect interpretation of such traits. Culture is the primary means by which man adapts to his physical environment, and the main difference between man and other animals is the substitution of this cultural means of adaptation for biological ones (e.g., Mead 1964). Of the major categories of culture—technological, social, and ideological—technology, which includes subsistence techniques, is most intimately related to the environment. All environments are not equally suitable for hunting, for shellfish gathering, or for agriculture. To the extent that environments offer different potentialities for human subsistence exploitation, either in terms of wild foods or in terms of agricultural productivity, they limit the level of complexity attainable by cultures occupying them. On the other hand, an environmental setting with high potential for cultural exploitation will not necessarily lead to realization of this potential.

Recognition of this general relationship makes it possible to approach the problem of prehistoric migration from a new direction. One can analyze the ecological setting of a particular culture, isolate its significant features from the standpoint of subsistence, and look for other areas with similar environmental characteristics. If a group with a certain kind of subsistence pattern were to move, it would be expected that it would be most successful if the area colonized closely resembled environmentally the one it left, because techniques for food getting and satisfaction of other basic requirements would require little or no modification. A different environment would make existing techniques less effective, and adoption of new techniques would be requisite for survival. The absence of already resident groups from which such techniques could be learned might lead to temporary cultural regression or even extinction.

Application of these propositions to the situation several thousand years ago makes it necessary to assume either that the present distribution of environmental varieties is similar to that of the recent past, or that parallel changes have occurred in different regions. Although some alteration has undoubtedly taken place during the past 5000 years, there is growing evidence of post-Pleistocene climatic stability in North America (Byers 1968, p. 249). Furthermore, a significant wild food resource is shellfish, and its exploitation leaves a clear imprint on the archeological record.

With these considerations in mind, let us review evidence bearing on the origin and diffusion of early pottery in South and Middle America. Although local chronological sequences extending backward beyond 1000 B.C. are few, the following have been described in sufficient detail to be included in the

analysis:

Orinoco delta, Venezuela (Cruxent and Rouse 1959)

Kotosh, central highlands of Peru (Izumi and Sono 1963)

Guayas Province, coastal Ecuador (Meggers, Evans, and Estrada 1965)

North coastal Colombia

Puerto Hormiga (Reichel-Dolmatoff 1961)

Barlovento (Reichel-Dolmatoff 1955)

Malambo (Angulo Valdés 1962)

La Victoria, coastal Guatemala (Coe 1961)

Chiapa de Corzo region, southern Mexico (Navarrete 1960, Sanders 1961, Dixon 1959)

Tehuacán Valley, central Mexico (MacNeish 1964)

The longest sequences in this list are those for the Tehuacán Valley, where pottery making begins with the Purrón Phase, dated at around 2300 B.C.; north coastal Colombia, where it appears at Puerto Hormiga around 3000 B.C., and coastal Ecuador, with an initial date of 3200 B.C. There are several significant differences between these early ceramics. In the Tehuacán Valley, the initial pottery is very crude, undecorated, and shapes tend to duplicate those of earlier stone vessels (MacNeish 1964, p. 536). At Puerto Hormiga, on the other hand, although forms are few and simple, decoration is varied and often carefully executed (Reichel-Dolmatoff 1961, pls. 1-2). The presence of unusual techniques like finger grooving and multiple drag-and-jab punctation has led to the inference that Puerto Hormiga pottery is an offshoot of the early Valdivia Phase of coastal Ecuador (Meggers, Evans, and Estrada 1965), where form and decoration are even more varied.

Two shorter sequences are significant because they establish the initiation of pottery making in two other parts of northern South America. At the mouth of the Orinoco, the beautifully decorated and competently executed Barrancoid tradition begins around 1000 B.C. This complex has presented a problem of interpretation, since it is far earlier than other known ceramic complexes in eastern Venezuela or the adjacent Guianas (Cruxent and Rouse 1958, p. 17), and because it has no apparent local antecedents. At the site of Kotosh in the central high-

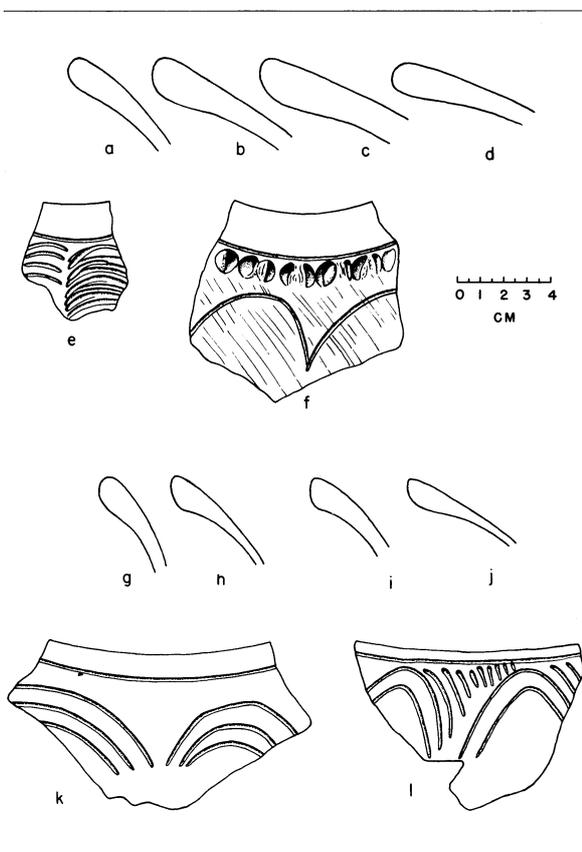


FIGURE 1, *a-l*. Rim profiles and decorative motifs of the tecomate ceramic tradition from Mexico and Peru. *a*. Cotorra Phase, Frailesca Region, Chiapas (after Navarrete 1960, fig. 22d).—*b-d, f*. Preclassic, Chiapa de Corza, Chiapas (after Dixon 1959, fig. 19e, 19d, 42d, 52m).—*e*. Burrero Phase, Santa Cruz, Chiapas (after Sanders 1961, fig. 19).—*g-l*. Waira-jirca Period, Kotosh, Peru (after Izumi and Sono 1963, pl. 149-2, 149-14, 150-25, 149-19, 150-6, 150-37).

lands of Peru, the earliest pottery is also beautifully made and tastefully decorated by incision and punctation. Several carbon-14 dates place its inception about 1800 B.C. (Izumi, pers. comm.).

Superficial inspection of the characteristics of the initial ceramic complexes in these widely separated regions gives an impression of great diversity. Several rather striking similarities occur, however, and these can be used as a basis for speculations about possible affiliations between certain of the complexes. For example, the early pottery in central and southern Mexico, represented by the Purrón and Ajalpan Phase in the Tehuacán Valley and the Cotorra (Chiapa I) Phase in the Chiapa de Corzo region, is characterized by the predominance of a rounded jar or "tecomate," typically with an interiorly thickened or expanded rim (fig. 1, *a-d*). Such vessels may be plain or decorated; decoration is often by

shallow broad incision on the upper exterior, with a series of arcs forming a scalloped band constituting one of the typical motifs (fig. 1, *e-f*). This same combination of vessel shape and decoration occurs in the Waira-jirca Phase, which has the earliest pottery in the Kotosh sequence. Similarities between sherds from these two widely separated areas are so marked, not only in terms of vessel shape and decoration, but also in terms of paste characteristics and surface finish, as to imply a common origin in spite of the distance between them.

The attempt to explain the dissemination of this tradition brings out the fact that these two manifestations of the tecomate complex are more similar to each other than either is to any other early complex yet discovered in the intervening area. Although Barlovento Phase pottery from the north Colombian coast is characterized by a rounded, tecomate-like jar form, the rim is not thickened in the manner diagnostic of the other two phases, and decoration emphasizes zoned punctation covering a more extensive area of the upper exterior surface (Reichel-Dolmatoff 1955, pls. 3-5). A gap of at least 1000 years separates Barlovento from the earlier Puerto Hormiga Phase, however, allowing the possibility that a ceramic complex with characteristics ancestral to Purrón-Ajalpan and early Kotosh tecomate styles may be discovered in the future on the Caribbean coast of Colombia.

This possibility is increased by certain ecological considerations. The earliest South American ceramic complexes, represented by the Valdivia Phase, with an initial date of about 3200 B.C. on the Ecuadorian coast, and Puerto Hormiga on the north Colombian coast, occupy regions now characterized by xerophytic or thorn vegetation (fig. 2). A major subsistence resource of these cultures was shellfish, and the now extinct inlets apparently afforded ideal conditions for shellfish gathering. A dependable "harvest" of this wild food made possible the kind of sedentary community that is compatible with the manufacture of a fragile and bulky commodity like pottery. Consequently, if pottery making became known to such people, they would have been in a position to adopt it. Inland groups could not do so, however, until they had achieved agricultural productivity sufficient to permit sedentary life. It is to be expected, therefore, that pottery making would be later in the interior than on the coasts.

If this hypothesis is valid, it suggests that pottery might have diffused along the coasts before it made its appearance at inland sites. A glance at the map (fig. 2) shows a zone of xerophytic vegetation along the western coast of Mexico. The existence of shell middens indicates that the stable food resource was



FIGURE 2. Distribution of thorn forest vegetation in Mexico, Central America, and northern South America (after Eyre 1963, map 5, 6) and the location of preceramic shell middens (squares) and sites of the tecomate ceramic tradition (triangles).

also available, making the region suitable for colonization by early ceramicists. Unfortunately, coastal survey has not been systematically conducted. One shell midden with simple pottery and an early carbon-14 date of 2440 ± 140 B.C. has been reported at Puerto Marquez (Brush 1965). The Barra Phase with the earliest pottery on the Guatemalan coast estimated to date about 1600 B.C. also features tecomates.

Although similar environmental conditions prevail in a number of places on the Venezuelan coast and were exploited by preceramic shellfish-gathering groups, no sites of this early tecomate ceramic tradition have so far been recognized. Large sedentary preceramic communities on the Peruvian coast also failed to adopt pottery until around 1200 B.C. Since shellfish collecting depends on marine rather than terrestrial conditions, an exclusive correlation with xerophytic vegetation need not be expected. In fact, a shell midden at Monagrillo on the Pacific coast of Panama has produced tecomate forms with incised decoration dating at about 2000 B.C. (Willey and McGimsey 1954). These situations illustrate the fact that the culture-environment relation is not a simple one, and generalized correlations like the one proposed here draw attention to problems rather than explain trait distribution patterns.

At a slightly later time, another cluster of ceramic traits makes its appearance in even more widely separated regions. The most striking representative

is the Barranoid style of the delta of the Orinoco River and northwestern Guyana (fig. 3). An astonishing degree of similarity exists between the well-polished, even, smooth surfaces, the technique and motif of incised decoration, and the broad, everted or "flanged" rim form of bowls from Barrancas (fig. 3, f) and from Playa de los Muertos on the northern coast of Honduras (fig. 4, h, l). Although Mesoamerican pottery continues to be dominated by tecomate forms, the aforementioned traits, plus lobing or more elaborate modeled embellishment of the broad rim, can be detected in pottery of the Dili Phase (fig. 4, a-d, g, i, k), which stratigraphically succeeds the Cotorra Phase at Chiapa de Corzo, and in Olmec pottery from Tres Zapotes, La Venta (Drucker 1952), and San Lorenzo on the Gulf coast of Mexico (fig. 4, e-f, j). Dates assigned to the Dili Phase on the basis of carbon-14 determinations are 1000-550 B.C., which places it contemporary with Barrancas (1000-500 B.C.). The dates of 1200-800 B.C. for the Olmec culture at San Lorenzo (Coe, Diehl, and Stuver 1967) are slightly earlier. Tlatilco flourished between 983-568 B.C. (Drucker, Heizer, and Squier 1959, p. 263).

While at first glance, the second phase in the Kotosh sequence seems to possess few of these features, closer inspection suggests that much of this impression comes from the fact that here in the central Andes the flange has been displaced from the rim to a position on the exterior wall (fig. 5, a-b).

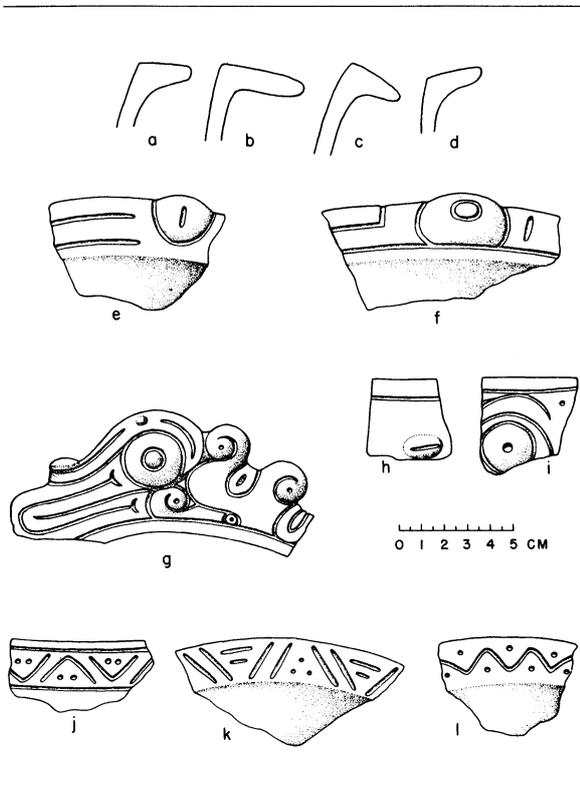


FIGURE 3, *a-l*. Rim profiles and decorative motifs of the flange-rim ceramic tradition from eastern Venezuela and northwestern British Guiana. *a-e*, *b*, *j-l*. Mabaruma Phase, British Guiana.—*f*. Barrancas style, Orinoco delta (after Cruxent and Rouse 1959, pl. 93-16).—*g*. Los Barrancos style, Orinoco delta (after Cruxent and Rouse 1959, p. 1. 97-6).—*i*. Ronquin style, middle Orinoco (after Cruxent and Rouse 1959, pl. 86-3).

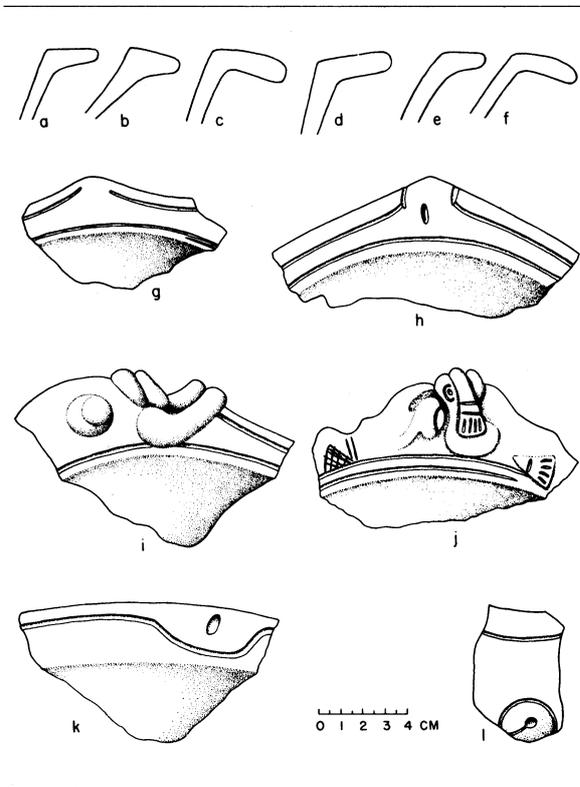


FIGURE 4, *a-l*. Rim profiles and decorative motifs of the flange-rim ceramic tradition from Mesoamerican sites. *a-c*, *g*. Preclassic, Chiapa de Corzo, Chiapas (after Dixon 1959, fig. 40a, 15b, 6b, 15f).—*d*, *i*, *k*. Dili Phase, Frailesca Region, Chiapas (after Navarrete 1960, fig. 25j, 26c, 26b).—*e-f*, *j*. Tres Zapotes, Veracruz (after Drucker 1943, fig. 20f, 20h, 33; no scale in original).—*b*, *l*. Playa de los Muertos, Honduras (after Strong, Kidder and Paul 1938, pl. 10h, 10p).

In this position, however, it continues to bear incised decoration in techniques and motifs resembling those occupying the rim top in the other complexes (fig. 5, c-d). Several carbon-14 dates indicate that these elements make their appearance at Kotosh around 1000 B.C. (Izumi, pers. comm.).

When sites with pottery of the "flange-rim" style are plotted on a vegetation map, several interesting correlations emerge (fig. 6). First, it is clear that environments sought by the bearers of this ceramic tradition were totally different from those preferred by the earlier pre-agricultural ceramicists. Instead of thorn forest, the vegetation is tropical rain forest or tropical semi-evergreen and deciduous forest. Since this habitat is suitable for slash-and-burn cultivation, there seems little doubt that the flange-rim style was spread by agriculturalists, and further that agriculture must have been of the slash-and-burn variety. Plant cultivation in forests requires totally different

techniques from those developed in the more arid highland environment of central Mexico, where water management was the principal problem. The contemporaneity of initial dates for pottery of the flange-rim style in Mexico and eastern Venezuela suggests that when a technique was developed for exploiting the tropical forests agriculturally, rapid dispersal of sedentary groups into this environment took place.

At the present time, the earliest member of this tradition seems to be the Malambo Phase on the lower Magdalena River of Colombia, with a single carbon-14 date of about 1200 B.C. (Angulo Valdés 1962). Although the ceramic complex is considerably different from the slightly earlier Barlovento Phase, several features are reminiscent of Puerto Hormiga pottery, including incision terminating in punctuation and modeled or relief ornamentation. Another significant difference between Barlovento and Malambo lies in subsistence pattern. Barlovento

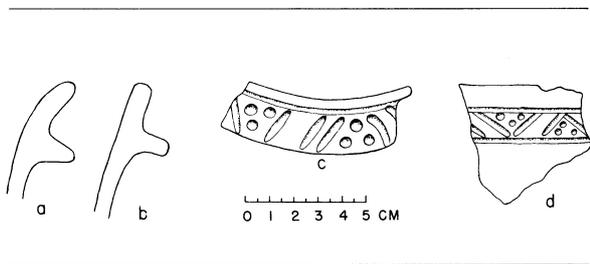


FIGURE 5. Rim profiles and decorative motifs of the flange-rim ceramic tradition from Kotosh, Peru (after Izumi and Sono 1963, pl. 146-28, 146-30, 146-36, 145-25).

represents a shellfish-gathering group, while at the Malambo site seafood is clearly subordinate in importance to agriculture. The Malambo culture can thus be seen as a product of the fusion of independently developing ceramic and agricultural technologies. Although its habitat is outside the tropical forest, the typically xerophytic vegetation is mitigated by the riverine situation. In such a transitional area, the steps might be taken that would culminate in a technique for invading the tropical forest with cultivated plants.

In view of the intermittent distribution of tropical forest areas along the Venezuelan coast, it is noteworthy that ceramic complexes with Barrancoid features (La Pitía, Hato Nuevo, El Palito, Rio Guapo, El Mayal, Irapa) are closely correlated with this type

of vegetation. Although Cruxent and Rouse (1958 p. 247) have considered them late introductions from the lower Orinoco area, it seems likely that they may be relicts of the spread of the style toward the east.

As in the case of the spread of the earlier tecomate tradition, a large portion of the area suitable for dispersal is unknown archeologically. If the hypothesis is correct, intensive investigation of the Caribbean coasts of Honduras, Nicaragua, Costa Rica, and Panama, which appear to offer the appropriate environment, should produce sites that served as "stepping stones" in the spread of slash-and-burn agriculture and the flange-rim pottery tradition. It would also be expected that these traits should be absent or late on the Pacific coast of Mexico and Guatemala. Although too little is known for a definitive judgment, the flange-rim tradition is not represented in the well-described coastal Guatemalan sequence (Coe 1961).

Fascinating as these speculations are, it is important to emphasize that they are only speculations. In spite of the tremendous progress made in New World archeology during the last decade, large areas remain almost totally unknown. Even if the reconstruction of two independent paths of ceramic diffusion, an early one along the Pacific coast and a later one along the Caribbean coast (fig. 7), should prove generally correct, the mechanics of the spread is likely to be extremely complex. We hope, how-

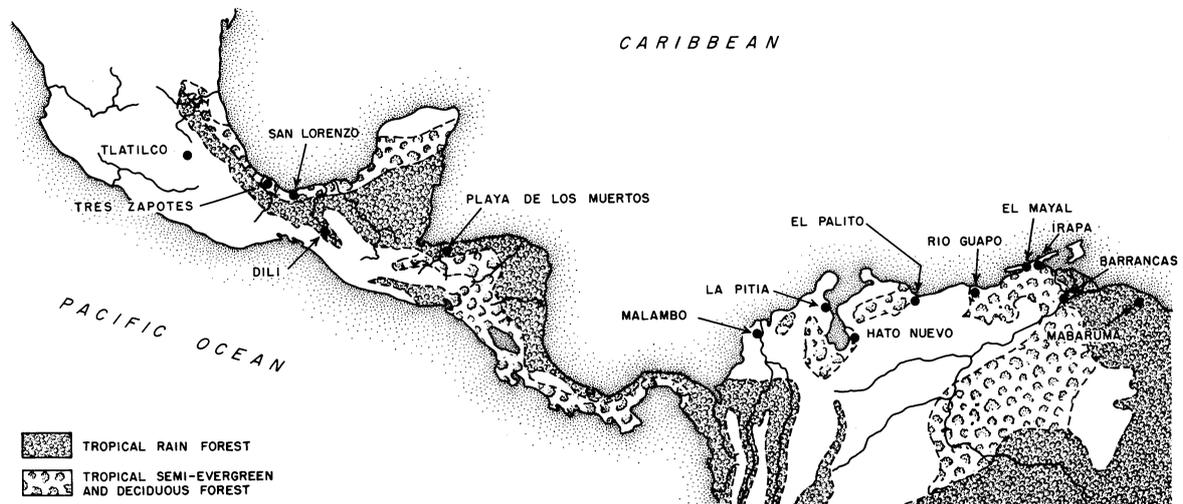


FIGURE 6. Distribution of tropical rain forest and tropical semi-evergreen and deciduous forest vegetation in Mexico, Central America, and northern South America (after Eyre 1963, map 5-6), and location of sites of the flange-rim ceramic tradition.

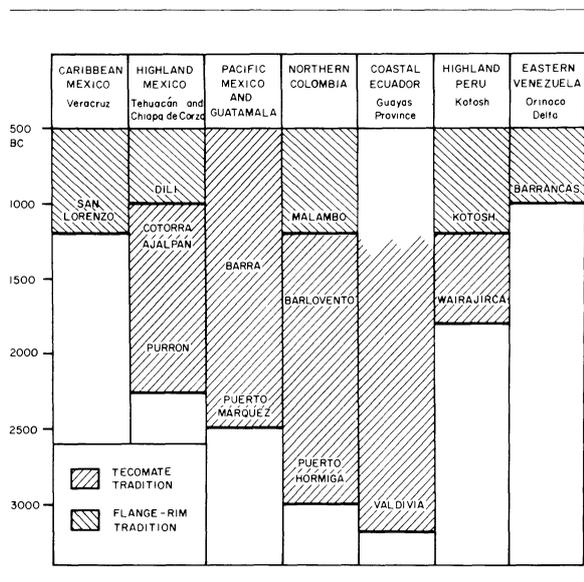


FIGURE 7. Chronological position of the tecomate and flange-rim traditions in 7 regions of Middle and South America.

ever, that calling attention to the possibility of two such movements will stimulate fieldwork along both coasts of Central America, since the results will not only shed new light on the early diffusion of pottery, but will permit more adequate evaluation of the role of interamerican diffusion in stimulating cultural development throughout nuclear America.

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