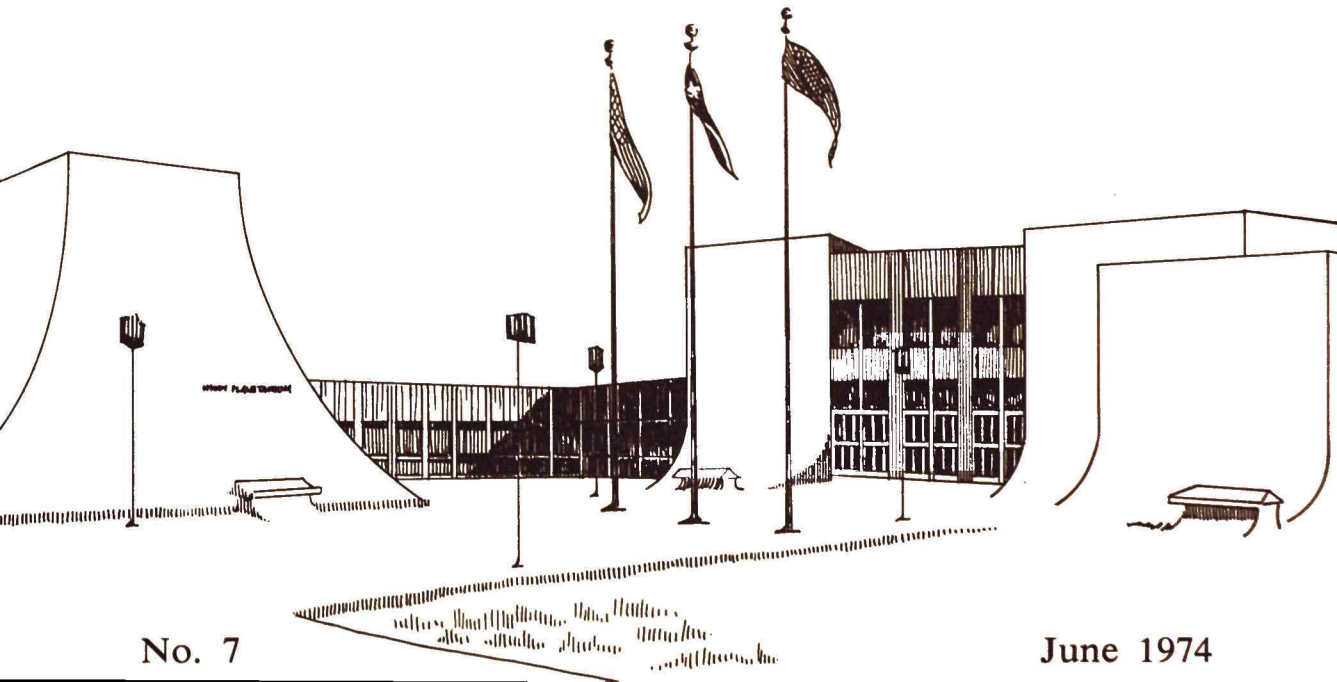


SPECIAL PUBLICATIONS
THE MUSEUM
TEXAS TECH UNIVERSITY

Art and Environment in Native America

Edited by
Mary Elizabeth King and Idris R. Traylor, Jr.



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PREFACE

This volume is comprised of papers presented on 29 October 1971 in a symposium on "The Prehistoric Arts of Arid America," sponsored by the International Center for Arid and Semi-Arid Land Studies as a part of its biennial Festival of the Arts, and conducted in The Museum, Texas Tech University.

When we first conceived this symposium, we envisioned it as dealing with the relatively unexplored relationships between climate and art in the arid regions of the Americas. The participants were drawn from the disciplines of anthropology and art history, but both of the art historians have often worked within an anthropological framework, and at least two of the anthropologists have a strong interest in art history. When we began to receive the papers, it became apparent that the authors had not perceived the topic in quite the same way as we, and we found that our original title was thus no longer entirely suitable.

Nonetheless, the papers all have certain distinctive unifying elements. One aspect of unity, elaborated upon by Di Peso in his commentary (p. 9), involves iconography. Each of the papers is to some extent an exercise in the interpretation of non-Western iconography. Another unifying element is that of aridity. The papers treat the art forms of regions that are arid or semiarid—the southwestern United States, the Mexican Plateau, and northern México, or regions where the cultural patterns were affected by proximity to arid regions. Finally, the most important unifying thread is that of the environment, in the broadest sense of the term. All of the papers involve relationships between native American art and environment—the natural environment, the social environment, or the spatial environment. A direct relationship obviously exists between art and environment: the artist can only interpret and dramatize what he can see or imagine; he can only utilize available materials. In a treeless environment, for example, artists are unlikely to depict trees or to carve wood. But this is only a beginning. The indirect effects of environment on art are equally important. It is with these less obvious effects that we are concerned in this volume.

So-called "primitive" or non-Western "art" has been approached from a number of directions, including the relationship between art and social structure (Wolfe, 1969; Fischer, 1961). Within a society, art may fulfill many functions—it may serve as a means of communication, as a device for social reinforcement, and as an aesthetic outlet, among other things. Maquet (1971:16) noted that much of the art in non-Western societies, and in Western societies before the Renaissance, has very definite functions that are not primarily aesthetic, but rather are "political or ritual, magical or familial, didactic or religious." He pointed out that primitive art is in fact a creation of Western society, and he distinguished between "art by destination" (*i.e.* products intended to have an aesthetic function) and "art by metamorphosis" (products with specific nonaesthetic functions treated as art by members of another society).

Thus, in the first paper, Brody basically is treating material that is "art by metamorphosis." He presents analyses of form in prehistoric Southwestern kiva murals and Navajo sandpaintings and a discussion of what occurs when these

aboriginal creations are utilized by an alien culture. Brody's concerns are almost exclusively with the spatial relationships and social milieu of these paintings—both valid subjects for investigation by art historians and by anthropologists, and no less properly environmental in orientation than studies of natural environment.

Kelley deals directly with both natural environment and art. The importance of the Chichimecs and of the concept of the Gran Chichimeca, which he refers to metaphorically as the "Chichimec sea," has often been underestimated. These nomadic hunting and gathering peoples in the arid and semiarid areas of the southwestern United States and northern México were in contact with the urban, agriculture-based society of the Mexican highlands. Kelley believes that Mesoamerican influences from the south extended even into the Pecos River area of Texas and thence into the Plains. The environment of the Gran Chichimeca, often too dry or too difficult to farm, and with few physical barriers to movement, encouraged mobility of peoples and made cultural transmission of traits more likely. This almost classic culture contact situation seems to have been of the type Bateson (1972:68-69) described as "reciprocal," in that it existed over many decades with no genuine signs of hostility. The Chichimecs of the north had materials both wanted and needed by the Mesoamericans, and the Mesoamericans had much to offer in return. The interchange is reflected in the arts and crafts of both groups.

It has been suggested (Bateson, 1972:147) that "art . . . has a positive function in maintaining 'wisdom', *i.e.*, in correcting a too purposive view of life and making the view more systemic." This "world view" function of art, of course, points up a more subtle, but highly important, relationship between art and environment. World view is also expressed in myth, and myth is often directly related to the more concrete arts. Art is further an expression both of the conscious and the unconscious mind. Access to the unconscious mind can be achieved through dreams, religious experience, and through such stimulants as alcohol and drugs. Furst's paper provides us with an important key to the use of psychotomimetic drugs by prehistoric, historic, and contemporary man in Latin America. He begins with a summary of the investigations of hallucinogens and their uses among Latin American Indians, and then proceeds to discuss the prehistoric and ethnological uses of plant and animal derived drugs. The intricate interrelations of flora, fauna, the physical world, the mystique of psychotomimetic drug use, and their expression, art, make this paper an important contribution to our understanding of man's utilization of his environment. Recent studies of cross-cultural studies (Furst, 1972, for example) of hallucinogens are also providing us with insight into the mythology, iconography, and the world view of man through time.

Quite a different approach to the relationship of art and environment is taken by Kubler, who has presented an elucidation of the ways in which iconographic details can provide us with insight into many aspects of man's culture. His analysis of the Palenque tablets, dealing particularly with the personages depicted thereon, is an object lesson in the amount of information that can be obtained from a restricted amount of material. If all Maya sculpture were to be subjected

to such scrutiny and analysis, our knowledge of the culture would be vastly increased. The natural environment of México provides Kubler with clues to the identity of the personages. One he sees as a native of Palenque, the other as coming from the colder climate of the Mexican highlands. The presence of a Mexican highlander in a classic Maya context has additional implications for the relationships between these two areas of high culture, and specifically between Palenque and Teotihuacán.

Cultural interactions within different climatic zones are also the subject of Lathrap's paper, although he is dealing with the South American west coast, the Andean highlands, and the adjacent tropical forest. His area of inquiry is one which previously has been largely neglected, and to which he brings new and provocative insights. He has done much more than discuss the great art styles, their origins, and their interrelationships; he has provided us with an important argument for the primacy of root-crop agriculture in lowland South America. Lathrap's most revolutionary suggestion is that a group of Tropical Forest root-crop farmers was the parent society for both Olmec and Chavín. The expansion of his argument offers solutions for the problem of why Mesoamerican and Andean civilizations emerged when and where they did. One may disagree with Lathrap's hypothesis, but it cannot be ignored. It will undoubtedly prove to be one of the most important recent contributions to the body of theory concerning cultural evolution in the New World.

Grieder's work at the highland Peruvian site of Pashash reflects a more traditional, basically descriptive approach to archaeology. Pashash is one of a small group of known, early sites that lie in the temperate highlands between the coastal desert and the tropical forest zone. The people who built these sites occupied a unique ecological and cultural area, one in which all of the great Andean art styles originated. The occupation of Pashash spans a crucial developmental period from Chavín to Recuay and is characterized by striking artistic developments in pottery and sculpture.

Each of the contributions to this volume make clear the fundamental truth that components of culture, such as art, religion, technology, economy, and social structure, are inextricably interwoven, and, further, that these must be examined in terms of their environment to be understood fully.

Before concluding our comments we wish to acknowledge the encouragement and invaluable assistance we received in the preparation of the symposium or in the publication of its proceedings from Dr. Grover E. Murray, President of Texas Tech University; Dr. Orlo E. Childs, Vice President for Research and Special Programs; Dr. Frank B. Conselman, Director of the International Center for Arid and Semi-Arid Land Studies; Dr. J. Knox Jones, Jr., Dean of the Graduate School; and Dr. Craig C. Black, Director of The Museum. We are particularly indebted to Dr. Dillard C. Carter, Associate Dean of the Graduate School and Managing Editor of Academic Publications, for his counsel and professional expertise.

Finally, we believe that this volume should be dedicated to Xochiquetzal, the Aztec deity who, in one manifestation, was the patroness of artisans and craftsmen. At the close of the festival that began on her Feast of Flowers the artisans

and craftsmen, costumed as animals, danced carrying the tools of their trade. This celebration of the mingling of art and nature is singularly appropriate to our topic.

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COMMENTARY

The papers in this volume offer discussions by six authorities on various facets appertaining to the Indian arts of the Americas. At first glance, the individual papers present a potpourri of seemingly unrelated subjects, which, though dealing with a common theme, are an unmeaningful whole. However, this is not true, as I discovered after seriously reading the various papers and asking myself several questions. What is art? and secondly, what is iconography? Art has been variously defined as the sum of all those truths and skills acquired by a people in their search for culture and, in essence, is a reflection of the total social mind. As Seneca so aptly put it, "All art is but imitation of nature" (Seneca, 1917) and, I might add, an imitation of nature as seen through the eyes of a particular society. Unfortunately, many of us are much too apt to think of art in the gross terms of its physical products, which are wrought as obtainable and skillfully-executed pictures or sculpture. The transference of these objects from one society to another and their ensuing shifts in evaluation are discussed by Brody in his paper concerning dry painting and its relationship to pre-Iberian kiva murals.

Further, these physical facets are used, in part, by Grieder and Kelley to reconstruct the historical continuum of a people as, for example, the pre-Iberian art of the Peruvian highland culture of Pashash and the Chichimecan Preconquest Chalchihuites art tradition of northern México.

Lathrap and Kubler manipulate their physical data in such a way as to move a step closer to the intangible essence of a people's inner feelings and, interestingly enough, both use the term "iconography," which involved the second question concerning the definition of art. Lathrap refers to the similarity of particular physical representations of natural things, which are not what they seem to be in Chavín and Olmec art, whereas Kubler is concerned with a particular set of Maya depictions uncovered at Palenque. One uses these elements to hypothesize the migration of peoples and ideas, whereas the other reflects upon a particular historical event. Herein lies the crux of the meaning of "iconography." To wit, Christian iconography involves the use of a large and miscellaneous series—vegetable, animal, and mineral objects—which the Church through the time of its existence has applied allegorically to specific historical events. These are understandable only if one possesses a properly oriented dictionary of Christian signs and symbols. Sign refers, of course, to representative art as an indicator of an individual historical event in the life of a saint; but a symbol differs in that it is a visible allegory of that intangible essence, or theme, of an idea (Ferguson, 1954). As such, it has a much deeper meaning to the initiated, but necessarily remains a senseless hodgepodge to the uninitiated. Consequently, it is only a well-indoctrinated Christian who can discuss intelligently the differences between, say, Roman Catholic and Greek Orthodox iconography of the 18th century.

Kubler and Lathrap both realize that these symbols and signs came into existence because of an historical event that involved a real thing or person and, through time, have become a symbolic part of a people's mystique. This is the

very substance of iconography. Thus, a pair of severed mammary glands served on a platter become the identifying sign of the Sicilian martyrdom of St. Agatha; and a pair of eyeballs lying on a salver are the mark of the day St. Lucy of Syracuse plucked out her eyes and sent them to her lover because he so admired them. What would these signs, or, for that matter, the Christian symbol of the fish, mean to an unindoctrinated alien? And by the same token, what would an alien's iconographic pattern mean to a devout Christian? The participants are well aware of these cross-cultural difficulties and yet are honestly endeavoring to produce symbolic religious dictionaries of other peoples' art, which define the aliens' allegories and ponder upon the natives' metaphorical implication. How complicated can this be? Take the cayman as a sign. This tropical American crocodilian differs from other species in its dental pattern and overlapping ventral scutes. It is related to that horrible seagoing crocodile that often grows to lengths of 20 feet, and has relatives that, in historic times, lived as far north along the Pacific coast as western México, in the province of Sinaloa (Hammond and Rey, 1928:88). Other relatives of these creatures are also used as allegorical signs throughout the world; for example, by the early Venetian Christians who placed a statue of an ugly crocodile under the feet of St. Theodore; the Egyptians, who revered the animal; and the Mesoamericans, who used this sign as their First Day symbol, Cipactli. In each case, the sign means something (see Selser, 1963:11-12; Beyer, 1965:431-435) quite different from the Chavín concepts. Now, if one adds the unreasoning potential of Furst's research concerning hallucinogens to this already complicated facet of folk culture, we cannot help but admire the scholarly quests of iconographic meanings that have been recorded by such notables as Herman Beyer (1965), Edward Selser (1963), Alfonso Caso (1958), and the gentlemen who have contributed to this volume.

To them our salute and tidings of good hunting, for theirs is the trying game of extracting the realities of historical truths from unreasonable symbolic data.

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IN ADVANCE OF THE READYMADE: KIVA MURALS AND NAVAJO DRY PAINTING

JACOB J. BRODY¹

Formal analysis is a useful tool for determining the mechanisms by which expressive or decorative effects have been attained as well as for discovering the internal logic of any given art work. It is an objective means for dealing with ethnic or other exotic arts and has the capability for aiding historical and cross-cultural studies. Further, if an intimate relationship between form and content can be assumed, it follows that the formal character of an art work will have meaning for the society that uses it, and that analysis of form will always have the potential for specifying aspects of the symbolic value that an art may have to its users. Formal analysis is also an essential tool for defining and resolving problems that deal with the rediscovery of ethnic arts and their relocation into the matrix of modern society. Obviously, in their new setting, original content value is generally irrelevant so that efforts to discover the meanings given to these arts by their new users are in order and must depend in great part on an understanding of their formal values.

This paper will explore aspects of the propositions stated above. Two comparable classes of ethnic art will be examined: the art of archaeological horizons, the original content value of which must be inferred though its formal characteristics have the appearance of being self-evident; and the art of contemporary ethnic groups, the content value of which is well documented, whereas formal characteristics are, again, apparently self-evident. For the former, kiva wall paintings of the American Southwest, and, for the latter, Navajo dry paintings from the same region, will be discussed. In both cases the emphasis will be on description and generalizations concerning the forms of these arts in an effort to ascertain whether fresh insights concerning their subjective values to both their original and their new audiences might be inferred.

The adoption of the art of all times and places by the industrial societies of the modern world since about 1900 has been an eclectic phenomenon without parallel in the history of world art. This event has been documented (Goldwater, 1967; Otten, 1971:20-36) and will only be summarized here. Popular acceptance of ethnic art as art occurred first as a by-product of the revolutionary art movements of the late nineteenth and early twentieth centuries. Except for the art of Japan (and by extension, China), and perhaps of Precolumbian Middle America, the forms of exotic arts had no fundamental effect on the developing forms of modern world art. Until recently, these were almost the only exotic arts analyzed and criticized by Western critics and historians in the same terms and with the same care as was given to analysis and criticism of European art. As example, the exotic space of Japanese painting was shown to be a convention that

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placed far things high on a picture surface so that the picture plane was preserved even while the illusion of deep space was created. An essential element of the revolution in European painting of the last century was rejection of the use of illusionistic spatial conventions that appear to penetrate the canvas and destroy the physical character of the two-dimensional surface. Preservation of the picture plane became a fundamental principle of many modern artists, and Japanese painting was one of several models used in the search for solutions to this problem.

In contrast, most other exotic arts were discussed in romantic, scientific, impressionistic, or formally nonanalytical terms. As Goldwater (1967) has demonstrated, the formal influence that ethnic art had on modern art movements was essentially superficial. As an example, while German Expressionist painters made occasional references to the art of Africa or Oceania, they were influenced not at all by the visual character of these arts. The ferocity and brutalism of technique developed by these painters was antithetical to the basic formal qualities of their models and is evidence that they used ethnic art not for what it was but for what they thought it should be (Goldwater, 1967:104-142).

Even the briefest examination of the relationships between exotic world art and Western art shows that only those exotic arts that have been of consequence to the development of the forms of Western art have been treated by Western analysts in Western terms. For the others, while they have been removed from ethnographic museums and placed in art galleries, their status as art remains separate but not quite equal. They continue to be examined and analyzed seriously as ethnographic rather than as art objects, with the result that the art producers and audiences of the West continue to treat them in romantic and nostalgic ways.

Goldwater (1967) made an excellent case for acquisition of ethnic art being one of a set of nostalgic, return-to-the-primitive responses by the people of industrialized, urbanized, monolithic states. It is the exotic character of these arts, their subject matter, and assumptions about the people who produced them that permit their adoption into a novel world as a sort of interrupted sequence.

From another perspective, ethnic art can be seen as an element in the mainstream of modern art, its modern meaning implied by Andre Duchamp's invention in 1913 of the readymade—a manufactured object, unaltered, placed in an artistic environment, with its discoverer recognized as its creator.

All in all the creative act is not performed by the artists alone; the spectator brings the work in contact with the external world by deciphering and interpreting its inner qualifications and thus adds his contribution to the creative act. (Duchamp, 1957, *in* Lebel, 1959:78)

Duchamp's readymades—a bicycle wheel, a urinal, a snow shovel (*In Advance of the Broken Arm*)—are at once iconoclastic, amusing, cynical, profound, and disturbing, especially in their implications concerning the role of art in the modern world.

Unlike Duchamp, spectators of the ethnic arts, creators of ethnic readymades, seem generally unaware of any psychic or formal values that their discoveries might have for their own world. Analysis of ethnic art has value for ethnographic and historical studies and is of importance to these disciplines, but it often

bears the same relationship to ethnic art in its new matrix as a discourse on the technology of snow shovels bears to *In Advance of the Broken Arm*. Ethnographic and historically oriented analyses are of little assistance in interpreting the “inner qualifications” of ethnic art to the “external,” the contemporary, world.

The one characteristic that ethnic arts carry with them as they are shifted from one matrix to another is their form. By studying the forms and generalizing about them, it may be possible to decipher these arts in terms that will be useful to the ethnographer and the historian, as well as to their new nonprofessional audiences. An attempt to make such generalizations follows.

KIVA MURALS

Watson Smith (1952) has documented the history of prehistoric Southwestern mural paintings. The most elaborate of these are known from four Pueblo IV sites dating from about AD 1250 to about 1550, and lesser murals have been found at other sites. There is evidence that the art continues to the present. Earlier wall paintings are also known, but formal and iconographic differences between these and paintings of Pueblo IV and V are so great as to imply different traditions rather than a developmental sequence (Brody, 1970).

The original functions, uses, or reasons for making these paintings are problematical. Almost nothing is known of contemporary Pueblo use of wall paintings so that analogy is hardly available as a logical tool for resolving these problems. Assumptions have been made that the paintings served somehow as altars (Smith, 1952), and it has been suggested that they were used for curing and also in connection with initiation ceremonies. Equally problematical is identification of the artists. In recent years, wall paintings have been made by individuals selected for their recognized artistic ability (Zia informant), and there is visual evidence that professional artists at Zuñi made wall paintings earlier in this century (Smith, 1952, fig. 36). However, prehistoric wall paintings showed remarkable identity of skill and formal conservatism during the first 250 years of the art, suggesting that artistic individuality was sublimated, and that selection of painters was made for reasons other than, or in addition to, artistic ability.

Virtually all of the known paintings were made on the interior walls of ceremonial chambers, which were usually subterranean. Paints were limited to a narrow range of mineral and vegetable pigments applied with brushes of hair or vegetable materials or with fingers and hands. Subject matter consisted mainly of ceremonial activities or motifs. After unknown periods of use, paintings were destroyed by being plastered over, and different pictures often would be superimposed on the same wall surface.

Kiva paintings were first reproduced shortly after the initial discovery of the murals at Kuaua in 1935. Colored reproductions have appeared since in periodicals and in the monographs by Smith (1952) and Dutton (1963). Most are small in scale, made from photographs or hand-drawn copies of fragmentary originals; of the published reproductions only the silkscreens by Louie Ewing in Smith (1952) approach the character of the originals. Several full-scale replicas have been made, and a few original paintings have been placed on view in museums.

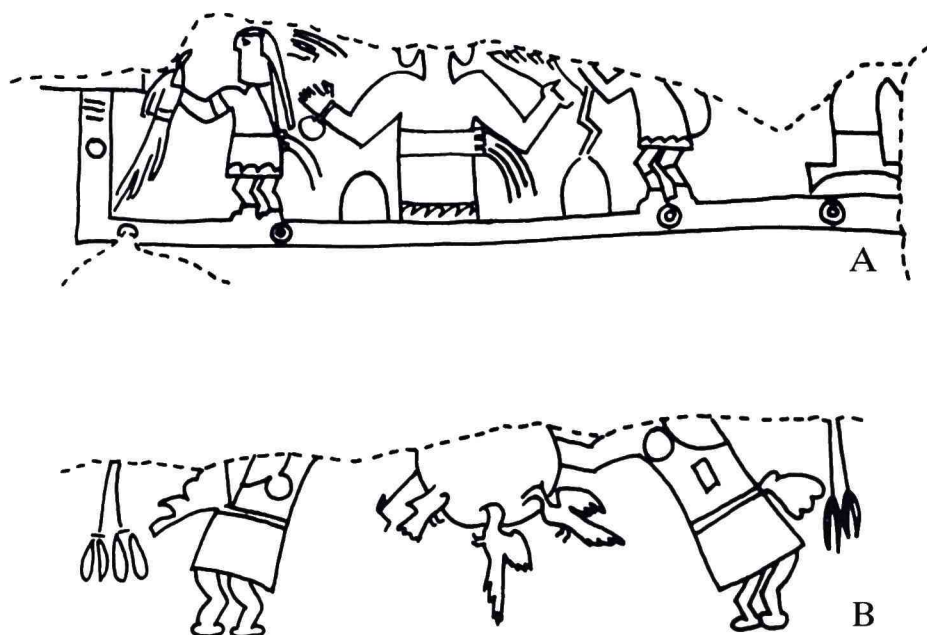


FIG. 1.—Layout groupings of Awatovi kiva murals: A, layout group I, figures organized within framed space (Smith, 1952, fig. 81b); B, layout group II, figures organized in unframed space (Smith, 1952, fig. 52a).

Motifs from paintings recovered from Awatovi were used by the Santa Fe railroad as dining car decorations; some from Pottery Mound were used by the Cochiti painter, Joe H. Herrera, as inspirations for his contemporary paintings. Beyond this, kiva murals have had little impact as a modern art.

Analysts of kiva murals have tended to concentrate on their iconographic and historical aspects. Both Dutton (1963) and Smith (1952) have identified specific figures in prehistoric murals with known personages of modern Pueblo ceremonial usage, and Dutton has attempted to correlate the narrative paintings of Kuaua with contemporary Pueblo mythology. In a general way, motifs have been identified with water, the kachina cult, fertility, and hunting, and some, such as feathered serpents, jaguars, and macaws, have been traced to foreign points of origin. These identifications are made by analogy or by reliance on informants several hundred years removed from the originals. Thus there is never any assurance that a contemporary symbolic value is identical with the original symbolic value of a given motif.

Visual analysis has been confined to descriptions of several compositional layouts by Smith, essentially as an aid to establishing chronology and sequence, and to an analysis made in an earlier paper (Brody, 1970) that dealt briefly with compositional and spatial organization. My intent was to demonstrate that the visual organization of a narrative painting created the illusion of mythic space inside a room, thus using analysis of form to suggest expressive intentions. Further explications of this order require generalized descriptions of the visual character-

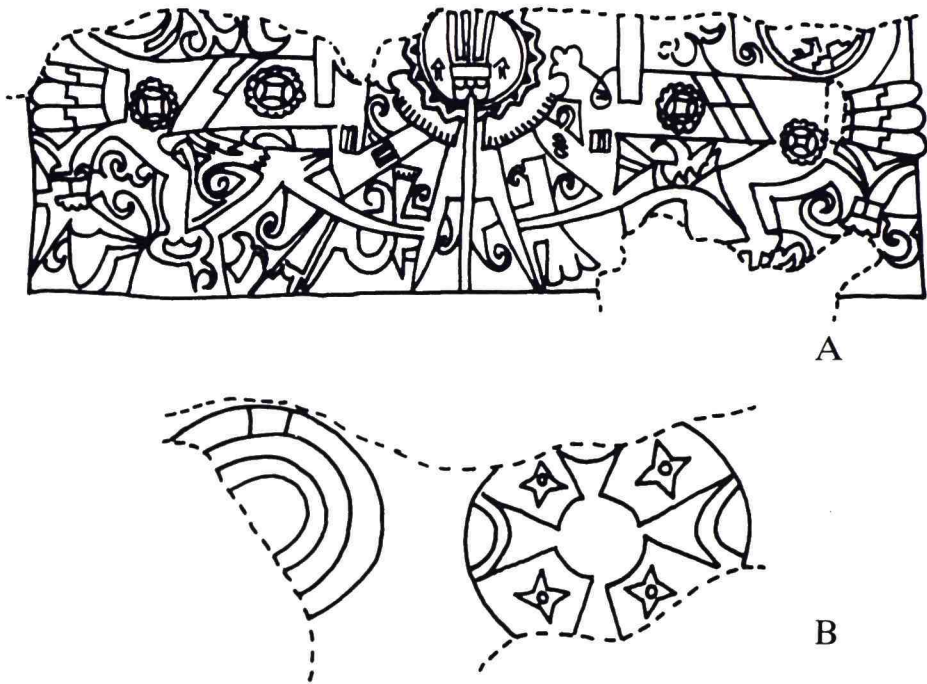


FIG. 2.—Layout groupings of Awatovi kiva murals: A, layout group III, surface treated as unified field within framed space (Smith, 1952, fig. 49a); B, layout group IV, surface treated as unified field in unframed space (Smith, 1952, fig. 40a).

istics of the paintings. They are placed on a vertical surface, the picture area is defined by a lower and occasionally an upper border, and the presence of side borders varies from none, to two, to none needed when paintings occur as continuous panoramas occupying two, three, or four walls (Figs. 1B, 2B). Color masses are placed on the surface as distinct, bordered units; several contiguous color masses sharing a contour line may be combined into a motif. Uncolored areas are usually left as blank, "background" space. Value and hue contrasts are kept within a limited range and color masses are applied with no attempt to create illusion of volume. Motifs are usually shown full face or in profile. The patterning of color masses and motifs varies in complexity from placement of single motifs that dominate an assigned space to placement of a multitude of forms either interacting or isolated from each other on an assigned surface. Massing of interlocked forms can become so complex that background space disappears (Fig. 2A). The range in formality of patterning varies from having all motifs symmetrically organized in their space to having them scattered haphazardly over the surface. Some motif organizations seem to conform to narrative rather than visual requirements, and the rhythmic movement appears to be a function of iconographic organization.

Certain nonpictorial factors act as determinants of visual characteristics. Among these is the placement of paintings on relatively large-scale walls sur-

rounding relatively small interior spaces in generally dim light. Although original viewing conditions are unknown, it may be assumed that paintings were seen with other people in the room and under mental and sensory stimulations that would tend to enhance ritual content.

Some generalizations can be made. By isolating iconographic motifs the painting system stresses their identification. Organization of picture space appears to be determined by iconographic needs. Hieratic figures occur in isolated, bordered spaces and tend to be rigidly symmetrical. Complex emblems occur in isolated situations and are symmetrical. Unbordered and panoramic paintings are almost always narratives. The unreal nature of the background space and nonvolumetric motifs create a mythic space. The formal unities suggest that the paintings express a harmonic ideal analogous to that of modern Pueblo religious systems. The expectation that compositional systems might provide clues to chronology appears to be unwarranted for these systems should last as long as they satisfy symbolic requirements. Formal features tend to emphasize compositional and spatial unity.

Removed from their original context and isolated as individual art objects, the kiva murals lose their unitary characteristics. Published reproductions lose both scale and environment, and, except where full-scale paintings or reproductions are placed in kivas or kivalike environments, the mystic and mythical qualities of the pictures are lost. In their new context the kiva murals would appear to be valued for their decorative content.

NAVAJO DRY PAINTING

There has been remarkable agreement among investigators of Navajo dry painting on the essential historical and ethnographic facts. It is an ancient art intimately associated with Navajo curing practices and possibly learned from the Pueblo people at some unknown time in the past. A thousand or more dry painting designs were known to Navajo singers, but the art has become increasingly restricted under pressures of change through contact with the outside world. Wyman's descriptions of the function and technology of the art appear to be definitive.

Briefly, the universe, viewed as an orderly system of interrelated elements, is an all-inclusive unity Moreover, evil, disease, or other disaster may result from disturbance of the normal order, *i.e.*, the harmony or balance between elements in the universe Evil may be dispelled . . . by means of knowledge and application of orderly procedures, that is, by ritual. (Wyman, 1957:6)

Dry paintings are made as integral and essential parts of these harmonizing rituals which also use the arts of poetry, prose, song, and dance in ceremonials, "sanctioned and explained in an extensive series of mythical tales" (Wyman, 1957:10). The paintings "document a minimum of the action of the narrative and present little more than the personnel of the episode and sometimes the locale Their pictures attract the Holy People, for who does not like to see his portrait being made" (Wyman, 1957:159).

A painting is made by apprentices or other male helpers of the singer who is in charge of the entire ceremonial, and it is the guiding intelligence of the singer

that determines its form and content. Paintings are used within minutes of completion and are totally destroyed within hours. Use requires that the picture be walked on and sat on and that elements of it be physically damaged.

Materials are prescribed, and the environment in which a painting is placed must conform to ceremonial needs. All are made on the ground, either indoors in a hogan purified for ritual use, indoors in a large hogan made specifically for the ritual, or outdoors. Thus, almost all factors that make for the production of a painting—form, subject matter, technique, guiding intelligence, materials, pictorial environment, and pictorial space—are determined by nonpictorial considerations.

“When the Holy People taught mortals how to make sand paintings, they strictly prohibited their reproduction in permanent form lest they be soiled or damaged” (Wyman, 1957:156).

Pictures of Navajo dry paintings were first published by Matthews (1887). Since that time, 500 or more different designs have been made in watercolor, crayon, or other permanent media on two-dimensional surfaces, sometimes by Navajos, but most often by whites from memory. Beginning about 1920, Hosteen Klah, a Navajo singer, reproduced dry painting designs in tapestry form, and in recent years, large numbers of such reproductions have been made by Navajo weavers. Hosteen Klah, as a singer, was familiar with the designs he duplicated; but most other weavers have had to depend on reproductions made for them (Reichard, 1934:26-28), or available in books. In recent years Navajo artisans have reproduced dry paintings in sand made to adhere to boards by the application of mastics. As with woven reproductions, these also seem usually to be copied from published sources. Elements of dry paintings also appear in pictures made by Navajo artists since about 1932.

The largest number of modern dry painting reproductions are made by Navajos for commercial reasons. The only people who can surely identify “real” dry paintings, that is, those that are ritually correct, are the Navajo singers trained to perform the ceremonials to which a dry painting may belong. The factors that define correct designs are unknown: all that can be said is that in some instances visually minor variations may make a picture incorrect, whereas in others, visually major variations may have no bearing on correctness (Wyman, 1957:159-160). The correctness of most reproductions is questionable, and it is doubtful that many Navajos have committed the sacrilege of reproducing dry paintings in permanent form.

Published analyses of Navajo dry painting have concentrated on symbolic and iconographic content rather than on form and have been aimed at understanding the narrative relationships between paintings and ritual literature. Visual descriptions of the paintings have been for purposes of classification rather than explication, and only the patterning of masses (referred to in the literature as “composition”) has been described. Interpretation of the possible significance of compositional classes has been limited to generally unsuccessful attempts to correlate their frequency with specific rituals (Wyman, 1957, 1970*a*, 1970*b*). The relatively simple model used earlier can serve to expand understanding of the ethnic functionality of these paintings.

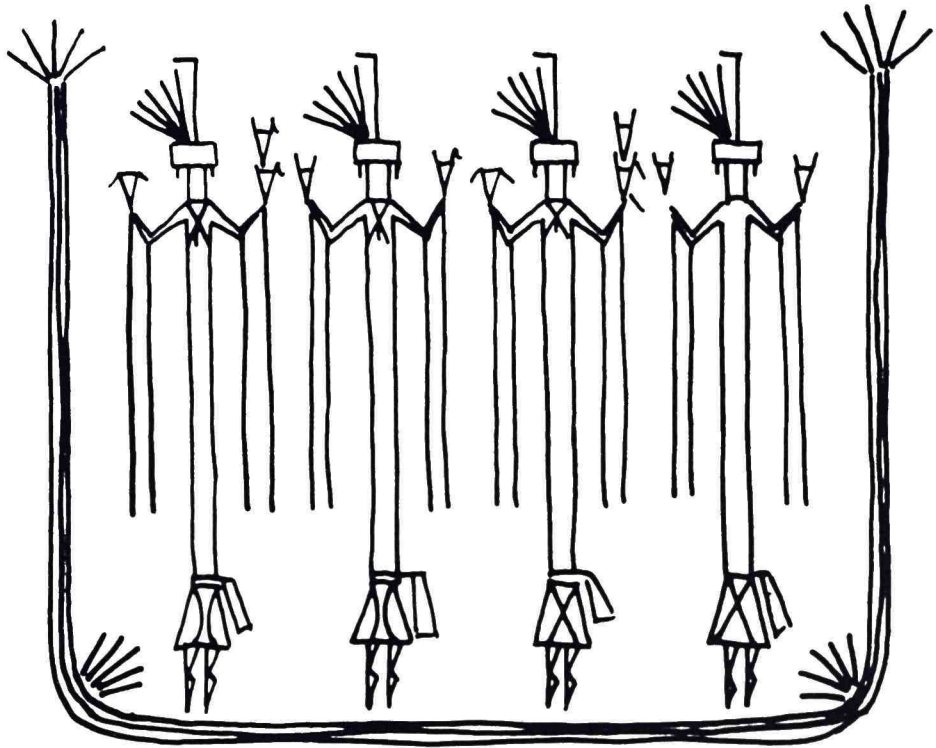


FIG. 3.—Navajo sandpainting, linear composition ("Snake People Who Make Medicine," Wyman, 1957, fig. 5).

Dry painting has a number of visual characteristics. They are placed on horizontal surfaces. The picture area is usually defined by a border open on one side while unborded picture areas are defined by texture contrast. Color masses are placed on the surface as distinct, bordered units, and combinations of these become motifs. Uncolored areas are treated as empty "background" space. Value and hue contrasts are kept within a limited range. No attempt is made to create volumetric illusions, but application of color creates true three-dimensional surfaces, and conical mounds occur on paintings. Representational forms may be placed at various angles in respect to the picture plane. The patterning of motifs varies in complexity; a single motif may dominate its assigned space or a multitude of forms may interact or be isolated from each other on an assigned surface. Compositional orientation varies widely; the range is from pictures with top to bottom orientation (Fig. 3) to those having no visually obvious single point of view (Fig. 4). Range in formality of patterning varies from having all motifs organized and symmetrically balanced to the apparently haphazard scattering of forms over a picture area (Fig. 5). Rhythmic movement is a function of formal arrangement modified by specific motif designs.

Other, nonpictorial factors act as determinants of some visual characteristics. Pictures are placed within a confined, hemispherical space in dim light. The nor-

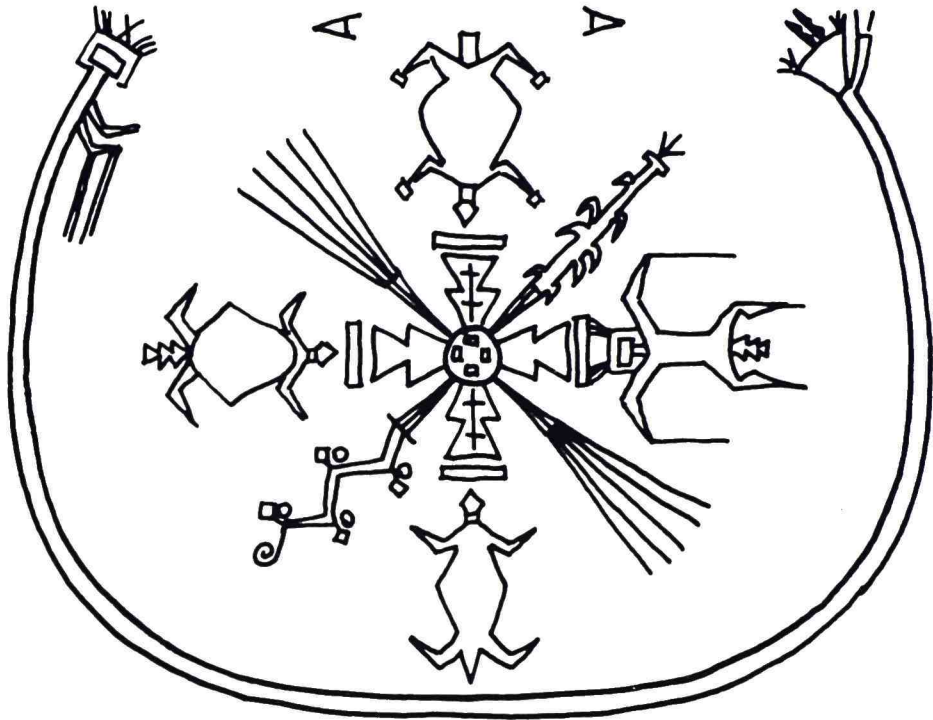


FIG. 4.—Navajo sandpainting, radial composition ("Water Creatures," Wyman, 1957, fig. 7).

mal viewing position is at an acute angle that varies depending on the height of the spectators' eyes and the size of the painting. Normal viewing occurs in crowded circumstances with people occupying portions of the picture space and under conditions of mental and sensory stimulation that emphasize the ritual reality of the painting.

Some generalizations can be made. Individual motifs are clearly defined and the visual system emphasizes iconographic identification. Picture space is ambiguous, but viewing angle, limited color range, nonvolumetric color masses, and isolation of motifs combine to unify the whole. Visual activity including the use of three-dimensional elements occurs on or above the picture plane. Ambiguity of pictorial space occurs when motifs are placed at various angles to the picture plane; this is consistent with the mythic nature of the time and space illustrated. Compositional patterning may be a function of scale and environment. It is doubtful that a large scale painting can ever be perceived in its totality. Information on relative size and scale is lacking so it can only be speculated that compositions with top to bottom orientation are more comprehensible if small in scale; whereas those oriented to several directions, those that are segmented, and those with many motifs scattered over a surface would be more appropriate as large-scale renderings. The forms of Navajo dry painting serve to illustrate the harmonic ideal that is a central theme of the Navajo belief system (Reichard, 1950).

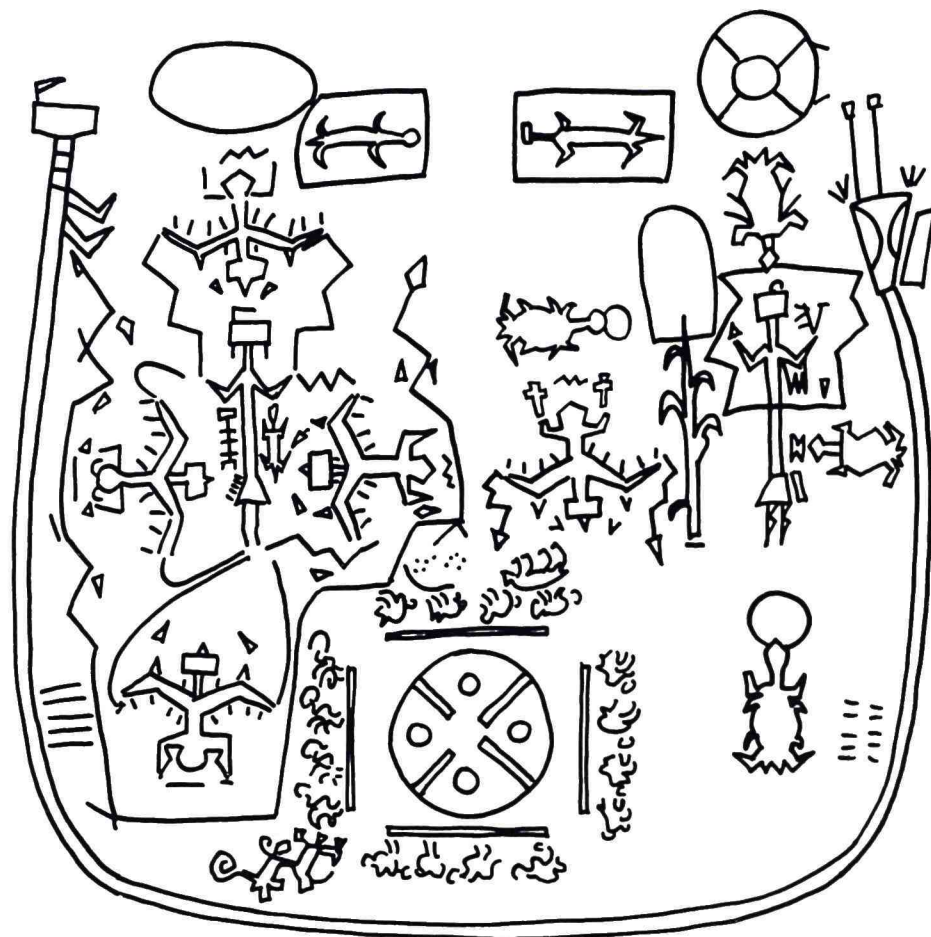


FIG. 5.—Navajo sandpainting, complex composition ("Sky-reaching Rock," Wyman, 1970*b*, pl. 12).

When they are removed from their original context, Navajo dry paintings undergo some significant formal changes. Pictures occur on vertical or mobile surfaces and are often reduced in scale, and the picture space is always clearly defined. Value and hue contrasts tend to be stronger, whereas the three dimensional elements are eliminated. Even more dramatic are the changes that occur in non-pictorial factors. The normal placement is in well-lighted circumstances, and the angle of viewing is generally head-on, permitting total perception of a painting. With these changes, generalizations become quite different. Although motifs remain clearly defined, their isolation is not as strong. Defined borders, verticality, sharper colors, and loss of symbolic value of the motifs all combine to emphasize decorative qualities. The harmonic balance of form and content is disrupted; compositional systems invented without regard for top to bottom orientation are placed in environments demanding such orientation. The result is arbitrary placement of some motifs in permanent upside-down situations. The imbalance

of form and content results in heavy emphasis on the decorative rather than the symbolic value of dry painting reproductions in their new environment.

Studies of prehistoric and historic Southwestern painting have concentrated on iconography and symbolism, and have therefore been ethnographic rather than art historical or art critical in nature. Formal studies have been neglected, thus making impossible explication of the unity of form and content on the one hand, while eliminating a possibility for systematic cross-cultural analysis on the other.

Generalizations about the formal characteristics of prehistoric kiva painting and historical Navajo dry painting suggest that the visual systems of each developed in response to symbolic requirements. The organic relationships between form and content can be read as visual symbols of a nonpictorial harmonic ideal. Comparison of the descriptions of the two pictorial systems suggest more differences than similarities. This is misleading because most differences can be traced to the single factor of placement. If all characteristics dependent on verticality or horizontality are set aside, the two painting systems are seen to be almost identical, a conclusion that both supports and explicates the assumption that an historical link between the two exists.

In their new context, neither painting system has much value beyond the decorative. Alterations of form that have occurred in the process of adoption by their new viewers have destroyed the dynamic quality of the originals. The non-decorative, formal aspects of both, which have the greatest potential symbolic value to their new audience (self-destructiveness, temporal limitations, mixed media and multi-media, ambivalent space, shaped picture surfaces, environmental dependence), have all been lost in translation. The potential real and symbolic values of these arts as readymades in a new context can only be realized if attempts are made, both verbally and visually, to describe and analyze all of their formal characteristics as they originally occurred.

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PICTORIAL AND CERAMIC ART IN THE MEXICAN CULTURAL LITTORAL OF THE CHICHIMEC SEA

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The term Chichimeca, or land of the Chichimecs (barbarians, savages, "sons of the dog"), had both a specific and a more general meaning among the aboriginal civilized Mesoamericans. Specifically, the Spanish term "Gran Chichimeca" referred to an area immediately adjacent to the Valley of Mexico on the north and west, an area from which wave after wave of Chichimecs infiltrated the very heart of civilized Mesoamerica. In more general terms, Chichimeca, or Gran Chichimeca, referred to all of those lands lying north of central México that were inhabited sparsely by basically nonfarming peoples (Di Peso, 1968) whose most noteworthy cultural characteristic was their geographic mobility. In a larger sense, at the time of European contact, this area extended from Alaska to the Gulf of Mexico and virtually to the Valley of Mexico, from the Rocky Mountains to the prairie lands west of the Mississippi River. I have found it operationally convenient to restrict my own usage of the term essentially to the Great Plains of the United States and Canada and to parts of the Southwest and northern México, including most of Texas from approximately the Brazos River westward. Notably in México, the basic culture out of which Mesoamerican civilization evolved was a desert culture, which was essentially Chichimecan in cultural terms.

So defined, the vast Chichimeca can best be conceptualized as a great ecological and cultural "sea," contradictory as the term may seem. Factors of temperature and precipitation, as well as physiography and soils, determined the shore lines of this sea; these shore lines varied with changes in their determinative factors so that the sea waxed and waned over the millennia. In the eastern Great Plains area the prairie belt formed a gently sloping continental shelf of the Chichimec sea. Minor short-term fluctuations in precipitation and temperature factors caused periodic emergence and submergence of this broad littoral of the Chichimec sea, with consequent changes in culture and ecology. In the west and south, intermittent mountain ranges formed more abrupt shore lines. As in real seas, interaction of these geographic factors produced currents and tides, and mobile life forms, including man, moved in response to these impulses. Human culture adapted to seasonal and long-term rhythms, and like sailors, the Chichimec moved over their sea, exploiting its resources where and when they were available and functioning incidentally as a communications network for the more settled occupants of its shores (Kelley, 1952*a*, 1955; Riley, 1971). However, unlike other seas, the Chichimec sea was characterized by a shortage of water, and aboriginal human groups whose culture was based on a farming economy found its shores to be an ultimate boundary. But along many of the shores of

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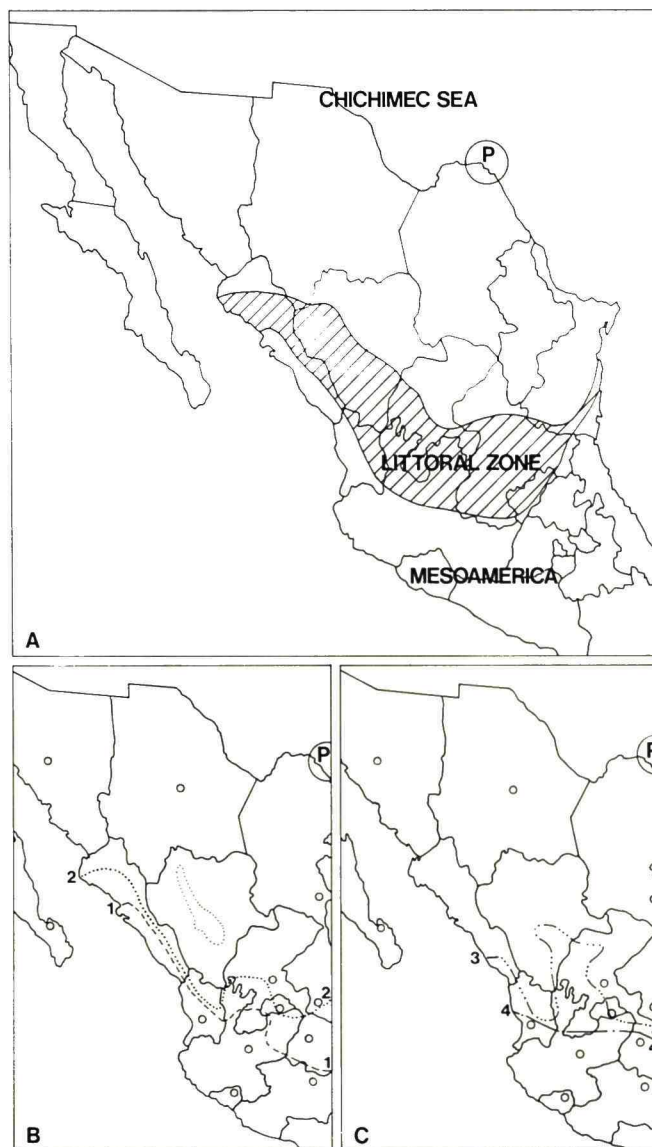


FIG. 1.—Northwestern México: A, map showing the Mexican cultural littoral of the Chichimec sea showing approximate Mesoamerican-Chichimecan geographic relationships; B, map of northwestern México showing approximate Mesoamerican-Chichimecan frontiers at *circa* AD 1530 (1), and 1350 (2); C, map of northwestern México showing possible Mesoamerican-Chichimecan frontiers at *circa* AD 800 (3) and 100 BC (4); P, the Pecos River pictograph area.

the Chichimec sea there was a true ecological-cultural littoral zone in which Chichimec sailors met and interacted with sedentary horticulturists, forming a dynamic frontier that fluctuated with the sea's diurnal, seasonal, and long-term tides. In northern México, and perhaps even in western Texas, the littoral zone

(Fig. 1A) was one where the bearers of Mesoamerican civilization directly, although at times intermittently, confronted the Chichimecs, whose cultural mobility and aggressiveness were ecologically based. In the Mexican cultural littoral, this relationship was complex, often symbiotic, sometimes exploitative and disruptive. On occasion, the Chichimec sailors came ashore and became Mesoamerican farmers themselves; on occasion, the Mesoamericans (or Mesoamericanized Chichimecs, or both) plunged into the Chichimec sea to form island enclaves, or even to join the Chichimec sailors. For the anthropologist, this Mexican cultural littoral is an area where the interaction of cultures, and of culture and environment, can be examined with great scientific profit. As in other aspects of culture, this vital and dynamic interaction is visible in art forms, especially in ceramic art.

North and west of the Valley of Mexico, the frontier between Mesoamerican and Chichimec at the time of the Spanish conquest lay roughly along the Río Lerma-Río Grande de Santiago (Kirchhoff, 1943), with an enclave north of this line in southern Zacatecas and northern Jalisco (the Caxcana), and northward along the Nayarit-Sinaloa coastal plain to the valley of the Río Culiacan (Fig. 1B, 1). About AD 1300-1400, the equivalent boundary extended roughly north-westward from near Guanajuato to near Valparaiso, thence more nearly northward to the Durango area and finally to Zape, almost on the present Chihuahua state line (Fig. 1B, 2), with a possible break in Mesoamerican continuity in western Zacatecas (Figs. 1B, 2; 1C, 3), where Mesoamerican cultures had been well developed until about AD 800 (Kelley and Abbott, 1966; Kelley, 1972). By *circa* AD 1350, the Mesoamerican frontier on the west coast was at its maximum northern extent in the drainage of the Río Sinaloa. Occupying the high Sierra Madre Occidental between the west coast and Durango salients of Mesoamerican culture were various groups whose archaeological cultures (Loma San Gabriel and others) must be termed sub-Mesoamerican although they had simple ceramics, practiced agriculture, and lived in semipermanent hamlets (Kelley, 1953, 1956, 1972; Kelley and Abbott, 1966; Spence, 1971). Probably deriving their meager Mesoamerican traits from an early Preclassic base, or alternatively from the earliest Mesoamerican cultures to enter adjacent areas, these sub-Mesoamerican mountain peoples were in themselves a form of Chichimec and probably were so regarded by the neighboring Mesoamerican settlers. Almost certainly, contemporary ethnic groups in the Sierra, such as the Tepehuan, may be regarded as modern survivals of the sub-Mesoamerican archaeological cultures (Riley and Winters, 1963).

Between *circa* AD 1350 and 1530 there was a geographic area and a cultural development that constituted the Mexican littoral of the Chichimec sea as here defined (Fig. 1A). Before *circa* 100 BC (Fig. 1C, 4) and after *circa* AD 1350, this area was essentially part of the Chichimeca. In the intervening centuries, there occurred in this littoral zone an extremely complex series of cultural processes, and a true "melting pot" of Mesoamericans and Chichimecs developed. These developments led to some complexity in the use of the term Chichimec in conquest times and probably before. There were the true Chichimecs of the north,

the Mesoamericanized Chichimecs of the littoral zone (actually "Mesomecs"² of mixed cultural and ethnic origins), and the sub-Mesoamerican Chichimecs of the Sierra Madre Occidental. Our own Southern Illinois University archaeological and ecological researches in this zone since 1952, and those of our colleagues in other institutions, now provide us with some knowledge of the most significant events that appear to have taken place in this littoral zone.

We know that Mesoamerican farmers were colonizing toward the northwest in small pioneer groups, derived from various Mesoamerican sources on a Pre-classic level, into an area already sparsely populated by Chichimec groups (see Kelley, 1974). At the same time, "soft" diffusion, by group-to-group contact and through the medium of itinerant traders and other culturally displaced persons, introduced Mesoamerican traits into the cultures of resident Chichimec groups. Many of these Chichimec groups appear eventually to have been incorporated into the societies and cultures of the pioneer Mesoamerican cadres that penetrated their area. After the rise of the great Teotihuacan empire in south central México, if not earlier, organized groups of traders, analogous to and probably ancestral to the *pochteca* of the later Aztecs, including priests and soldiers, invaded the littoral zone to exploit local mineral resources, especially turquoise and related jewel stones, thereby functioning as agents of "hard" diffusion. Such exploitative mining developments as the extensive one that occurred in the Chalchihuites area in western Zacatecas and southern Durango also must have attracted Chichimecs into the Mesoamerican centers as a floating labor force (Weigand, 1968), and these Chichimec laborers undoubtedly became incorporated into the local Mesomec society.

By about AD 350, a relatively firm frontier was established between the advancing Mesoamerican front and the Chichimecs. This frontier lasted until around AD 800 (Fig. 1C, 3) and locally as late as *circa* AD 1350. Along this frontier line were established great stronghold sites such as La Quemada,³ and (in western Zacatecas) Cruz de la Boca, Cerro de Moctehuma, Cerro Alto, Cerro de la Gloria (Gualterio), Pedragoso, El Chapin, and Cerro de las Viboras,⁴ suggesting that Mesoamerican-Chichimec relations were in general far from peaceful. It is easy to misinterpret this situation, however, inasmuch as many of these strongholds may have been used in petty wars between rival chiefdoms occupying various sectors of the frontier. This was almost certainly the case with the twin strongholds of Cerro Alto and Cerro de la Gloria, which appear to have functioned primarily to protect the putative Moctehuma ceremonial precinct and

2. I suggest coining the term "Mesomec" to refer to a generalized admixture of peoples of unspecified Mesoamerican and Chichimec ethnic origins, analogous to *mestizo* as referring to generalized Spanish-Indian admixture.

3. La Quemada, situated on a high hill dominating the valley of the Río Malpaso south of the city of Zacatecas, clearly was a great castlelike stronghold constructed to protect not only the local Mesoamerican villages, to which it was connected by a network of paved causeways, against the Plains Chichimecs, but also to prevent entry of the Chichimecs into the Malpaso-Juchipila Valley, which still serves as a principal approach to the Guadalajara region (Hedrick *et al.*, 1971:xiv-xvi; Batres, 1903).

4. Cerro de las Viboras, located on a high hill above present day San Andrés de Teul (Jiménez), Zacatecas, must have been established as a stronghold against the sub-Mesoamerican Chichimec of the Sierra Madre Occidental, in this case the Tepehuan. Notably, San Andrés de Teul, located just above the beginning of the great barranca of the Río Chapalangana southwest of Chalchihuites, was described in 1677 as an outpost on the "frontera de Yndios Chichimecas" (Bartholome Sucres Ortiveras, 1677, folio 80).

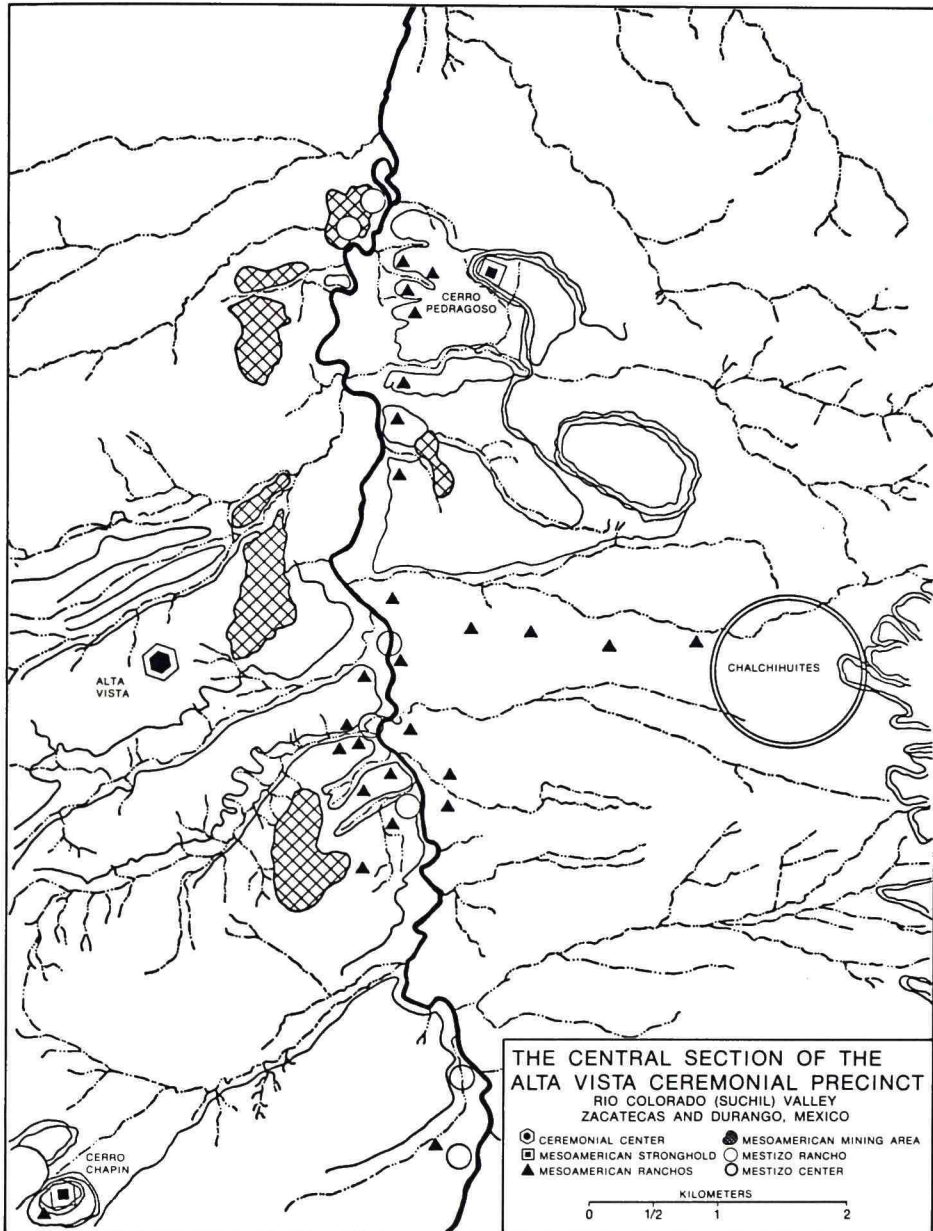


FIG. 2.—Map of the Alta Vista ceremonial precinct, a putative exploitative chiefdom established by Mesoamerican settlers in the littoral zone of the Chichimec sea in western Zacatecas, México, *circa* AD 300-500.

chiefdom from the analogous and contemporary aggressive Alta Vista ceremonial precinct and chiefdom of the Chalchihuites area (Fig. 2). Actually, Mesoamerican-Chichimec relations along their common frontier must have normally been symbiotic ones like those that prevailed between Puebloans and Plains

Chichimecs at La Junta de los Ríos (Río Conchos and Río Grande, or Río Bravo) at a much later date (Kelley, 1952*b*). There, Chichimec groups regularly traded salt, certain minerals, meat, hides, and probably bones, to the sedentary Puebloans in exchange for agricultural products. Peace prevailed as long as both sides could provide adequate supplies of the desired trade goods, but when crop failure or failure in the hunt kept one group from providing its trade quota, hostile relations developed, usually on a local level and on a relatively small scale. Spence (1971:22-26) has found archaeological evidence that Sierra Madre obsidian and hides, hence presumably meat, were being traded by Chichimecs to the Mesoamericans along the Río Suchil.

Notably, the very strong Mesoamerican exploitative development in the Chalchihuites area began to decline rapidly in population and extent after about AD 500, and that area was abandoned by Mesoamericans sometime after *circa* AD 800, perhaps as late as AD 900 or even 1000. Shortly after AD 500, emigrants from the Río Suchil-Chalchihuites area established colonies in the Guadiana Valley near Durango and a strong Mesoamerican development took place there between *circa* AD 550 and 1350. In the Guadiana Valley development, Mesoamericans, or almost certainly by now Mesomecs, lived in small and scattered enclaves surrounded by ranchos of Loma San Gabriel (Sierra) Chichimecs, with whom they clearly had very close relations.⁵ After the disappearance of the Mesoamerican colonies around AD 1350, the Chichimec peasantry continued in existence; the demise of the Mesomecs remains as yet unexplained, but the Mesoamerican frontier at that time apparently retreated to approximately the same line as existed in 1530.

Art, and especially ceramic art, is one of our best clues to the degree of intermixture and cultural cross fertilization in the Mesomec littoral zone from AD 800 to 1530. In the general Chalchihuites area of western Zacatecas and Durango, we have established the existence of a sequence of ceramic types and styles extending chronologically from *circa* AD 200, perhaps much earlier, until about AD 1350 (Figs. 3 and 4). This sequence (Kelley and Kelley, 1971; Kelley, 1972) is much too complex to consider in detail here, but a brief summary of the ceramic development is pertinent.

In the early pioneer period of the Chalchihuites culture, the Canutillo phase, beginning at *circa* AD 200 or earlier, there were polished black wares decorated in circling geometric motifs by red-filled engraved (post-firing) lines on the interior of plates or shallow bowls (Fig. 5A) and in an exterior band below the rim

5. The Spaniards replaced the vanished Mesomecs in an identical pattern during their settlement of Durango in the sixteenth century. Their settlements at Nombre de Dios, the Guadiana Valley (Victoria de Durango), Santiago Papiasquiario (and Atotonilco), Tepehuanes, and Zape had also been the sites of Mesomec enclaves and in turn they were surrounded by a Tepehuan (Sierran Chichimec) peasantry. However, Spanish relations with the Tepehuan Chichimecs was not as good as that of their Mesomec predecessors; in the years from 1616 to 1618, a Tepehuan rebellion nearly succeeded in destroying the Spanish enclaves (Hedrick *et al.*, 1971:144-153). Later, with the widespread introduction of the horse among the Plains Chichimec, these same Spanish colonies came under repeated attack from the Comanche. In the middle nineteenth century, the Plains Comanche raided as far south as Zacatecas, completely terrorizing the present Mexican states of Coahuila, Zacatecas, Durango, and Chihuahua, raiding and pillaging at will (Richardson, 1933:201-204). Perhaps the earlier demise of the Mesomec centers in this area are attributable to just such Plains Chichimec attacks in the fourteenth century. In the Schroeder collection from the late Chalchihuites site of Navacoyan, there are great numbers of arrowpoints suggestive of Plains types.

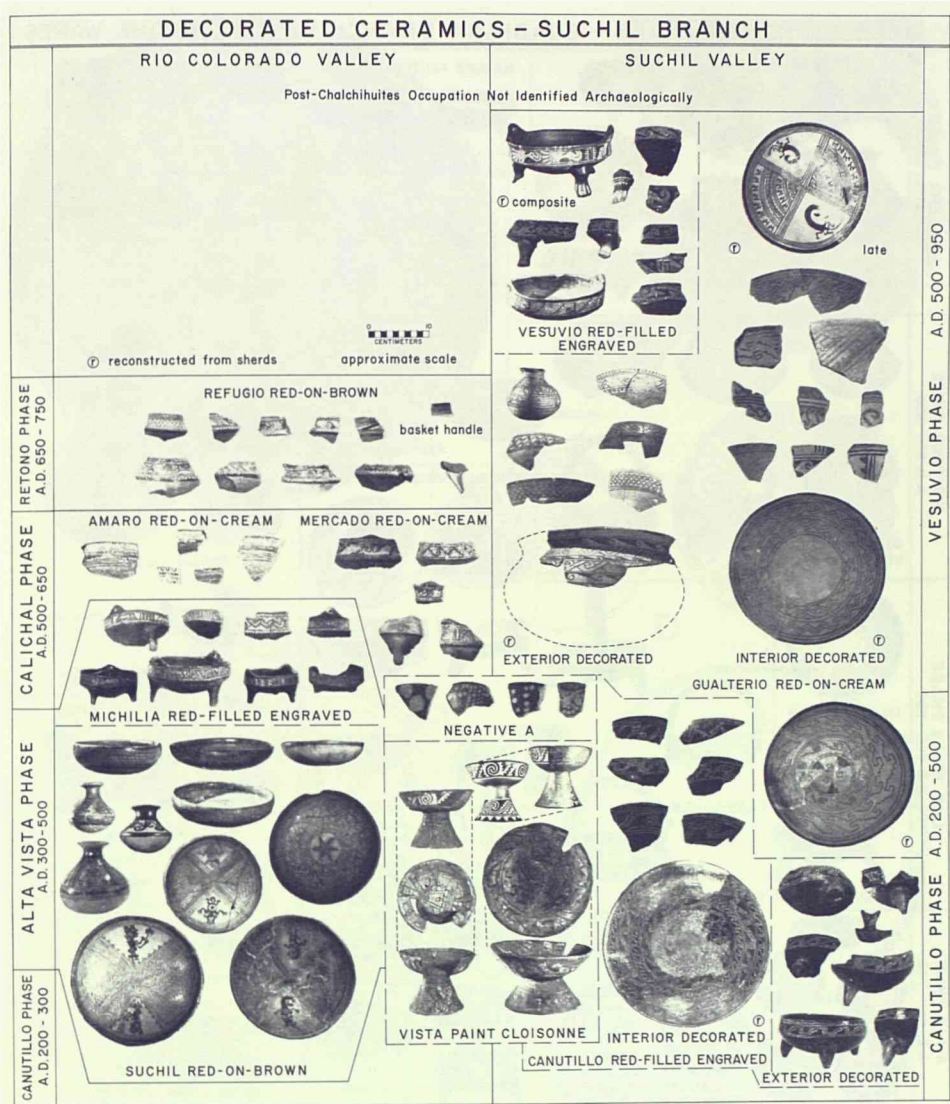


FIG. 3.—Chart showing sequence of decorated pottery types and phases of the Suchil Branch of the Chalchihuites culture, Zacatecas, México.

of tripod bowls (Fig. 5B). Accompanying these wares were cream slipped plates or shallow bowls decorated on the interior by red painted geometric designs, in circling patterns like those of the polished black plates (Fig. 5C) or on occasion forming a quadrate interior layout, with rare life forms in opposed quadrants and parallel lines of geometric elements in alternating quadrants. Similar cream-slipped jars and bowls are decorated on the exterior in red paint in somewhat different geometric designs and layouts (Fig. 5D). These wares are clearly of Mesoamerican origin and have their closest affiliation with Preclassic ceramics.



FIG. 4.—Chart showing sequence of decorated pottery types and phases of the Guadiana Branch of the Chalchihuites culture, Durango, México, and monochrome and utility wares of both branches of the culture.

There is strong evidence that at about AD 300 or 350 an intrusive Mesoamerican group from the south took over the Río Colorado and Río Graceros drainages of the Chalchihuites area, apparently displacing the earlier Canutillo phase occupants, who retained control of the adjacent upper Río Suchil valley for another 200 years or more. This was an exploitative invasion, resulting in the opening of many large aboriginal mining zones in the area, and appears to have been inspired by the development of classic Teotihuacán, although the invaders did not come from there. The new ceramic wares introduced at the beginning of

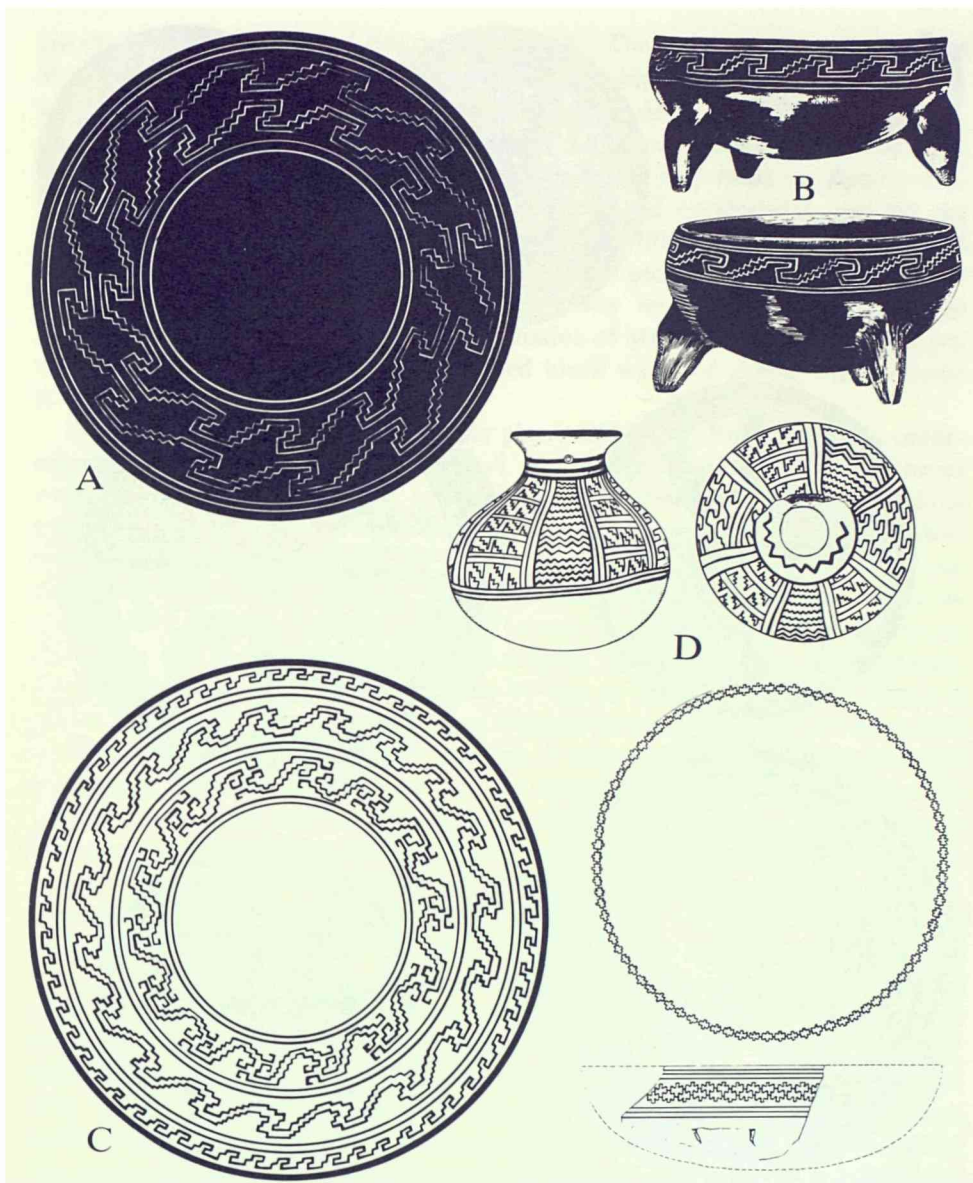


FIG. 5.—The earliest known Chalchihuites ceramics, those of the Canutillo phase of the Suchil Branch (*circa* AD 200-300 Río Colorado Valley, AD 200-500 Río Suchil Valley) in western Zacatecas, México: A, Canutillo Red-Filled Engraved, interior decorated plate or bowl; B, Canutillo Red-Filled Engraved, exterior decorated tripod bowls; C, Gualterio Red-on-Cream, interior decorated plate or shallow bowl; D, Gualterio Red-on-Cream, exterior decorated small jar (above) and simple bowl (below).

this period, the Alta Vista phase (*circa* AD 300-500), included polished black tripod vessels with semi-effigy feet and paired, pierced rim tabs, and exterior decoration in champlévé technique characterized by red-filled motifs in a band

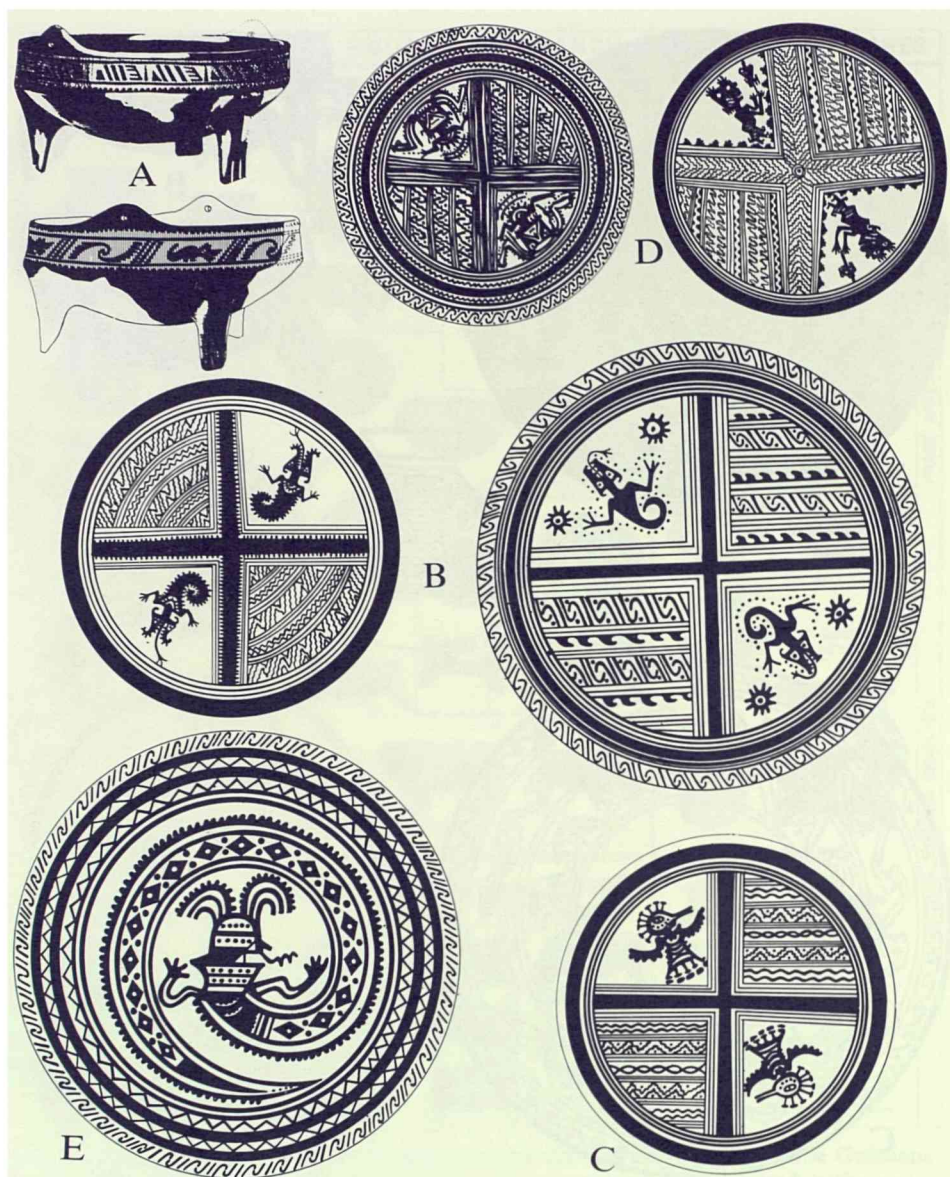


FIG. 6.—Pottery of the Alta Vista phase (circa AD 300-500) of the Suchil Branch of the Chalchihuites culture of western Zacatecas, México: A, Michilla Red-Filled Engraved tripod vessels decorated with geometric and life form motifs in the champlévê technique; B, Suchil Red-on-Brown shallow bowls or plates with quadrate interior layouts in which alligator monsters are depicted in opposed quadrants, alternating with quadrants filled with bands of geometric motifs (note line of dots surrounding the life forms in one bowl and the associated pairs of star or sun symbols); C, similar Suchil Red-on-Brown bowl with hummingbird depictions in opposed quadrants; D, similar Suchil Red-on-Brown bowls with anthropomorphic figures shown in the opposed quadrants (the two-headed figures in the bowl shown in the upper right hold aloft what appear to be severed human hearts depicted in codex style); E, Suchil Red-on-Brown bowl with spiraling anthropomorphized serpent shown in vessel center.

layout (Michilía Red-Filled Engraved, Fig. 6A). The decorative motifs consisted of a wide range of geometric elements and assemblages, and stylized life forms as well as mythological or anthropomorphized depictions, including birds, jaguars, deer, rabbits, and other quadrupeds, alligator monsters, and undulating serpents with anthropomorphized horned heads and tiny arms and hands. Elements in the decorative band were either repeated continuously around the bowl or, alternatively, grouped into panels, with life forms frequently placed between geometric panel dividers. Some of the geometric elements resemble stylized glyphs and the entire band depiction on occasion resembles the Mesoamerican sky-band. The stylistic affiliation of Michilía Red-Filled Engraved with other red-filled champlévé decorated black wares of classic Mesoamerica is very clear.

A companion ware of the Alta Vista phase was Suchil Red-on-Brown, occurring in plate, shallow bowl, simple bowl, jar, olla, and rare goblet forms (never with legs) with interior, exterior, or interior-exterior decoration. Circling bands of parallel lines and repeated small geometric elements, bounded above and below by solid red bands, lying just below the rim exterior or interior were characteristic decorative patterns. Noteworthy in this ceramic school were plates or shallow simple bowls characterized by quartered interior layouts placed below decorative rim bands like those described. The quartering dividers were broad red bands, sometimes ticked, and often paralleled by one or more narrow lines. There is reason to believe that these lines were stylized serpents and that the quadrants themselves represented the world quarters of Mesoamerican ceremonialism and mythology. On Suchil bowls, two of the opposed quadrants were filled with parallel lines of geometric elements; the alternating quadrants contained life forms, usually one to a quadrant, often with an associated astronomical symbol. Life forms depicted were varied but included especially an alligator monster (Fig. 6B), a seemingly strange life form for a culture occupying a habitat over 7000 feet in elevation. Other realistic or stylized life forms included a hummingbird (Fig. 6C) and truly Mesoamerican depictions such as a pair of two-faced personages, certainly priests, holding aloft on salvers objects that resemble the dripping severed human hearts depicted in the Mesoamerican codices (Fig. 6D). Other Suchil Red-on-Brown plates were decorated inside with one central figure (Fig. 6E), rather than a quadrate design; this figure was usually a spiraling, scaled serpent depicted with rattles, an anthropomorphic plumed head, and two tiny arms and hands (similar to the serpent depictions on Michilía red-filled engraved tripod bowls). Suchil jars and ollas also had exterior red-painted decoration combining geometric elements and both realistic stylized life forms; a circling band of alligator monsters was characteristic (Fig. 7A). Polished red, black, and buff monochrome wares in a variety of forms, including bird effigies (Fig. 7B) together with large quantities of plain and textured red, brown, and buff utility wares completed the normal ceramic complex of the Alta Vista phase, and in fact seem to have persisted throughout the entire sequence.

The entire Alta Vista ceramic assemblage clearly seems to have been classic Mesoamerican in origin although characterized by a rustic frontier appearance.

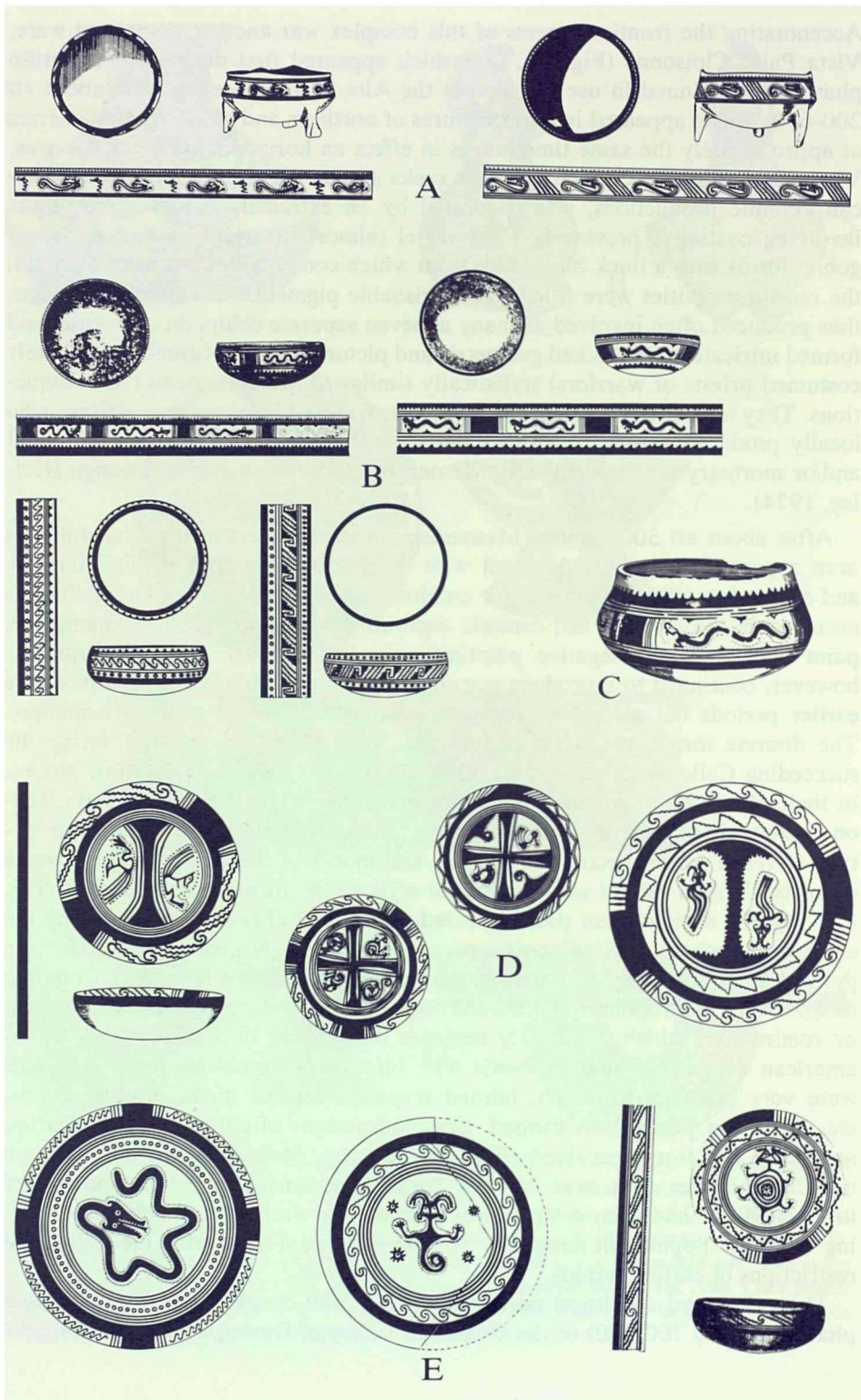


FIG. 7.—Chalchihuites pottery of the Alta Vista and Canutillo phases, Suchil Branch, in western Zacatecas, México: A, Suchil Red-on-Brown water jar with combined geometric and life form (alligator monsters) decoration (this ware dates from *circa* AD 300-500); B, bird effigy in polished red ware, from an Alta Vista phase burial at the Calichal site; C and D, Vista Paint Cloisonné goblets reputedly found with burials at the Escondida site. This ware first appeared during the Canutillo phase but was most popular during the Alta Vista phase; it was used between *circa* AD 200 and 600 (note elaborate depictions in several perishable colors and designs suggestive of later codice illustrations).

Accentuating the frontier aspects of this complex was another associated ware, Vista Paint Cloisonné (Fig. 7C, D), which appeared first during the Canutillo phase and continued in use throughout the Alta Vista phase, or from about AD 200-600. It also appeared in other cultures of northern and western Mesoamerica at approximately the same time and is in effect an horizon marker for the area. Vista Paint Cloisonné, which I believe ranks among the very best of Mesoamerican ceramic productions, was decorated by an extremely complex technique, involving coating a previously fired vessel (almost invariably a footed cup or goblet form) with a thick black slip, from which complex designs were then cut; the resulting cavities were filled with perishable pigments. The complex designs thus produced often involved as many as seven separate colors on one vessel and formed intricately interlocked geometric and pictorial designs (usually elaborately costumed priests or warriors) stylistically similar to Mesoamerican codex depictions. They appear to represent the work of traveling Mesoamerican artisans who locally produced vessels of Vista Paint Cloisonné on demand as a ceremonial and/or mortuary ware, completely Mesoamerican in technique and design (Kelley, 1974).

After about AD 500, central Mesoamerican exploitation of the Chalchihuites area apparently ceased, coincident with the decline in power of Teotihuacán, and only a few villages survived for another three centuries or so. Great changes occurred in the ceramic art; ceramic decorative techniques such as *champlevé*, paint cloisonné and negative painting were lost entirely. Painted ceramics, however, continued to reproduce not only the painted designs and layouts of the earlier periods but also those formerly produced in the *champlevé* technique. The discrete formalized styles of the Alta Vista phase disappeared during the succeeding Calichal (*circa* AD 500-700) and Retoño (*circa* AD 700-800) phases; in their place there appeared one major decorated ware, Amaro-Mercado Red-on-Cream, characterized most notably by great internal variability. Recombination of vessel forms, decorative layouts, and motifs of the earlier discrete wares occurred. Tripod vessels with realistic or stylized life forms still were made (Fig. 8A), but the designs were painted in red-on-cream rather than produced by the *champlevé* technique. Similar designs, as well as purely geometric motifs were painted on simple (Fig. 8B) and composite silhouette bowls (Fig. 8C). Common designs were anthropomorphic horned serpents and birds, especially the *paisano*, or roadrunner, which apparently replaces the quetzal bird of southern Mesoamerican depictions. Shallow bowls with bifurcate or quadrate interior layouts were very popular (Fig. 8D); horned serpents, various birds, monster forms, *etc.*, filled the panels thus formed. Centered designs of coiled serpents, turtles, and other life forms occurred (Fig. 8E). Clearly, Mesoamerican influences in the Chalchihuites area were waning. Purely Mesoamerican groups had retired to the south or had been destroyed by rebellion or warfare, and only the declining Mesomex population remained,⁵ its ceramic school freed from the formalized restrictions of earlier periods.

There followed a cultural period, especially well developed in the Las Joyas phase (*circa* AD 700-950) of the Guadiana Valley of Durango, at which time the



popular ceramic art clearly demonstrates a strong trend toward Chichimec artistic concepts and a rejection of many but not all Mesoamerican ceremonial-artistic elements. Gone were the anthropomorphized horned serpents, the alligator monsters, the two-faced priests with human hearts; in their place were depicted dogs, coyotes, squirrels, and dancing human figures (Fig. 9A, B, C, D). One is reminded that Mesoamericans referred to Chichimecs as sons of the dog, and that the Chichimec Otomi had the coyote as a principal deity. The dogs, coyotes, and squirrels were painted in a configuration of elements that suggest a popular theme in Mesoamerican mythology; in this theme the dog clearly was analogous to Xolotl, the monster twin of Quetzalcoatl, but in the north, coyotes and even squirrels became equivalent representations. Among the Huichol (Chichimecs of the Sierra Madre Occidental), the gray squirrel is regarded as a sacred animal that provides a means of communication between earth and sky, man and Father Sun, inasmuch as the squirrel runs up and down the trunks of trees, between earth and heaven. (Phil C. Weigand, personal communication; see also Lumholtz, 1904: 301). The substitution of the squirrel for the dog in the Xolotl status, like the substitution of the roadrunner for the quetzal, marks the influence of Chichimec thought and art on the pioneer Mesoamerican colonies in Zacatecas and Durango. Conversely, much of Huichol art shows strong influence from Chalchihuites culture (Maritzler, 1958), in my opinion from the Alta Vista phase of that culture between *circa* AD 300 and 500.

The ceramics of the final Río Tunal (*circa* AD 950-1150) and Calera (*circa* AD 1150-1350) phases cannot be discussed here in detail. Many and varied influences, both Chichimec and Mesoamerican (mainly derived from the Sinaloan coastal area), are visible in the ceramics of these phases. With regard to the entire ceramic sequence of the Chalchihuites area, one may say that in this part of the Mexican littoral the ceramic art was at first overwhelmingly Mesoamerican in stylistic affiliation and origins, but with the passing of centuries the Mesoamerican artistic contribution came to be balanced, if not replaced, by Chichimec motifs and concepts.

Far out in the Chichimeca, in a limited geographic area along the lower course of the Pecos River, in Texas and adjacent sections of the Rio Grande (Fig. 1A) ancient Chichimecs with an Archaic (Desert) culture developed a remarkable pictographic art (Kirkland, 1937, 1938, 1939; Jackson, 1938; Taylor, 1949; Kelley, 1950; Newcomb and Kirkland, 1967) between *circa* 6000 BC and AD

FIG. 8.—Chalchihuites decorated pottery of the Calichal-Ayala phases (*circa* AD 500-700), in western Zacatecas and southern Durango, México: A, Mercado Red-on-Cream tripod bowls with life forms and geometric decoration; B, Mercado Red-on-Cream simple bowls with geometric and/or life form decoration; C, Mercado Red-on-Cream composite silhouette bowl with combined life form and geometric decorations; D, Amaro Red-on-Cream shallow bowls with quadrate and duplicate decorative layouts and combined geometric and life form decoration; E, Amaro Red-on-Cream shallow bowls with centered interior life forms (horned serpents, alligator monsters, and turtle) combined with geometric decoration (note four star or sun symbols associated with the alligator monster and the line of dots surrounding all life form depictions).



600 (Johnson, 1964:92-99).⁶ The exact dates of this pictographic art complex are uncertain; I would guess that the pictographs were made for the most part between 500 BC and AD 600.

On analysis, the pictographs in question appear to be rather sophisticated art forms. Elements and patterned combinations reappear consistently in site after site over a demonstrably lengthy time span. The pictographs include for the most part masked anthropomorphic figures, singly and in groups; animals including especially deer and cougars (or a similar large feline); as well as water fowl and fish; unidentified objects; and geometric representations; in red, black, yellow, orange, and white. A considerable cultural content can be identified: atlatls and darts, spears, "bolas," curved fending or throwing sticks, shields, loose deerskin shields, bags, masks, two-horned masks, and various items of costume. In addition the patterning of depictions enables high level inferences as to the meaning of the pictographs and the socio-ceremonial behavior involved.

Thus, Kirkland (1938:24), Taylor (1949), and Kelley (1950) have all pointed out that the repeated occurrence of human figures in ceremonial costume, engaged in hunting or shown with full hunting (or fighting) equipment in association with either game animals or large felines, suggest that the pictographic complex is concerned principally with depiction of a hunting cult. Gebhard (1960:43-45) has expressed the view that this is too narrow a concept and Newcomb and Kirkland (1967:79) elaborated this view, noting: "But a hunting-cult hypothesis fails to explain the presence of cougars in the pictographs, or the fact that a majority of shamans in all periods do not have animal associations . . . Cougars . . . are never pierced by darts nor do they seem to menace human figures." However, Newcomb then suggested supernatural association of shamans with cougars, the great hunters of deer, with the shamans drawing power from the great feline hunter. Although I agree entirely with the latter conclusion (indeed it was in fact part of my own conceptualization of the pictographs as representing a hunting cult), I am sure that Newcomb was factually mistaken on one point, that the cougars are never shown menacing men, although the contrary view actually strengthens his argument. On two visits to Panther Cave, about 1934 and again in 1947, I noted that two huge cougars (panthers) dominated the intricate strip of murals covering the rear wall of the rock shelter. One of these (Fig. 10; also see Newcomb and Kirkland, 1967, pl. 26, no. 1) depicted in a springing pose occupied the end of the curving rock shelter wall toward the Rio Grande, facing the rock shelter interior and all of the other paintings on the wall. Fine scratches had been made across the cougar's extended claws, suggesting "borrowing" of its hunting powers by human hunters. This figure measured almost nine feet from nose to tail and the tail extended another 10 feet (Newcomb and Kirkland, 1967, pl. 26, no. 1). As late as 1947, faint remains of an identical oversize cougar figure painted in the same springing position at the other end of the rock shelter could still be identified. Clearly, these were huge threatening figures of awesome

6. These are Johnson's estimated dates for the long Archaic continuum subsumed by other workers under the title "Pecos River Cave Dweller" or "Pecos River Focus," with which the pictographic art complex is associated.

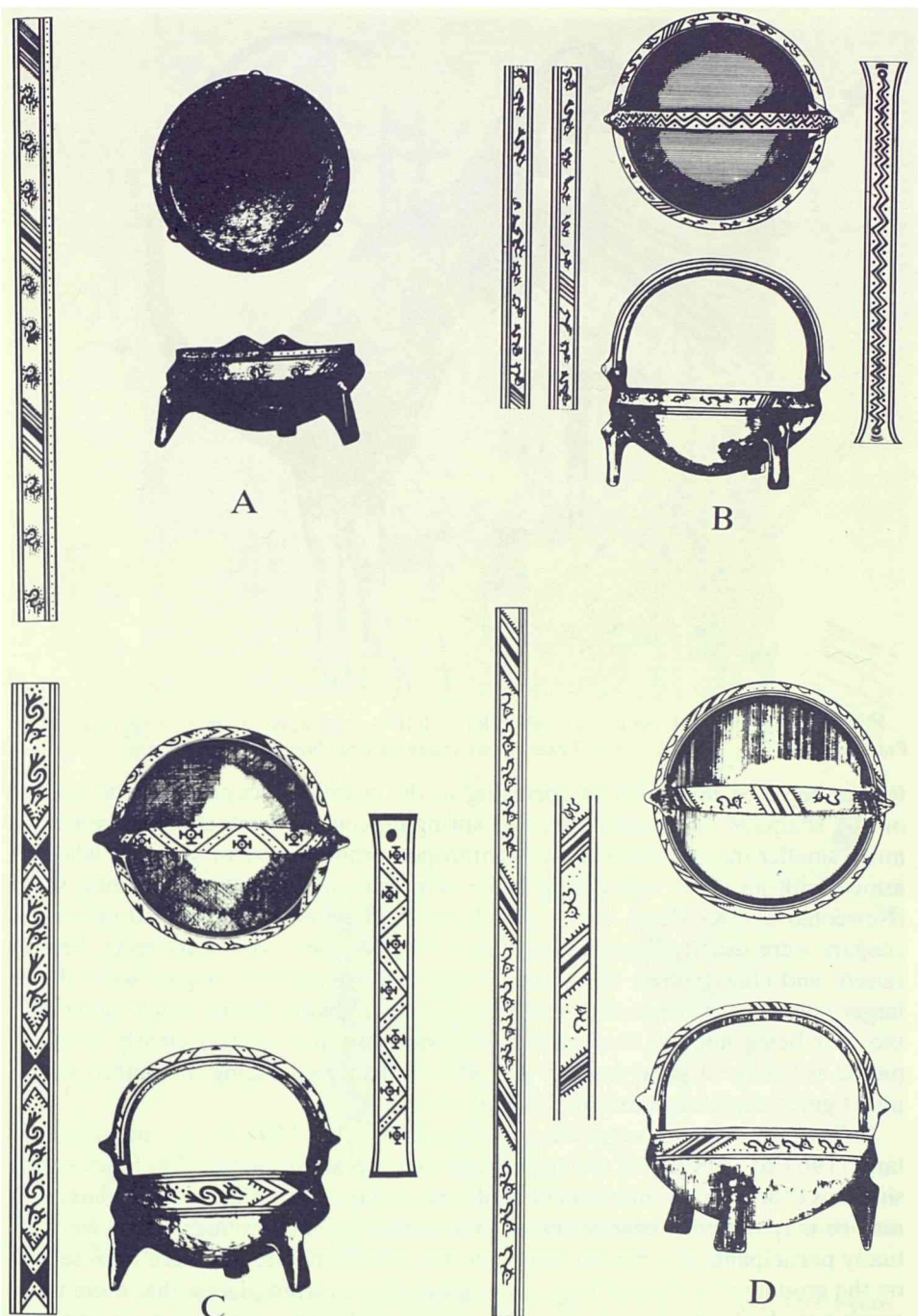


FIG. 9.—Refugio Red-on-Brown (A) and Neveria Red-on-Brown (B, C, D) pottery of the Las Joyas phase (circa AD 700-950), Guadiana Branch of the Chalchihuites culture in southern Durango, México. Note prevalence of dogs and squirrels in decorations.

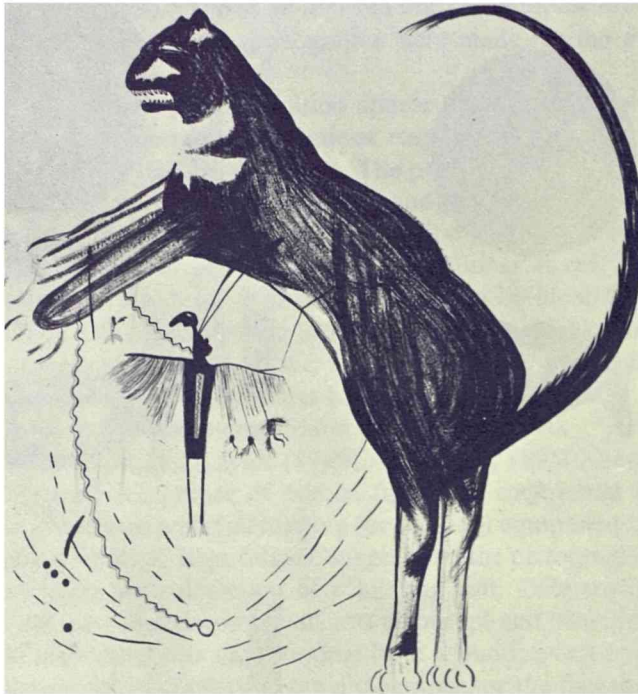


FIG. 10.—Painting of cougar or other large feline, portrayed in menacing position in Panther Cave, Val Verde County, Texas. Copy made by Lois Neville Kelley.

felines depicted in the act of springing at the painted occupants of the shelter, mostly shamans. In another site, two springing cougars were shown menacing a much smaller masked (two-horned) anthropomorphic figure or shaman, who was armed with an atlatl and dart, a loose skin arm shield, and two fending sticks (Newcomb and Kirkland, 1967, pl. 33, no. 1). Earlier, Kirkland had noted that cougars were usually depicted with their mouths open, their ears erect, bristles raised, and claws shown (Kirkland, 1939:60). Usually the cougars were shown larger than man, whereas the human figures were always shown much larger than the deer being hunted. Newcomb notwithstanding, the cougars clearly were depicted as beings of great ferocity and power, clearly menacing the anthropomorphic figures depicted in association with them.

Following an earlier suggestion by Campbell (1958:159), Newcomb and Kirkland (1967:65) developed the hypothesis that the anthropomorphic figures were shamans ("or perhaps members of medicine or dance societies, in which case they may or may not have been shamans in a narrow technical sense.") who were actually participants in a mescal bean cult. He denied that deities were represented, on the grounds that the paintings were not made in sacred places, that there is too much variability in their representation, and that later paintings were superimposed upon earlier paintings, which were thereby more or less obliterated. Newcomb clearly was not familiar with Huichol ceremonial practice in which ritual items such as prayer arrows, decorated gourd offertory bowls, *etc.* are

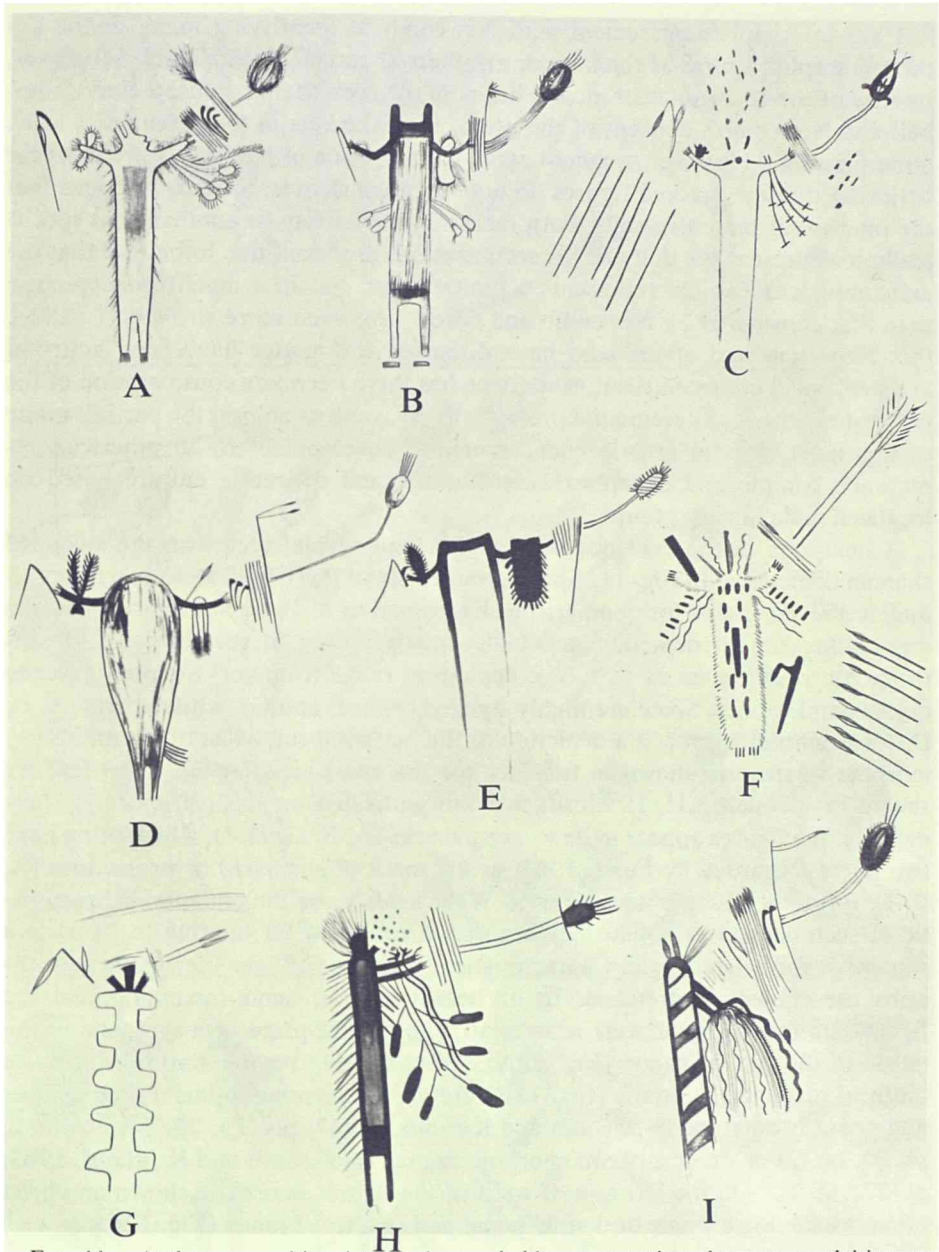


FIG. 11.—Anthropomorphic pictographs, probably representing shamans or deities, or both, from Pecos River area rock shelters.

used once only, thereafter they no longer have supernatural power. The Pecos River pictographs may well have been painted in one specific ritual, like a Navajo sand painting, after which they remained as paintings, the supernatural power of which had been used up.

I am in complete agreement with Newcomb in identifying many of the anthropomorphic figures as shamans or members of ceremonial societies. Moreover, in view of the occurrence of mescal beans in the rock shelter refuse I find Campbell and Newcomb's concept of the use of mescal beans in the ceremonies to be quite plausible. However, I cannot agree with any one of Newcomb's reasons for believing that the masked figures do not represent deities; indeed, I believe that the purpose of the universally worn mask, of one variety or another, was specifically to represent the deity or his secular stand-in. I continue to believe that the art complex essentially represents a hunting cult, but in a much broader sense than that considered by Newcomb and others. But even more strongly, I believe that Newcomb and others who have discussed the matter have been guilty of archaeological ethnocentrism; never once has there been any consideration of the great Mesoamerican ceremonial presence to the south as at least the partial source of this most unusual artistic and ceremonial development in an otherwise remarkably simple and unsophisticated hunting and collecting culture based on localized male lineage groups.

A new look at the evidence is required, with special regard to the so-called shaman depictions. In Fig. 11, I have grouped six of these figures, shown approximately the same size for comparison. Examination of these six figures, and the many other similar depictions available, reveals the great variability of the anthropomorphic figures as such. The depictions range from very simple figures to quite complex ones. Some are highly stylized (as in F and G), while others (A, B, D, for example) approach a depiction of the human form. Most of the anthropomorphic figures are shown in full face (or full rear) view (A-G), but a few are shown in silhouette (H, I). Heads are only indicated, or left off entirely; alternatively, the figures appear to be wearing masks (A, B, G, H, I), which often have two horns (regarded by Furst, 1965, as the mark of shamans) or projections (A, B, I). Faces as such are never shown. What tends to be the common characteristic of such depictions is that they are shown equipped for hunting (or war) in a somewhat formalized style. Characteristically, in the full face view paintings, the arms are shown outstretched. In or near the right hand (assuming that the figures are facing the viewer) is an atlatl with dart in place or a symbolic representation of the same weapon (Fig. 12A).⁷ In composite representations darts like those in place in the atlatls (Fig. 12B) are shown piercing animals such as deer and possibly antelope (Newcomb and Kirkland, 1967, pls. 23, 25, 27, nos. 1, 2; pl. 30, no. 2) or other anthropomorphic figures (Newcomb and Kirkland, 1967, pl. 27, no. 1).⁸ On the left arm or wrist of the figures is usually shown an object often resembling a single or double nopal pad or a tree branch (Fig. 12F).

7. Kirkland identified this object as a "broken flowering plant," but I have pointed out that the depiction is certainly that of an atlatl and dart (Kelley, 1950, fn. 18), a conclusion with which Newcomb and Kirkland (1967:49) concurred. Atlatls and darts have been found in Pecos River cultural deposits at several sites.

8. Anthropomorphic figures pierced by darts are not common, but occur. Such figures are usually portrayed horizontally rather than vertically. That the weapons carried by the anthropomorphic figures were used almost entirely for killing animals other than man emphasizes hunting rather than warfare aspects of the cult represented. Notably, the cougar is never shown pierced by darts although in one instance, cited above (Newcomb and Kirkland, 1967, pl. 33, no. 1), two cougars menace a figure who holds atlatl and dart ready. Apparently the great feline hunter, almost certainly deified, was too powerful, or too sacred, to be killed by atlatl and dart.

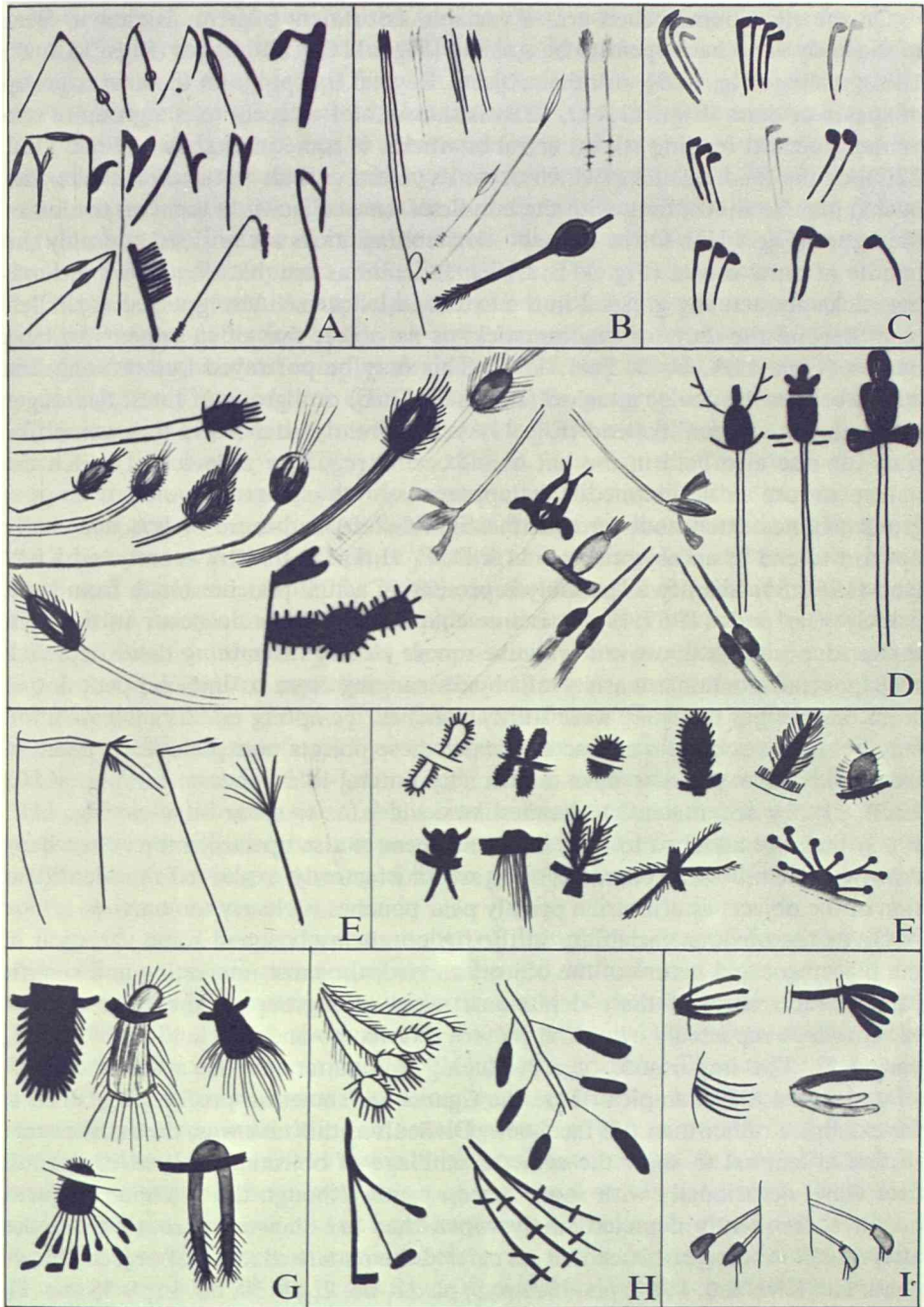


FIG. 12.—Details of costume and objects carried by anthropomorphic figures as portrayed in Pecos River area pictographs: A, groups of atlatls with darts selected from various pictographs; B, group of darts; C, groups of fending or throwing sticks; D, selected examples of prickly pear pouches; E, selected banners; F, objects worn on right wrist or arm; G, group of shields; H, possible bolas carried on left arm; I, costume ties.

On the right outstretched arm a variable assortment of items is shown. Next to the body are what appear to be a shield (Figs. 11C, 12G), bolas (Figs. 11A, C; 12H), a sling (Fig. 11D), or other objects. Beyond this point on the arm, a group of spears or darts (Figs. 11A-D, 12B) is shown, and adjacent to it a group of two or more curved fending sticks, or rabbit sticks, is sometimes shown (Figs. 11A, 12C); or the fending sticks (which occur as common finds in the rock shelter deposits) may be shown first, with the bundle of darts adjacent to them on the left of the figure (Fig. 11D). Often the rabbit or fending sticks are omitted and only the bundle of darts shown (Fig. 11B, C, E). Indications are that the darts and fending sticks are actually grasped in the extended left hand. Also grasped in the left hand beyond the darts or fending sticks is an object that often appears to be a banner (Figs. 11A, B, D, E, I; 12C). This may be portrayed by one long line with a bannerlike device attached (Fig. 11B, D, E) or a group of lines, the longer of which has a broomlike end (Fig. 11A). Apparently attached to this bannerlike staff (or else also held in the left hand) occurs regularly a device of which the nature or use is not immediately apparent. In the paintings, one, two, or a group of lines extend outward (to the figure's left) and more or less diagonally upward to end in an object (Figs. 11A-D, F, H, I; 12) that Newcomb and Kirkland (1967:56) identify as possibly representing actual pouches made from sewn prickly pear pads (1967:49). It is true that such pouches do occur in the rock shelter deposits, as do woven ones even more closely resembling those depicted; such pouches contain a variety of objects ranging from a flint chipper's kit to seeds, suggesting that they were utility pouches. Tempting as this interpretation may be, it leaves certain characteristics of these objects unexplained: 1) some of the prickly pear pouches have a distinctly animal-like appearance (Figs. 11C, 12D); 2) they are attached to bannerlike devices (or to spear bundles, Fig. 11C, F); 3) they are attached to long lines and seem to rise upward, rather than hang downward. Until these characteristics are satisfactorily explained the identification of the objects as utilitarian prickly pear pouches is clearly too narrow.

Given the obvious variability in the figures themselves and some variation in the placement and nature of the objects carried, the most interesting and significant characteristics of these depictions, taken as a group, is the clear attempt to reproduce repeatedly a cultural pattern (Newcomb and Kirkland, 1967, fig. 1, period 2). The importance of reproducing this pattern to the artist is demonstrated in the few examples where the figures are shown in profile (Fig. 11H, I, for example) rather than full face view. Difficult as this task was, the artist nevertheless attempted to show the same assemblage of objects displayed in the full face view, occasionally with some success. And although the "shaman" figures are most frequently depicted singly, when they are shown in groups the artist attempted to indicate at least that all carried the patterned array of objects (Newcomb and Kirkland, 1967, pls. 19, no. 1; pl. 21, no. 2; pl. 30, no. 1; pl. 38, no. 1).

One must conclude that this patterned depiction derived from either overt or covert cultural images available to the artists. Conceivably, they are overt images of actual hunters properly accoutered for the chase (or for battle), in which case the masks might be interpreted as camouflage. Alternatively, they

may be images of shamans attired for the chase and utilizing the masks to accentuate their supernatural status and powers. In such cases, the artist depicted what he actually saw, perhaps from recent memory. Conversely it is also possible that covert patterning is involved; that the artists carried in their memories a carefully detailed image imparted to them when they served as apprentices, or which they learned from the stories told by shamans or other leaders. In all of the instances cited, the working assumption is that only the patterns, overt or covert, of that particular culture were involved; that the art and the implicit ceremonialism is entirely a development of the Pecos River area artistic climax.

There is an alternative explanation in terms of diffusion, as opposed to the postulated local evolution of the art and ceremonialism represented. As already noted the ceremonial art complex developed in a very limited area and apparently during a very limited time span in terms of the geographic and temporal span of the Archaic (Desert culture, Chichimec) culture with which the complex was associated. It should also be noted that in this limited Chichimec cultural-temporal enclave there was no associated efflorescence of either ceremonial or secular aspects of the culture, a datum that further emphasizes the uniqueness of the development in the Chichimec cultural milieu. Implicit, and explicit (Newcomb and Kirkland, 1967:75, 79-80), in the mescal bean-shamanistic society explanation for this unique cultural phenomenon so ably advanced by Newcomb and Kirkland is the concept that the paintings were produced as the result of supernatural visions or experiences of the artists while under the influence of the hallucinogenic drugs contained in the mescal beans. Such an explanation must certainly remain a significant hypothesis, subject to further investigation. But if one enlarges the scope of his geocultural horizon to search for comparable depictions elsewhere, it must inevitably come to his attention that the Pecos River ceremonial art can also be interpreted as a primitive effort to copy ceremonial art much more strongly developed in the great Mesoamerican civilization to the south.

Figs. 13 and 14 reproduce a number of illustrations derived from that enormous Mesoamerican ceremonial art milieu to indicate the clear parallels involved. In sample illustrations of warriors and of deities (or deity-surrogates) from various codices, as shown in Fig. 13, the patterned conceptualization of the Pecos River hunter-shaman deity is clearly recognizable. The subject is usually shown in three-quarter view, occasionally in profile or full-face view, usually standing but sometimes sitting or kneeling. In Fig. 13A, a warrior in full regalia is depicted in three-quarter view with his arms outstretched. In his right hand, he holds an atlatl, and there is an object of some sort on his right wrist. On his left arm is a shield, and with his left hand he grasps a bundle of darts. From the shield or from behind it there streams an elaborate device analogous to the banner-prickly pear pouch of the Pecos River depictions. His face is clearly shown, in contrast to the Pecos River painting custom, but on his head he wears a headdress that includes a bird.

In Fig. 13B, the rain god, Tlaloc, is depicted in the guise of a warrior. He is shown in profile with his arms outstretched. In his right hand, there is an atlatl;

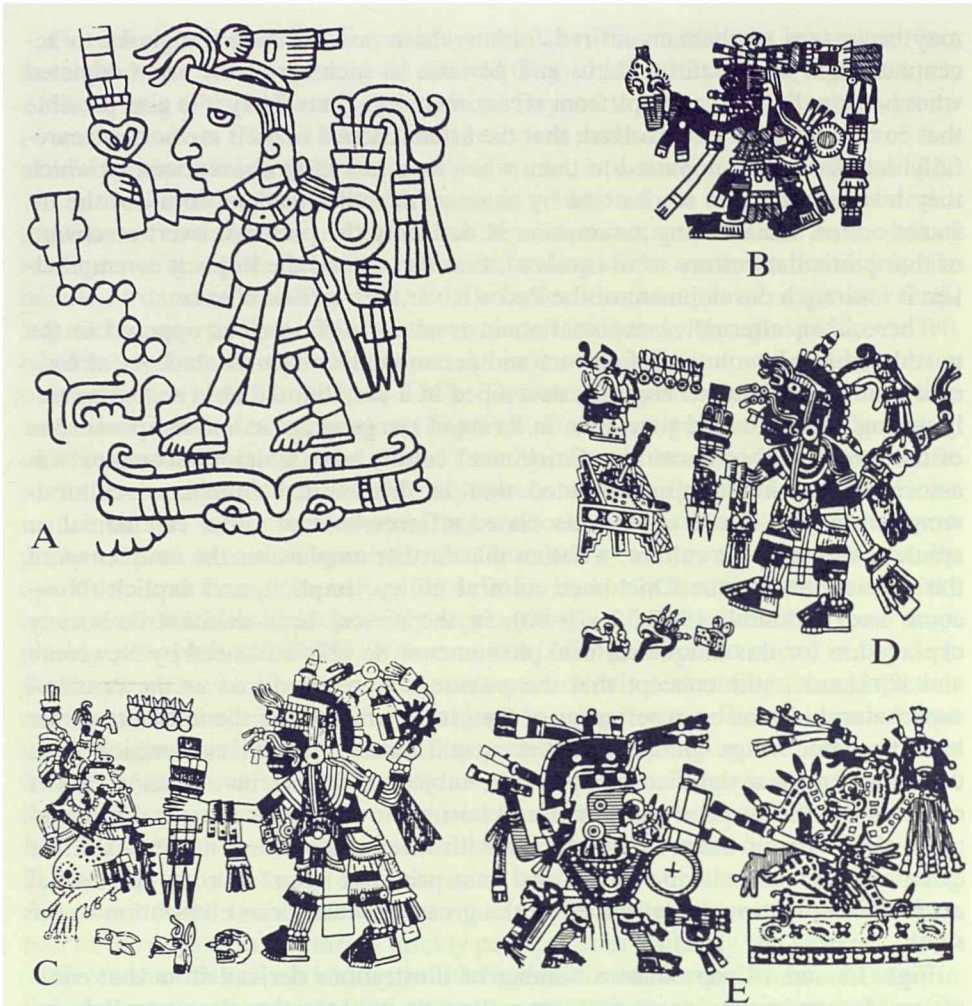


FIG. 13.—Mesoamerican warriors, some of them deities, in full fighting or hunting regalia, as depicted in the codices (A, courtesy of Peabody Museum, Harvard University; B-E, with the permission of the Fondo de Cultura Economica, México and Buenos Aires): A, Codex Nuttall 12 (after Tozzer, 1957, fig. 372); B, Tlaloc in guise of a warrior (from Seler, 1963, fig. 579b); C, Tlahuizcalpantecuhtli, God of Morning Star (Venus) in his second period (after Seler, 1963, fig. 119); D, Tlahuizcalpantecuhtli, in his fourth period (after Seler, 1963, fig. 123); E, Tlahuizcalpantecuhtli, in his fifth period (after Seler, 1963, fig. 126).

on his wrist, there is a decorative device analogous to the forked branch or double nopal pad of the Pecos River paintings, and another decorative element hangs from his elbow. On his outstretched left arm there is, first, a bundle of three sticks or tubes (perhaps equivalent to the Pecos River fending sticks), then a shield, while he grasps a bundle of darts in his left hand. He wears a mask, from which streams to the left and rear a device perhaps analogous to the Pecos River banner and prickly pear pouch.

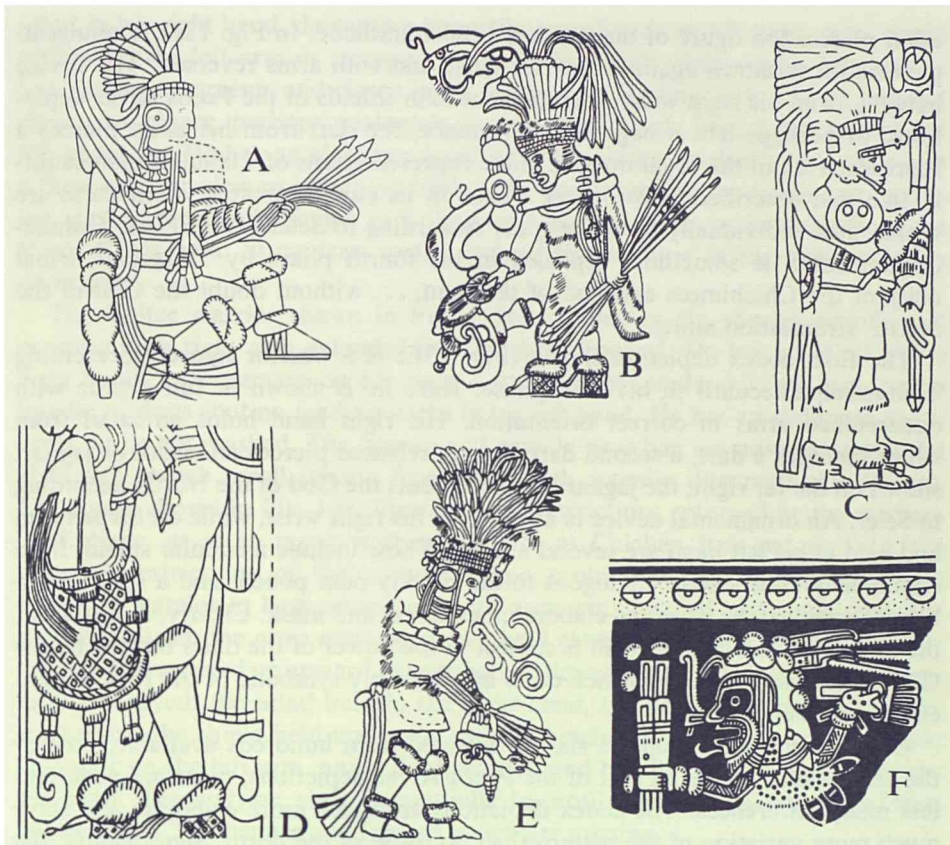


FIG. 14.—Mesoamerican warriors, deities or priests from Early Postclassic depictions: A, From part of altar top, Temple of the Jaguars, Chichén Itzá (Tozzer, 1957, fig. 574); B, From row C, Lower Temple of the Jaguars, Chichén Itzá (Tozzer, 1957, fig. 556); C, Column 18 N, northwest colonade, Chichén Itzá (Tozzer, 1957, fig. 550); D, Column 4 S, South Temple of the Great Ball Court, Chichén Itzá (Tozzer, 1957, fig. 577); E, From row C, Lower Temple of the Jaguars, Chichén Itzá (Tozzer, 1957, fig. 578); F, Fresco from Mitla (Tozzer, 1957, fig. 568). All illustrations courtesy of Peabody Museum, Harvard University.

In Fig. 13C is depicted in warrior guise the Mesoamerican god of Venus, the morning star (Codice Vaticanus in Seler, 1963, fig. 119), who is also a variant aspect of Quetzalcoatl. This warrior-deity depiction is reversed, shown in semi-three-quarter view with outstretched arms, but with the atlatl in his left hand, a common situation in the codices deriving rather from the position of the god depictions in the manuscript than from left-handedness. On his left wrist there is a cuff, with a threefold ribbon or similar item dangling from his elbow. On his right arm next to his body is an elaborate device that is perhaps a shield. An object, perhaps a bag, resembling somewhat some of the prickly pear pouch depictions, hangs from his right wrist; another one is attached in a somewhat upward position to the distal end of his atlatl and a similar device is attached to his elaborate headdress. In his right hand he holds a bundle of darts; a dart from his

atlatl pierces the figure of the goddess Chalchiuhtlicue. In Fig. 13D, Tlahuizcalpantecuhtli is shown again in warrior guise and with arms reversed. The device hanging from his right wrist resembles the skin shields of the Pecos River depictions, or perhaps it is a bag. In this instance, the dart from his atlatl pierces a representation of the royal throne. These representations of Tlahuizcalpantecuhtli, like that described below, show Venus in its various phases; often these are represented individually by other gods. According to Seler (1963:116), Tlahuizcalpantecuhtli is sometimes replaced in his fourth phase by "Mixcoatl, tribal deity of the Chichimecs and god of the hunt, . . . without doubt the God of the North" (translation mine).

The final codex depiction shown (Fig. 13E) is a warrior figure representing Tlahuizcalpantecuhtli in his fifth phase. Here he is shown in full profile with outstretched arms in correct orientation. His right hand holds an atlatl from which emerges a dart; a second dart already released pierces an ocelot or jaguar, shown on the far right; the jaguar here represents the God of the North, according to Seler. An ornamental device is attached to his right wrist, while on his left arm and held in his left hand are several articles. These include a circular shield, from which dangles an object analogous to the prickly pear pouch, and a staff with a banner attached; he wears an elaborate headdress and mask. Clearly, in this view, the jaguar as God of the North is subject to the power of the darts thrown by the God of the Morning Star (which darts are probably symbolic of the rays of light emitted by Venus).

Granting that the examples shown, selected from hundreds available, portray the same basic pattern as that of the Pecos River depictions, there are nevertheless many differences. The codex depictions are much more elaborate and show much more variation of the pattern than do those of the north. Significantly, the fending stick is not portrayed, but all other elements of the northern depictions are present. And even if the resemblances are regarded as real and significant, it may nevertheless be argued correctly that I am comparing depictions in Mesoamerican codices of the historic period with rock shelter paintings dating perhaps between 500 BC and AD 600, or late in that interval, and that resemblances so far removed in time and space have little meaning. Unfortunately, there is no body of pictorial art for the prehistoric periods of Mesoamerican cultural history that adequately compares with the codex depictions. Instead, we must depend on relatively rare wall murals (often poorly preserved), plaster and carved stone bas-reliefs, sculptured figures, ceramic paintings, and engraved metal plates, for comparative data. Aside from mural paintings and, in a sense, ceramic decoration, the media used placed certain restrictions on the artist in his attempt to portray a covert image. Nevertheless, there is evidence that covert images for warrior or hunter figures such as those we have discussed existed and were to some extent portrayed, using the available archaeological evidence, during both the early Postclassic and the earlier Classic period in Mesoamerica.

Analogous Toltec art from the early Postclassic, for example, is replete with warrior images that reproduce in some degree the patterned Pecos River depictions. The figure shown in Fig. 14A, for example, shows the classic warrior with

atlatl in his right hand, decorative items like nopal pads on his right wrist, shield (either on the left arm or strapped to the body there), while on his left arm he has similar ornaments and clasps in his left hand a fending stick and a bundle of darts. An object, perhaps analogous to the prickly pear bag, dangles from his left shoulder. He has an elaborate headdress, but is not masked and is shown in a three-quarter view squatting position. It is significant that the fending or throwing stick is frequently shown in Toltec warrior depictions, as in those from the Pecos River area, in contrast to the lack of this weapon in the historic codex depictions.

The Toltec warrior shown in Fig. 14B is shown in the correct near-frontal position with right arm extended but left arm dropped. He has an atlatl in his right hand, an ornament on his right wrist, a shield under his left arm, and a bundle of darts (but no fending stick) in his left hand. He has an elaborate headdress but is not masked. The banner and prickly pear bag are missing, unless the elaborate speech scroll issuing from his mouth actually illustrates this feature. The figure shown in Fig. 14C illustrates the restrictions enforced by the medium used. Here, as in so many warrior columns at Chichén Itzá and at Tula, the material restrictions of the column shape prohibited depiction of the fully equipped warrior to best advantage, with arms outstretched and equipment displayed. Instead, the arms must be shown held close to the body, either flexed or extended downward or upward. Nevertheless, the essential elements were successfully portrayed: the atlatl held in the right hand, the decorative element on the right wrist, the shield held under the arm or attached to the body, and ornament or armor on the left arm, and a fending stick and bundle of darts grasped in the left hand. The warrior, shown essentially in profile, has an elaborate headdress but no mask. The banner and fringed pouch are missing.

The Toltec warrior from Chichén Itzá shown in Fig. 14E does carry a pouch in his left hand, together with a bundle of darts. The pouch has a handle and is closed by a rattlesnake tie, which may also be part of the handle. Unfortunately the warrior's right arm has been obliterated, although in the original depiction he almost certainly carried an atlatl. He is shown in full profile with elaborate headdress and speech scroll but no mask. The figure from Chichén Itzá shown in Fig. 14D also has been partially obliterated but it clearly portrays the lower left side of a warrior in profile. In his left hand, he holds a fending stick; hung over his left wrist is a tasseled bag; ornaments or armor cover the arm above the wrist; a shield is either attached to his body or dangling from the upper arm. This particular representation is important because of the clear depiction of the fending stick and the tasseled bag. The latter resembles those used and sold all over México today. The tassels produce some resemblance to the animal skin (or trophy) look characteristic of some of the prickly pear pouches of the Pecos River depictions.

Probably contemporary with the Toltec depictions is the fragmentary Mitla fresco shown in Fig. 14F. A warrior with headdress and speech scroll, apparently masked, is shown in three-quarter view, with arms reversed. In his outstretched left hand, he holds an atlatl, and there is an ornament on his left wrist. In his

right hand, he holds a bundle of darts, and there is armor or an ornament on his right wrist. The value of this fresco fragment is that it extends to the Mixteca region in Oaxaca the distribution of the patterned painted depictions of the hunter-priest-god. In the Maya area, only the Toltec (Mexican) warriors at Chichén Itzá are shown in this characteristic pattern; the Maya warriors are shown in a different style and with different weapons. Similarly, the many ceramic figures of western México show warriors in a different pose, and usually equipped with armor, spear, mace, or club, rather than atlatl, darts, fending sticks, and shields.

Fragments of murals such as that from Tepantitla in Teotihuacán shown by Tozzer (1957, fig. 567), however, offer evidence that in central or southern México such depictions have great time depth. The preserved fragment shows only a portion of a warrior, shown in profile, grasping an atlatl in his right hand. Marquina (1970:49), also illustrates an elaborate warrior-priest figure in Teotihuacán style, presumably derived from one of the groups of murals or carvings there, but without any identification given. This figure is shown in profile, with an elaborate headdress and facial mask. In its left hand, it holds a stylized atlatl and a fending stick. Despite the use of the profile view, an attempt was made by the artist to show both arms outstretched, so that the right arm also is shown. Perhaps attached to the right arm is a complex mass of items, including apparently a shield, a bundle of darts, and a bag, while the hand itself holds an elaborate bannerlike device, perhaps fastened to two fending sticks. The design is completed by a somewhat bedraggled bird figure placed in front of the priest-warrior. Marquina (1970:87, lower left and upper right) also illustrates a priest figure from the Tepantitla (Teotihuacán) group of murals that shows a complex figure in profile view, complete with elaborate headdress, mask, and costume. The figure carries in its right hand an object that appears to be a double ceremonial atlatl;⁹ also from its left hand dangles an object that may well represent a flow of blood, water, or other valuable gifts from the gods, as interpreted elsewhere in Teotihuacán art. Its right hand holds an elaborate tasseled bag by its arching handle, which perhaps is a serpent representation.

The significance for our discussion of these rare depictions is that they indicate that our basic covert conceptualization of the armed warrior-hunter-priest-god was already well developed in Classic Teotihuacán times, between AD 150 and 750, and hence overlapped, if not equaled, in time the postulated period of efflorescence of the Pecos River pictographs in question. It should be noted that there are other resemblances between the art styles in question. As noted earlier, a stream of water or blood or valuable objects often falls from one or both hands of the Teotihuacán deity (especially Tlaloc) depictions (Marquina, 1970:45, 54, 86, 87, for example); this is found also in the Pecos River depictions (Fig. 11F, I, for example; also Newcomb and Kirkland, 1967, pls. 19, no. 2; 35, no. 1). And the apparent deification of the giant feline in the Pecos River pictographs is a certain one in the Teotihuacán murals (see for example Acosta *et al.*, 1970:28,

9. This scroll-shaped object is often shown in Teotihuacán depictions. The characteristic speech scroll resembles it closely, but in the instance described, one scroll figure is held in the hand like an atlatl while the second emerges from its top, not from the mouth of the subject. Perhaps the atlatl is here represented equipped with a speech scroll to indicate symbolically that it speaks, and its voice is death.

29, 35, 48, 50-53, 67, 76, 82-84). There, large felines are not only shown with speech scrolls and with plumes but are even portrayed blowing conch shell trumpets, a ceremonial activity. The worship of the feline deity in Mesoamerica, of course, was already well developed in Preclassic times, especially in Olmec culture, and continued through the Toltec period into Aztec times. The two great warrior societies of the Aztec (and judging from archaeological evidence of the Toltec as well) were the Jaguar and Eagle groups;¹⁰ indeed worship of the great feline is one of the major attributes of Mesoamerican ceremonialism and is strongly represented in its ceremonial art. It is difficult to believe that the place of the great feline in the Pecos River Archaic culture was not that of a deity¹¹ and that its worship there was not an extension of its worship in the great Mesoamerican cultures to the south.

Perhaps my inference regarding a relationship between Pecos River and Mesoamerican ceremonialism and art is overdrawn or even completely erroneous. In both areas the artists may have simply depicted hunter-warriors with their weapons and regalia because these were customary sights within the respective cultures and portrayed giant felines as awesome if not divine beasts because they were, in actuality, the great predators of both areas. But the demonstrated wide spread of maize-bean-squash agriculture and related concepts and practices from early Mesoamerican centers through an Archaic (or Desert culture) continuum show that Mesoamerican traits were widely diffused through these ancient Chichimec cultures. Although the ecological aspects of the Pecos River-Rio Grande junction area made agriculture, then as now, a most unattractive basis for subsistence, the hunting and warfare aspects of Mesoamerican culture, which were quite likely diffused along with the agricultural aspects, may have been attractive to and accepted by the Pecos River Chichimecs. As I have demonstrated earlier (Kelley, 1952a, 1955), great masses of cultural influences were being transmitted through the Chichimec cultural sink of southern and western Texas from Mesoamerica to the cultures of the southeastern United States and vice versa on the early historic horizon. Kirchhoff (1948), moreover, has maintained that the Mesoamericans made a purposeful effort to acculturate the Chichimecs along their frontiers.

My opinion is that the Pecos River pictographs in question represent depictions of a ceremonial hunting cult, in which the great feline was deified and its power invoked by the masked shamans to assure success in the hunt and in war. I believe, furthermore, that this particular Archaic or Desert culture group developed this ceremonial and artistic cult, with or without the incidental use of drugs, in response to cultural emanations originating in Mesoamerica. Here, I

10. On artistic and other grounds, it is virtually certain that these warrior societies also had extended their influence into the ceremonialism and art of the Mississippian cultures of the eastern United States, and in fact may have been represented there in person.

11. Cougars, or mountain lions, are still killed in the canyons running into the lower Pecos River and the adjacent gorge of the Rio Grande. Modern hunters who live on the mesa tops safely out of the canyons and who hunt the cougars with high powered rifles and trained dogs regard them as cowardly beasts that fight only when cornered. For the Pecos River Archaic peoples who competed with the cougars of their day for occupancy of the rock shelters and canyons and for the same game animals themselves armed only with the atlatl and dart, and perhaps bolas and slings, the group image of the feline must have been greatly different.

believe, was an island enclave of dilute Mesoamerican culture, developed by Chichimecs far out in the Chichimec sea under influence from the great civilization to the south.

It is known that the Mesoamerican Huasteca traveled the Tamaulipas-Texas coast to the mouth of the Rio Grande and beyond. The Rio Grande was also navigable by dugout canoes to the mouth of the Pecos River, or for a limited distance above it, where canyon rapids greatly impede such travel. On the Rio Grande below the Pecos River art style area, the river emerges from the Edwards Plateau and continues to the Gulf of Mexico, basically through alluvial lowlands. In other words in exactly the area where any Mesoamerican riverine exploration would have ended, and not beyond it, were to be found Chichimecs living in rock shelters where such a pictographic art could have developed, given the appropriate Mesoamerican stimulus. A comparison of certain aberrant Pecos River pictographic depictions (Newcomb and Kirkland, 1967, pls. 14; pl. 39, no. 2; pl. 40, no. 1) with a Toltec (Mexican) fresco at Chichén Itzá (Tozzer, 1957, fig. 62) suggests that these are representations of boats. I know of no archaeological or ethnographic evidence that the Pecos River Archaic peoples possessed even crude dugout canoes, so I suggest that these are indeed the artists' conceptualization of actual Mesoamerican boats that reached this area in exploration and trading activities. If so, the foreign invasion was not greeted entirely in peace, inasmuch as one Pecos River depiction shows a shower of darts falling upon the boat (Newcomb and Kirkland, 1967, pl. 40, no. 1) and its occupants. It also should be noted that the warriors in the Toltec boat apparently conform roughly to the Pecos River artistic conceptualization. Much may be learned by both artists and shamans from even the hostile presence of members of obviously superior culture in their midst, and thereafter incorporated in their own culture.

It has long been known that Chichimecs from the north and west moved into Mesoamerica in wave after wave of migrants over many centuries, and, that once there, they adopted and adapted Mesoamerican culture, influencing it perhaps as much as it influenced them. It has long been suspected also, and now been virtually proven, that Mesoamerican cultural influences emanated northward to change markedly the way of life of former Chichimecs living in what are now the southeastern and southwestern United States. In this paper, I have attempted to demonstrate the operation of these processes in the Mesoamerican littoral of the Chichimec sea in northern and western México. I have also examined with some approval the hypothesis that strong Mesoamerican influences may have impinged, under peculiar geographic and cultural conditions, upon one small enclave of hunter-gatherers far out in the Chichimec sea, leaving for a while a strong Mesoamerican imprint on an otherwise truly Archaic culture. I suspect that many Mesoamerican influences spread far and wide throughout the Chichimec sea, leaving lasting impressions on the occupants. Thus, the famous Sun Dance of the Great Plains peoples may not have originated there, but may actually represent the adoption by some Chichimecs of the complex pattern of ritual and mythology associated with the *volador* ritual and mythology of Mesoamerica. Color directional symbolism, the morning star ritual, and arrow sacrifice may represent

a few other among many such concepts that spread northward through the mobile medium of the Chichimec sea from the great Mesoamerican civilization of México, either directly by contact or indirectly through the peripheral Mesoamerican cultural offshoots that developed in the southeastern and southwestern United States. Chichimec people moved south into Mesoamerica, while Mesoamerican culture moved north into the Chichimeca. Here and there, both stayed, where they took symbolic or actual root.

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HALLUCINOGENS IN PRECOLUMBIAN ART

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That which is called Ololiuhqui is a seed like lentils or tares, which when drunk takes away one's sense, and it is a thing to behold the faith which these misguided natives have in this seed, for once it is drunk, they consult it as if it were an oracle, for whatever many things they wish to know, even those which are beyond the scope of human knowledge. (Hernando Ruíz de Alarcón, 1629)

Though they excoriated such practices with righteous fervor and sought to stamp them out wherever possible, to the sixteenth century missionary friars, the widespread and continuing use of hallucinogenic plants in Indian America seems to have been at least as much a cause of wonderment and fascination as it was of religious indignation.

To judge from some of the early writings, few of those engaged in the spiritual conquest of the New World doubted the efficacy of these magical plants, and some were convinced that the Indians really did experience the supernatural in their rituals. Even the learned Hernando Ruíz de Alarcón, a seventeenth century divine who labored among the Indians of Morelos and Guerrero, México, in an effort to discover and exterminate remaining vestiges of prehispanic "idolatries," remarked repeatedly upon the wondrous capacities of peyote, ololiuhqui, mushrooms, and tobacco, in divination and other native practices.

What made it all wrong, of course, and positively evil, was not so much that the system itself was ineffectual, but that Christ was missing from it. The Indians, it was said, were being misled by the Devil, who appeared to them through the medium of certain magical plants in his employ. As late as the mid-eighteenth century, P. José Ortega, in his *Historia del Nayarit* (1754), was calling peyote "the diabolic root" (colorful language that somehow managed to survive into a supposedly more enlightened twentieth century, when proponents of punitive drug legislation in the United States adopted the term, along with claims, seriously advanced, that use of the cactus caused uncontrollable violence, crime, sexual excess, and madness).

One man's devil being another man's god, the Spaniards were perhaps not wholly off the mark. They perceived quite correctly that the sacred hallucinogens had played an important role in Indian life (in religious ceremonial, individual vision quests, curing, and divination) for many centuries before Columbus. These practices had all survived the Conquest. Hence they had to be eradicated at all costs if Christian instruction was to be complete.

For the Indians, these costs were great indeed: detention, questioning under mental pressure or physical torture, flogging, enslavement, even death. Christianization proceeded apace through the first century after the Conquest, without necessarily displacing the older beliefs and practices, including those involving

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FIG. 1.—Stirrup vase, Chavín, northern Perú, circa 1000 BC. Vessel depicts jaguar in association with columnar cactus between two stepped mountain designs with curling tops. The same cactus appears between mountains on reverse side and on sides of the vessel. The cactus is believed to represent the mescaline-containing *Trichocereus pachanoi*, known in contemporary Peruvian hallucinogenic folk healing practices as San Pedro (Sharon, 1972). The same cactus-feline association occurs on other Chavín vessels of this type and on painted textiles dating to the first millennium BC, thus providing a 3000-year time depth for San Pedro as a sacred hallucinogen. Height, 10½ inches, Collection of the Munson-Williams-Proctor Institute, Utica, New York.

the magical hallucinogenic plants. The Prehispanic native supernatural gradually became populated with new denizens—saints, angels, devils, the Virgin, Christ, God the Father—who merged with the old gods more often than they replaced them altogether. In curing or divination with the aid of hallucinogens, saints

and Virgin became the patrons, whose aid was invoked by the native practitioners in rituals, the folk Catholic trappings of which barely concealed their pagan ancestry.

So, for example, in Oaxaca, the sacred mushrooms and the hallucinogenic seeds of the morning glory (ololiuhqui) are taken with prayers to the Virgin and the saints. In Mexican herbal markets, ololiuhqui is sold not only as Don Diego de día, Dompedro, maravilla, manto de María, or semilla de la Virgen (Horcasitas and Heyden, 1971:116-117, fn. 5), but also as ololuc, or some other derivation of the Aztec word, ololiuhqui. In Perú, the mescaline-containing cactus (*Trichocereus pachanoi*) (Fig. 1) used in hallucinogenic folk healing rituals is known as San Pedro. The supernaturals whose aid is invoked by the Peruvian curandero include both pagan spirits and Christian saints, while among his adversaries from the Netherworld is the Devil himself (Sharon, 1972). Such syncretism is common but not universal; in México, the peyote beliefs and practices of the Huichol remain to this day basically free of Catholic admixture, and in South America, there survive numerous hallucinogen-using Indian populations among whom missionary effort has been minimal or nonexistent. Even many heavily missionized Indians continue to use hallucinogens in a traditional manner and for traditional purposes, or, where deculturation has already occurred, in an effort to maintain or reestablish their former intimate connection with the ancestral spirits and the ancestral culture.

Fray Bernadino de Sahagún, whose monumental *Historia General de las Cosas de Nueva España*, better known as the Florentine Codex, is a gold mine of primary data for the beliefs and customs of central México just prior to the Conquest, catalogued no less than 123 medicinal plants known to the Aztecs in the sixteenth century. Among these, he described some of the principal psychotomimetic species and their physiological and psychological effects. Above all, these included the peyote cactus (peyotl), the sacred mushrooms (teonana-catl), *Datura* (toloatzin), and the seeds of the morning-glory (ololiuhqui). The ritual use of tobacco (yetl, picietl), in ways and for purposes that closely resembled the hallucinogens, was also described (for an ethnographic account of this phenomenon in South America see Wilbert, 1972:55-83).

Francisco Hernández, physician to the King of Spain, spent many years studying the medicinal plants of Indian México and wrote extensively of those that had psychotomimetic effects. Later churchmen were rather less scientifically dispassionate. Ruíz de Alarcón and Jacinto de la Serna composed their treatises on pagan customs and idolatries primarily to instruct the clergy in the recognition, and it was hoped, eradication of pre-Christian religious survivals, especially those involving hallucinogens, which were still being accorded divine status a century after the Conquest, as indeed they are to the present day.

Ruíz de Alarcón's *Tratado* of 1629 is a marvelous primary source work for the considerable body of prehispanic beliefs, customs, and incantations that had managed to survive the first century of Spanish rule in central and west-central México. The author, holder of the ecclesiastical benefice of Atenango del Río in the state of Guerrero, and brother of the seventeenth century Hispano-American

dramaturgist Juan Ruíz de Alarcón, spoke Nahuatl well. His investigations in behalf of the Inquisition extended over a considerable portion of Guerrero and Morelos, where he interrogated and arrested many native practitioners, preached incessantly to the Indians "to root out their prejudicial superstition from their hearts," and confiscated and destroyed prodigious quantities of *ololihqui*.

It should be pointed out that the undiminished faith of some indigenous groups and individuals in the magical powers of traditional hallucinogens was related, at least in part, to the therapeutic properties they were believed to possess along with their psychotomimetic ones (often with good reason). Peyote, for instance, is sold publicly as medicine in many herbal markets in México and is so employed by mestizos who may have no particular interest in the mystical qualities of the cactus. The Huichol, to whom peyote is sacred, also regard it as good medicine; it is taken internally, for example, to counteract intestinal disorders, and its juice is applied to cuts and bruises. Interestingly enough, researchers at the University of Arizona recently discovered a scientific basis for these folk beliefs. Testing an ethanol extract of the cactus on mice, they found that it exhibited antibiotic activity against a wide spectrum of bacteria, including some that are resistant to penicillin (McLeary *et al.*, 1960:247-249).

This dual mystical-medicinal aspect sometimes troubled the colonial Spaniards. How was one to eradicate the use of peyote in the hated pagan practices, when so many people, Spaniards included, esteemed peyote as medicine? In any event, outlawed it was, at least for a time, and its use by Indians punished wherever discovered.

The writings of the Colonial period notwithstanding, and despite a wealth of potentially significant ethnographic, ethnohistorical, botanical, and archaeological data, the prehistoric role of hallucinogens and their possible impact on style and content of the ritual arts has received relatively little attention in the anthropological study of the ancient civilizations of the Americas. Numerous questions come to mind, for example: We know that style and iconography of masks and other works of ritual art among contemporary or recent Indians in North and South America are frequently inspired and even decisively influenced by the dreams and ecstatic trances of shamans and priests. Often the shamans themselves are the artists. This is true as much of relatively simple Arctic hunters and food gatherers or Tropical Forest manioc planters as it is of more complex and stratified societies, like those of the Northwest Coast of North America. Was it true also of Precolumbian art, which, as we know, served wholly religious, ritual, or magical purposes?

We are, of course, talking of prototypes, not their institutionalized and often mass produced replications, although, judging from a sixteenth century account by the Bishop of Yucatan, Fray Diego de Landa, Maya artists customarily sought supernatural inspiration through fasting and smoking for the images or idols that they were commissioned to create—even though the gods and their attributes had long since become institutionalized, leaving little room for idiosyncratic variation.

The so-called "mushroom stones" from Guatemala and southern México would seem to present much less of a problem. But even these relatively uncomplex

objects had to wait a long time for recognition. Carl Sapper identified them as effigies of mushrooms as early as 1898, but for several decades thereafter they were variously identified with “phallic worship,” assumed to be seats or thrones, or simply described as of “unknown significance.”

It might be argued that until a living mushroom cult had actually been discovered in Oaxaca failure to connect the ancient effigies with hallucinogenic mushrooms was not surprising—especially inasmuch as such objects do not appear in the few surviving codices. Perhaps so, but why were they not at least considered in the light of the numerous and very specific historical references to mushroom worship and intoxication in the writings of Sahagún, Hernández, Ruíz de Alarcón, and others? True, for a time the assertion of the botanist William E. Safford (1917) that all these early writers were wrong, that no such mushrooms existed in México, and that *teonanacatl* (the “God’s flesh” of the Aztecs) was nothing but the peyote cactus, was widely accepted. The old sources were proved right and Safford wrong, however, when the Mexican ethnologist Roberto Weitlaner, and subsequently B. P. Reko and Richard Evans Schultes, in the late 1930’s collected the first botanical specimens of hallucinogenic mushrooms actually employed in magico-religious and divinatory rites in Oaxaca (Schultes, 1972:9).

The Oaxacan mushroom rites were more intensively studied in the 1950’s, especially by R. Gordon and Valentina P. Wasson, Roger Heim, and Rolf Singer; it was in the Wassons’ (1957) monumental book on the role of mushrooms in human culture that they and Stephan de Borhegyi (1961) made the first connection in print between the mushroom effigy stones and worship of sacred hallucinogenic mushrooms in ancient and contemporary Mesoamerica. This connection has since come to be generally accepted, so that we should hear no more of phallic worship or stone seats as explanations for these interesting sculptures. Borhegyi (1961) published an expanded version of his earlier classification of all mushroom stones then known (approximately 50); since then, many more have been added, including 50 in Guatemala alone (Lowy, 1971). Others undoubtedly remain to be described. The best current estimate of the number of such sculptures in private or public collections is between 200 and 250.

It should also be noted in this connection that with the recent discovery that hallucinogenic mushrooms are being used today in Chiapas, the long-assumed disappearance of any vestige of a cult of sacred mushrooms from the Maya area has turned out to be a myth (Furst, 1972:x). Students of Michael D. Coe observed the use of these mushrooms (apparently a species of *Psilocybe* and possibly also one of *Stropharia*) at and near the Classic Maya ceremonial center of Palenque, an area inhabited by Chol-speaking Maya (M. D. Coe, personal communication). Merle Greene Robertson (personal communication) likewise reported hallucinogenic mushrooms in use on the Río Usumacinta, which divides Chiapas from the Petén of Guatemala. The important Classic ceremonial centers of Yaxchilán and Piedras Negras are located on the banks of this river.

These discoveries should help lay to rest any lingering doubts about the function and meaning of the mushroom stones in the Maya area. They should also put an end to speculation as to why a mushroom cult survived in Oaxaca but



FIG. 2.—Miniature clay effigies from Nayarit, representing mushroom spirits or shamans with hallucinogenic mushrooms, the sanctity or worship of which is emphasized by exaggerated size. It was this abnormal size that gave rise to their usual interpretation as umbrellas or trees: A, private collection, height, 3 inches; B, Museo de Arqueología del Occidente, Instituto Jalisciense de Antropología e Historia, Guadalajara, México, height, about 4½ inches.

not among the Maya, whose ancestors are presumably the creators of the great bulk of prehistoric mushroom stones from southern México and Guatemala.

I should point out that it is not yet possible to say with certainty whether the contemporary mushroom practices at Palenque represent true survivals, or whether they were reintroduced in the Maya region by more recent non-Maya settlers, perhaps from a mushroom-using area of México.² It is certainly puzzling that no mention of hallucinogenic mushrooms can be found in any of the accounts of Maya life by missionaries, travellers, adventurers and, more recently, ethnologists. Lacandon use of hallucinogenic mushrooms is another matter in that it gives every appearance of a well-integrated practice with a long indigenous tradition.

In any case, the negative evidence does not prove that such practices did not in fact exist at Palenque as well. But even if contemporary mushroom use here should turn out to be relatively recent, it is somewhat ironic that professional anthropologists, who have labored among the Mayas for so many decades,

2. Since the above was written, Merle Greene Robertson (1972) has added considerably to her field data on the ritual use of at least two species of hallucinogenic mushrooms by Lacandon Mayas around the lakes of the Metzabok region, a few kilometers from the Río Usumacinta. "The mushrooms," she wrote, "are placed in ritual bowls on stone altars in their small oratorios;" the mushrooms, which are eaten, are not worshipped but serve, as they did in Prehispanic times, as mediators between the people and their gods. From her own observations and the data supplied by her informants, she became convinced that knowledge and use of the hallucinogenic mushrooms is indeed ancient among the Lacondones; in any event, "they have apparently been eating the mushroom ritually as long as anyone can remember."



FIG. 3.—Three male figurines with mushroom effigy "horns," from the area of Teocaltiche, northern Jalisco, *circa* AD 100-200. Unlike the Colima-Jalisco-Nayarit shaft tomb figurines with which they are more or less contemporaneous, these funerary effigies show a surprising degree of uniformity, being limited to male and female pairs, of which the male alone is almost always distinguished by two mushroom representations on the head. The iconographic and stylistic consistency of these companions of the dead suggest they might represent a male and female pair of supernaturals or deities, perhaps the divinities inherent in sacred mushrooms. Height of largest male, about 14 inches, David Stuart Gallery, Los Angeles, California.

would have missed a practice of which, I am told, at least some youthful adherents of the cult of psychedelia from France and the United States have been aware of for at least several years. The answer lies probably not so much in secretiveness on the part of the local inhabitants as it does in failure to ask the right questions.

Meanwhile, evidence is accumulating that hallucinogenic mushrooms were important prehistorically not only in the beliefs and rituals of southern México and Guatemala, Oaxaca, or central México, but extended into far northwestern México as well.

If my interpretation of certain western Mexican effigies (Figs. 2-4) is correct, a considerable mushroom cult appears to have flourished in prehistoric Colima, Jalisco, and Nayarit during the shaft-and-chamber tomb phase—that is, from about 100 BC to AD 300-400.

Interestingly enough, some Huichol Indians in Jalisco retain a tradition of "sorcerers" who collected and ate hallucinogenic mushrooms in "ancient times."



FIG. 4.—Mushroom ceremony, with four individuals ringing long-stemmed mushroom effigy, the cap of which suggests a species of *Psilocybe*. Colima, circa 100 BC to AD 200-300. Height, about 6 inches, private collection.

I also heard a similar story from a Cora curandero in Tepic, Nayarit (the Cora are neighbors and linguistic and cultural cousins of the Huichol in the Sierra Madre Occidental). The late Huichol artist and shaman, Ramón Medina Silva, who, between 1965 and 1971, translated many Huichol traditions for me into two-dimensional art, in the summer of 1970 made a wool-on-wax yarn design depicting what he identified as a male and female Héwi sorcerer beneath a giant multicolored hallucinogenic mushroom. The Héwi is a legendary pre-Huichol race that was wiped out by the universal flood and now lives under the earth.

This Huichol tradition, evidently shared by others in the Sierra, would seem to corroborate to some degree my identification of archaeological mushroom effigies in western Mexican art. I was informed also by a colleague, Phil C. Weigand, that hallucinogenic mushrooms, presumably one or more species of *Psilocybe*, occur in Jalisco, and that some of the inhabitants of the region of Etzatlán are said

to have employed these mushrooms as recently as the late nineteenth century. Ramón's "ancient sorcerers" might thus be only a few generations old; on the other hand, the tradition could well refer to a much earlier time.

I would not wish to leave the subjects of mushrooms without reference to South America. Early missionaries in Amazonian Perú found hallucinogenic mushrooms being used by the Yurimagua Indians; Schultes (1972:11) suggested the species employed might have been *Psilocybe yungensis*, which is known to contain hallucinogenic principles and which has been collected in the area. There also are reports from Colombia of hallucinogenic mushrooms, but to my knowledge, none is being used today by Indian groups. On the other hand, there is archaeological evidence for a Prehispanic mushroom cult in Colombia. I was recently shown a pottery mushroom effigy, apparently of Chibchan origin, with a platelike cap and the mold-made figure of a panpipe-playing man in high relief on the stipe, reminiscent of some Guatemalan mushroom stones with human figures on the stipe. The latter, however, date considerably earlier.

André Emmerich (1965:76-77) developed the interesting theory that the pairs of telephone bell-like, semispherical, hollow-stemmed ornaments surmounting the headdress of a certain class of conventionalized anthropomorphic gold pectorals in the Darién style from Colombia ("telephone gods") are in fact mushrooms. Emmerich demonstrated convincingly that over time these ornaments gradually changed position as the effigies themselves became more and more stylized. On early, more realistic pieces, the mushroom form is unmistakable, the semispherical caps being separated from the headdress by stems or stipes attached to the top of the head. Subsequently, the stipes became shorter and the caps were slightly inclined forward. Eventually, the stipes, though still present beneath the cap, disappeared altogether from view and the two caps faced forward like a pair of female breasts. By this time the human characters had also been stylized to the point of abstraction. This progression from semirealism to extreme stylization is well illustrated also in a catalogue of the Gold Museum in Bogotá, published by the Banco de la República (1954: pls. 53-56). The mushroom form is unmistakable, especially in a tumbaga (gold-copper alloy) pectoral from Antioquia (Fig. 5), which appears to be a relatively naturalistic prototype for the more stylized and elaborate later pectorals of cast gold.

Finally, we should take note of the mushroom-shaped ornaments on the headdresses of certain Moche effigy stirrup vessels from Perú. Kneeling figures of warriors sometimes have a mushroomlike ornament on the head. Of even greater interest is a vessel illustrated by von Hagen (1964, pl. 85), depicting a curing shaman seated on a boxlike vessel, with a female patient lying on her back in front of him. The curer's right hand touches her throat, his left her abdomen. He wears a headdress consisting of a toadlike animal with feline characteristics, surmounted by a large mushroom with a semispherical cap, which is remarkably similar in style and iconography to some zoomorphic effigy mushroom stones from Guatemala, including one recently published by Lowy (1971:989, fig. 6), and another by myself (1972:189, fig. 30).

Safford's confusion of *teonanacatl* with *peyotl* notwithstanding, mushrooms are nothing like the peyote cactus, and these two sacred hallucinogenic plants of

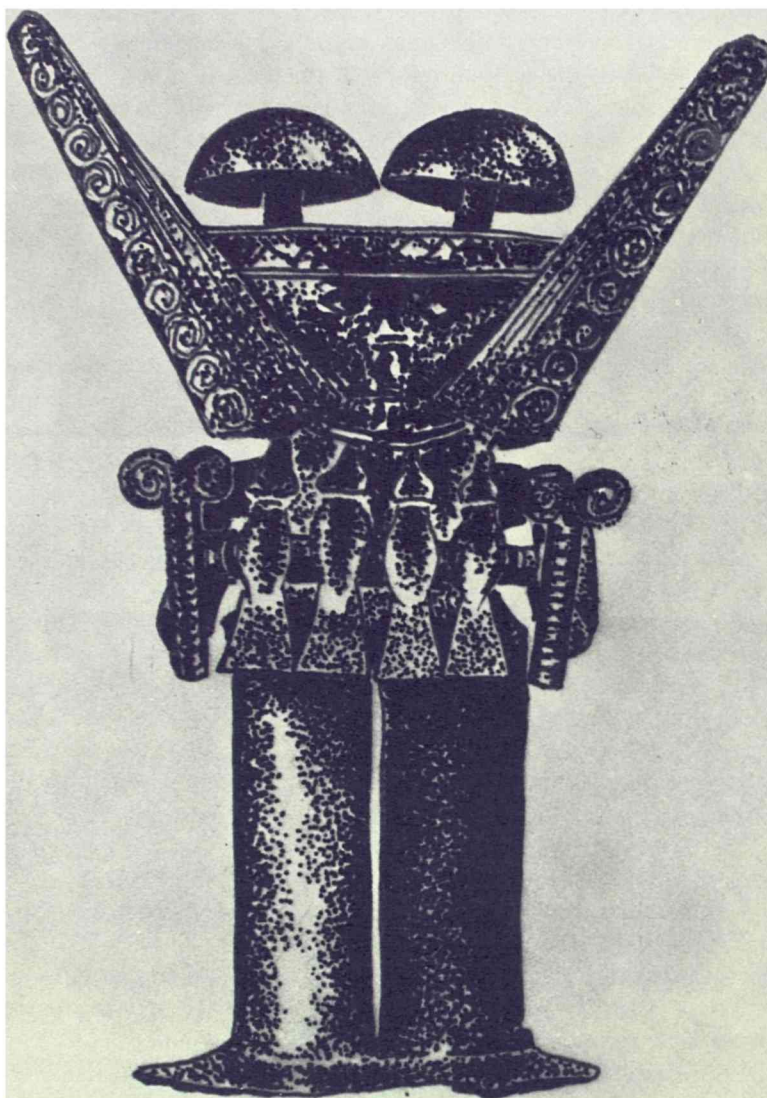


FIG. 5.—Anthropomorphic pectoral with pair of mushroom effigies attached to the top of the head. Darién style, from Frontino (Antioquia) Colombia, Tumbaga, height, 6½ inches, Museo del Oro, Bogotá, drawn from pl. 53, Banco de la República (1954).

Mexican Indians are generally easily told apart when they appear in art. The shape of mushrooms being more familiar to archaeologists and art historians, it is not surprising that the identification of the former should have preceded that of the latter by many years, even if it did take inordinately long to make the connection between mushrooms in art and mushrooms in ritual.

My interest in peyote representations in western Mexican funerary art was a consequence of ethnographic research among the Huichol Indians, to whom the

peyote is at once itself, maize, and, above all, the divine deer. Hence the cactus is quite literally tracked and hunted with bow and arrow on the peyote pilgrimages, which annually take small parties of peyoteros from their present homeland in the Sierra Madre of Jalisco and Nayarit about 300 miles northwestward to Wirikúta, as they call the sacred peyote country, in the north-central desert of San Luis Potosí. We were privileged to participate in two such hunts in 1966 and 1968.

I first suggested, in a paper (1965) on the relationship of West Mexican funerary art to shamanism, that some of the so-called rattles in the hands of certain Colima effigy figurines might be peyote rather than musical instruments. Subsequently, Meighan and Nicholson (1970), using ethnographic analogy with contemporary Huichol peyote ritual, suggested that the well-known Colima "mourners," a class of large hollow seated ceramic funerary effigies characterized by bent heads resting on folded arms, might represent participants in a peyote ceremony. Inasmuch as Huichol peyote ceremonialists not only sit in this manner but also stand, squat, lie, and even dance while entranced with the sacred cactus, the analogy may be somewhat tenuous. Nevertheless, the evidence in archaeological art for the use of peyote in ancient Colima is now so substantial that such an alternative interpretation for the "mourners" is not unreasonable, even in the absence of any other sign of the cactus itself.

I also have long thought that peyote is represented on Colima bowls, such as that in Fig. 6. Although conceding that the modelled plants could as easily represent some other vegetable, such as squash, surely no such ambiguity adheres to effigy sculptures of the kind illustrated in Fig. 7. In this case, comparison of the plant effigies in the hands of the hunchback figurine with actual peyote plants, with their characteristic slightly rounded crowns and tapering roots, removes any uncertainty. In other figurines of related iconography, the cactus is not always quite so faithful to the natural prototype, at least not as it grows in its desert habitat. Instead, the crown is sometimes conventionalized into a less typical spherical shape. This is particularly common in figurines that hold one or, more often, two putative peyote plants in the right hand and a dish or a bowl made from a gourd in the left.

The perfectly round form had me puzzled for a time, until I learned by observation that intervention by man is able to alter the life form of individual plants considerably. For example, when the cactus is taken from its native arid habitat and transplanted into a more humid environment, the crown may gradually change shape, so that in time it comes to resemble a perfectly round (but spineless) barrel cactus more than a typical peyote. To keep it fresh for the various ceremonies that follow the peyote hunt, the Huichol customarily plant some of the peyote they have brought back from their pilgrimages; perhaps the ball-shaped plants in the hands of some Colima peyotero effigies are the result of similar temporary domestication in prehistoric times.

Noteworthy in Fig. 7 is the engraved circle by which the artist marked the center of the ribbed plant. This clearly represents the inner circle formed by tufts of fine spines. Among the Huichol, this area is equated with the fontanelle as seat of the life force, or soul. Before the cactus is eaten the hairs are carefully re-



FIG. 6.—Bowl with four peyotelike cactus effigies in high relief. Colima, diameter, 12 inches, height, 12 inches, *circa* 100 BC to AD 200-300, private collection.

moved and usually stored in a medicine bag for later sacrificial incineration in the sacred fire (Tatewarí, our Grandfather). The same convention of a circle for the sacred center was employed by the Monte Albán artist who modelled the deer effigy with a peyote cactus in its mouth (Fig. 17). This remarkable artifact is more fully described in the discussion on artistic evidence for snuffing in prehistoric Mesoamerica.

The history of the botanical identification of ololihqui somewhat parallels that of the sacred mushrooms, with similar confusion between two unrelated Mexican hallucinogens as that between teonanacatl and peyote. As Schultes (1972: 17-22) noted, in México the attribution of ololihqui to the morning-glories was generally accepted as early as 1854. The Mexican botanist, Urbina, had identified it as the seeds of *Rivea corymbosa* more than 70 years ago, and in 1919, B. P. Reko collected ololuc (ololihqui) seeds in Oaxaca that were identified by personnel at the Smithsonian Institution as belonging to *Rivea corymbosa*. Moreover, both Sahagún and Hernández, writing in the sixteenth century, and Ruíz de Alarcón, in the seventeenth, had clearly identified the plant as a vine, known to the Aztecs as coatl-xoxoiuhqui, or green snake plant, and an illustration by Hernández left no doubt that a morning-glory was intended.

Nevertheless, Safford (1917), partly on the basis of some failed experiments with morning-glory seeds, insisted that ololihqui had to be *Datura*, known to be



FIG. 7.—Male hunchbacked effigy figurine from Colima, holding a pair of peyote cactus plants, *circa* 100 BC to AD 200-300, height, 13 inches, collection of Mr. and Mrs. William Kaplan, New York.

used hallucinogenically by many Indians in Mesoamerica at, and since, the time of the Conquest.

This unjustified confusion was to persist at least until 1939, when B. P. Reko and Schultes collected unquestionable voucher specimens of morning-glory seeds in the courtyard of a Oaxacan Zapotec curandera, who was actually using them in her hallucinatory rituals. Schultes (1941) also reported use of the same seeds among a number of other Oaxacan Indians, including Mazatecs, Chinantecs, and Mixtecs. Schultes (1941) published an important paper summarizing what was

then known about ololihqui and the morning-glory, *Rivea corymbosa*, and the matter was finally settled. A psychiatrist, Humphrey Osmond (1955), published the first account of intoxication with *Rivea corymbosa* seeds. Not long after, Albert Hoffmann, the discoverer of lysergic acid diethylamide (LSD-25), announced the isolation of lysergic acid derivatives from *Rivea corymbosa* seeds. Since then, another morning-glory, *Ipomoea violacea* (= *Ipomoea tricolor*), has been identified as a source of hallucinogenic seeds, also used in curing and divination among Mexican Indians.

According to Ruíz de Alarcón (1629), the Indians generally attributed divinity to ololihqui, as also to peyote and tobacco. Ololihqui was venerated and sacrifices were made to it; it seems that the greatest fear of the native practitioners using ololihqui was not so much its destruction by the foreign priests but the possibility that the sacred seeds might become profaned and contaminated by their touch, to the degree that the divinity inherent in them might vent his displeasure on the people. The reverent attitudes of contemporary Indians toward ololihqui were well described by Wasson (1963).

How ancient is the ololihqui tradition in central México? On the basis of mural paintings at Teotihuacán and nearby Tepantitla (Figs. 8-10), which I believe to be based on the sacred morning-glory,³ it must have played an important role in religion and ritual at least as early as the rise of the first great urban civilization in Mesoamerica, that is, in the Early Classic. However, it is probable that the discovery of potent hallucinogenic principles in the seeds and the investiture of the morning-glory with divine power had its origins much earlier, long before the shamanism and incipient priest-shamans characteristic of preagricultural and early agricultural societies had evolved into the highly formal organized priesthood for which we have evidence at Teotihuacán.

Although morning-glorylike flowers abound in the art of Teotihuacán (to the virtual exclusion of other species), the complex Tepantitla mural is iconographically by far the most interesting. Its dominant figure is a deity with great quetzal feather headdress, flanked by priestly personator-attendants, whose clothing and symbolic accoutrements duplicate those of the deity. Behind and above is a great plant that I think botanists will agree is not a tree, as it is usually identified, but a vine, the natural form of which, however, has been subsumed to its mythological and symbolic content. Nonetheless, the white, funnel-shaped flowers at the ends of the branches and certain other characters identify it as a morning-glory, presumably *Rivea corymbosa*.

In nature the branches of the morning-glory vine are thin, but in the mural they have been abnormally enlarged within a double outline that makes it appear as though they contained within them spiders, butterflies, four-petaled flowers and what appear to be egg masses. The focus of interest, however, is on the pro-

3. I am greatly indebted to Dr. Richard Evans Schultes, Director, Botanical Museum of Harvard University, for pointing out those features of the Tepantitla mural and other floral representations in Teotihuacán art that tended to support my identification of the morning-glory. Above all these include the characteristic structure of the profiled flowers and the seed pods, in combination with the vinelike conformation of the plant as a whole. The seed pods of the painting are in fact quite faithful to the natural model, whereas the rest of the plant is greatly stylized, but not to the degree that the species defies botanical identification, as is the case with some other plant representations in Precolumbian art.

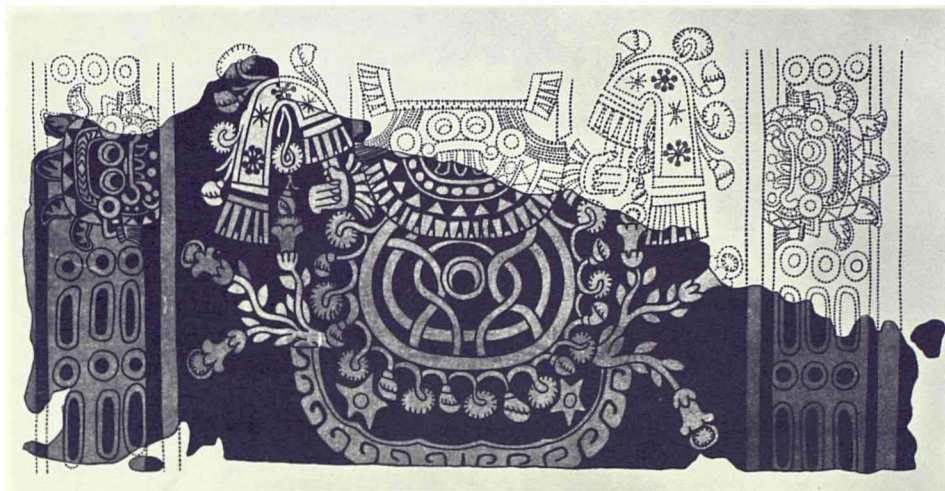


FIG. 8.—Mural depicting Tlaloc with flowering aquatic vine and morning-glory plants, from Zone 3, Teotihuacán, México. Drawing by Felipe Daralos, courtesy Arthur G. Miller.

filed blossoms in which the branches terminate. Their outer edge is set with three eyes, and double sets of three eyes each also adorn the bannerlike streamers with pendant drops of water that seem to flow from the blossoms themselves, or from small four-petaled flowers, which, like those within the branches, are reminiscent of the well-known four-petaled Teotihuacán flower symbol and its Classic Maya counterpart. The latter stands for kin (sun or day). Of special interest are the sets of four seed pods, as well as single seed pods attached to yet other four-petaled flower symbols immediately in front of some of the profiled blossoms. Singing birds flutter about the outer limits of the great plant.

The late, great Mexican scholar, Alfonso Caso (1942), long ago interpreted the Tepantitla mural as an early representation of Tlalocan, the Aztec paradise of the rain god, Tlaloc, ultimate destination of those who died by drowning or were struck by lightning. As Caso noted, it was the custom of the Aztecs to bury such people with a leafless branch, because it was thought that on emerging from the waters of death, and arriving in Tlalocan, the branch would again sprout green leaves. And, indeed, beneath the central figure of the great water and fertility deity, there is a lively scene (not shown here) of happy little people singing, dancing, chasing butterflies, and, significantly, holding branches covered with leaves. Flowing into a lake at the bottom of the mural are rivers with eye symbols, and in the lake itself, people who seem to be swimming, drowning or drowned, diving head-first, saving someone, shouting, or emerging from the waters to join their fellows playing on shore.

The symbolism here certainly seems to correspond remarkably well to the sixteenth century sources that Caso cited in support of his interpretation of the mural. Nor is it the only example in the sacred art of Teotihuacán to substantiate the case for a high degree of ideological continuity in central México.

Whether or not the scene below exactly reflects the Aztec tradition of Tlalocan, the dominant water and fertility deity above is certainly not Tlaloc. Tlaloc is eas-



FIG. 9.—A, Upper half of "Paradise of Tlalocan" mural at Tepantitla, Teotihuacán, with water goddess below giant stylized representation of the scared hallucinogenic morning-glory, *Rivea corymbosa* (reconstruction painting by Agustín Villagra in the Teotihuacán Hall of the Museo Nacional de Antropología, México); B, detail, showing the characteristic structure of morning-glory flowers.

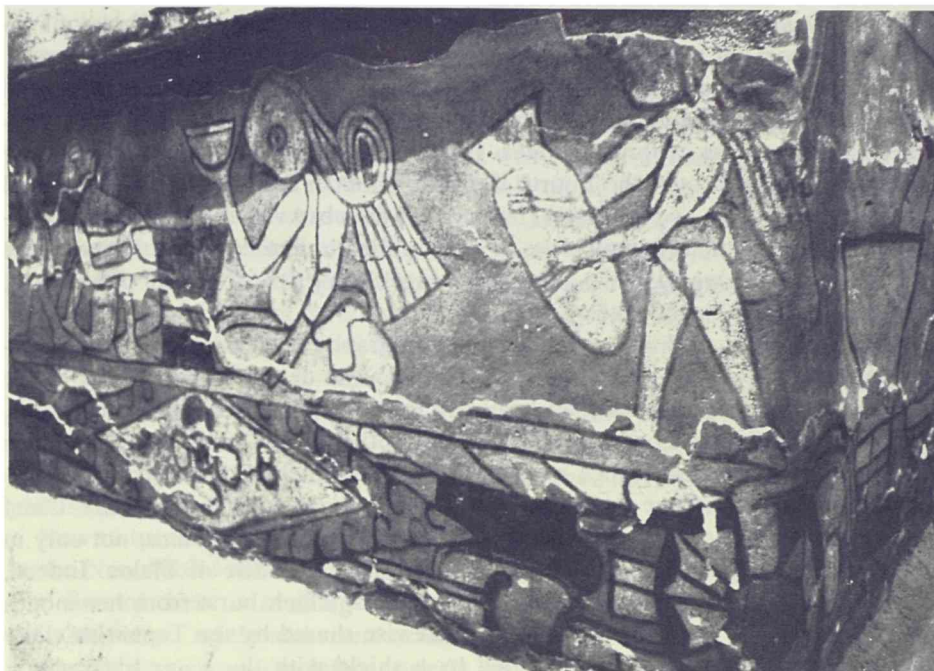


FIG. 10.—Detail from the recently discovered mural of the *Bebedores* (Drinkers) at Cholula, Puebla, Teotihuacán. Measuring about 210 feet in length, the mural, which depicts a lively drinking ritual with numerous human figurines, dates from Cholula II, second to third century AD. If the flower symbol on the corner at lower right, and repeated throughout the mural above or below the drinkers, is a stylized morning-glory, the drinking ritual may involve not just pulque but pulque reinforced with an infusion of *ololiuhqui*, the hallucinogenic seeds of the morning-glory, *Rivea corymbosa*. Ritual mixtures of alcohol and a hallucinogen are mentioned by the chroniclers and are still employed today.

ily identified by the characteristic goggle eyes that were his trademark from the Early Classic to the Conquest, whereas the eyes of the Tepantitla deity are lozenge shaped. All that reminds us of Tlaloc is a nose pendant with protruding curved teeth. But this may be no more than an indication of a certain relationship to Tlaloc or the principles for which he stands: earth and, above all, rain.

Not only does the central image as a whole suggest specifically female principles of creation, fertility, and abundance, but the two priestly personators are obviously wearing the *quechquemiltl*, the characteristically feminine, poncholike, triangular upper garment that in Aztec times was reserved for women of noble status and also served as identifying characteristic of certain female deities in the Aztec pantheon, including the earth goddess *Xochiquetzal* and the water goddess *Chalchiuhtlicue*.

George Kubler (1962) suggested that the Tepantitla deity is a water goddess. Esther Pasztory (1971) made a persuasive case for a composite creator goddess of the earth, fertility and abundance, whose predominant characteristics identify her as *Xochiquetzal*. Certainly the quetzal headdress in association with flowers

(xochi = flower, quetzal = quetzal bird, precious) and numerous symbols of vegetation support her hypothesis.

My own preference leans toward the goddess of flowing water, streams, and springs, Chalchiuhtlicue, but with certain attributes of the earth goddess, Xochiquetzal. As goddess of flowing water, Chalchiuhtlicue, who was also the spouse of Tlaloc, presided over the Fourth Creation (Fourth Sun), which was assigned to water and which, as Nicholson (1971:395-446) observed in his masterful synthesis of the enormous complexities of Aztec religion, appropriately ended in the destruction of the world in the universal deluge. The Fifth Sun is the present era, which is to end in earthquakes.

Obviously we would not expect Aztec iconography to duplicate that of Teotihuacán in all, or even most, respects, whatever the degree of continuity. Over time, even where gods remained basically the same, the emphasis might shift, and what had distinguished a particular deity in the Early Classic might not have retained the same significance in later times. Nevertheless, the Tepantitla goddess and Chalchiuhtlicue do seem to share a number of important traits. Chief among these is, of course, the imagery of flowing water and streams, not only in the upper panel but also in the lower, the so-called Paradise of Tlaloc. Indeed, the goddess herself is the source of these streams, which burst from her mouth as from a spring. The water lily motif is likewise shared by the Tepantitla deity and Chalchiuhtlicue, who is identified by a shield with the water lily symbol. Finally, the name of the Aztec goddess translates as "jade skirt," or hip garment of jade beads, and Sahagún specifically mentions her necklaces of precious jade beads. The Tepantitla goddess and her personators are similarly adorned with strands of jade beads.

In point of fact, the specific identification of the great Tepantitla goddess hardly matters, for Chalchiuhtlicue, like Xochiquetzal, and a whole series of other earth and fertility goddesses in the Aztec pantheon can be understood, as a perusal of Durán's sixteenth century observations makes clear, more as different manifestations of the same Great Mother Goddess in her youthful and fecund form than as truly different personalities (Durán, 1971; Doris Heyden, personal communication). Ethnographically we find this to be true also among the Huichol, whose numerous female earth, water, and fertility goddesses are, as the Huichol say, "the same," meaning that they are all manifestations of the same feminine fertility principle represented by the old earth goddess Nakawé, Our Grandmother.

There remains the question of the association of the morning-glory with water. As it happens, morning-glories could be considered not only as companions of the sun, in the sense that the blossoms open when touched by the first rays at dawn and close at dusk, but also as harbingers of rain, in that the vine begins to flower with the onset of the rainy season in central México. Morning-glories are also fond of wet places.

However, this association may be even more profound. In rural México, there are chapels dedicated to the Virgin Mary as Our Lady of the Waters, or Our Lady, Mother of Water, without indication of the origin of the name.

In his discussion of the effects of acculturation of the *ololihqui* complex, Aguirre Beltrán (1963:130-137) offered an interesting hypothesis. Citing de la Serna's seventeenth century treatise on Indian beliefs and practices in early Colonial times, Aguirre Beltrán noted that *ololihqui* was considered to be a male divinity, whose female counterpart was a plant known as *atl ynan*, which is translatable as Mother of Water. The male *ololihqui* and the female *atl ynan* (species unidentified), who were considered to be brother and sister, were often combined into a single hallucinogenic potion employed in magic, curing and divination. The author suggested that in the process of religious acculturation in the early Colonial period, *atl ynan*, as the personification of a pre-Christian mother of water and sister of the male *ololihqui*, might have become merged with the Catholic Virgin, thus giving rise to the latter as a syncretic Christopagan Lady of the Waters. To take this a step farther, one wonders to what degree the seventeenth century folk tradition of *atl ynan* and her brother *ololihqui* might reflect traditions that long ago determined the iconography of the mural painting at Tepantitla.

Now to turn to two areas of what might be called the psychedelic phenomenon in the New World for which evidence is only just beginning to be accumulated. The first of these is snuffing in Mesoamerica, the second is the symbolism of the toad in art, myth, and ritual as earth mother or earth monster in relation to ethnopharmacology—the latter, strictly speaking, is not an unequivocally hallucinogenic problem but potentially closely enough related to it to deserve consideration in the present context.⁴

SNUFFING

The inhalation of a potent snuff powder of vegetal origin to trigger ecstatic visions was actually the very first of the many hallucinogenic practices to be encountered by the early European explorers. The earliest account of the use of psychotomimetic snuff and some of the associated beliefs and rituals is that of Friar Ramon Pane, whom Columbus had commissioned on his second voyage (1493-1496) to collect information on the ceremonies and customs of the native inhabitants of Hispaniola and other islands of the Caribbean. According to Pane, whose observations were later published in 1511 by Peter Martyr (Schultes, 1972: 24-25), the *cohoba* powder was taken in connection with curing, divination, and, above all, for the purpose of communication in ecstatic trances with the spirits (*cemi*, *zeme*).

In time, similar practices with hallucinogenic snuff were to be observed by the early explorers of South America. Techniques of inhalation varied, but the effect was much the same. So was the avowed purpose of intoxication: direct experience in an ecstatic trance of the supernatural (or the devil, as the Spaniards interpreted it).

4. Some of the material on snuffing and on toads in the following pages was first presented at the symposium on American Indian art on which this volume is based. It was subsequently expanded for presentation and discussion at the XII Mesa Redonda of the Sociedad Mexicana de Antropología, held in Cholula, México, 11-17 June 1972, with Mesoamerican religion as its focus, and was revised and augmented for the present publication.

For a time, there was some confusion of psychotomimetic snuff with tobacco, but this was soon corrected. Powdered tobacco was (and is) in fact used as snuff in some areas, either by itself or in combination with other active plant materials. But today we know that the principal sources for the potent hallucinogenic snuffs of South America are two species of *Anadenanthera* (*A. peregrina* and *A. colubrina*), which is closely related to the genus *Mimosa*, and several species of *Virola* (family Myristicaceae), both of which genera contain very similar or identical powerful psychotomimetic alkaloids (Schultes, 1972; Altschul, 1972). *Anadenanthera* was formerly identified as *Piptadenia*, to which genus it is closely related, and in much of the older literature, *Anadenanthera peregrina*, from which seeds snuff is made in Amazonia and other lowland areas of eastern South America, was referred to the genus *Piptadenia*.

The most comprehensive ethnographic and pharmacologic studies of the South and Central American snuffing complex (the latter is a northern extension of the former) are those by Wassén (1964, 1965, 1967) and Wassén and Holmstedt (1967). The ethnobotanical and taxonomic data have been reviewed thoroughly by Schultes (1967, 1972) and von Reis Altschul (1964, 1967, 1972). Wassén, in particular, has published many archaeological and ethnographic snuffing implements collected over the years by ethnologists and travelers, or excavated in prehistoric sites. Many of these snuffers are relatively simple: single, bifurcated or Y-shaped tubes of bird or mammal bone or of wood or cane, without decoration. But others are highly complex affairs of considerable artistic merit, with bird, jaguar, and anthropomorphic motifs predominating. Serpent and, more rarely, butterfly motifs also figure in the symbolism of the snuffing complex, as does the alter ego motif. Many of the well-preserved wooden snuff trays found in the Atacama desert region of Chile and Argentina are beautifully decorated with felines, birds, and anthropomorphic figures. Especially prominent is the association of man and jaguar, a motif of which the significance in relation to the widespread concept of shaman-jaguar equivalence and transformation (jaguar as alter ego) was discussed in an earlier paper (Furst, 1968). Associated with these wooden trays are snuffing tubes of bird bone. Such symbolic juxtapositions of felines, birds, serpents, man, *etc.*, are, of course, not fortuitous but relate to shamanic beliefs that still persist among indigenous populations in South America. Indeed, even the undecorated snuffers have their own complex symbolism, so that their simplicity must be taken as more apparent than real.

In some cases, it was only recently that ethnologists were able to recognize the true function within the snuffing complex of certain intricately carved objects from Amazonia that had found their way into museum collections without accompanying ethnographic data. An example is a fine carved stone representation of the jaguar as alter ego from the Río Trombetas region of Brazil, in the collection of the Gothenburg Ethnographic Museum. By analogy with ethnographic snuffing paraphernalia with animal motifs used today by the Carib-speaking Cashuena Indians, who live on a tributary of the middle Trombetas, and by other Amazonian tribes, Wassén was able to identify this superb work of aboriginal art as a snuff container (Wassén, 1965:34; 1967:254, fig. 13). The same motif of the

feline as protector or alter ego is also found on many of the archaeological snuffing implements from Chile, Argentina, and elsewhere.

In addition to these studies, there is an interesting paper by Zerries (1965:185-193) describing an old bifurcated bird effigy snuffer of carved wood and two finely-carved snuff containers in the form of jaguars, all probably from the Río Trombetas, in the collection of the Ethnographic Museum in Mannheim, Germany. The bird-effigy snuffer with its bifurcated tubes, one for each nostril, and other bifurcated South American snuffers led Wassén to postulate a South American origin also for the well-known bifurcated ceramic bird snuffers found in Costa Rica. As will be seen, the line of diffusion seems to extend northward even farther, all the way to northwest México.

In contrast to the West Indies and South America, the numerous plants the early Spaniards observed being used as intoxicants in Mesoamerica were eaten whole, brewed or macerated into beverages, smoked, chewed, and sucked, but not inhaled as powder. True, tobacco was dried and pulverized, but the resulting *piciétl* powder was evidently only applied externally to the body by certain curers, or else made into a kind of cud with lime and sucked, but not inhaled. Since it is hardly likely that such careful early observers of Indian customs, including the use of hallucinogens, as Sahagún, Durán, Landa, or Hernández, or, in the seventeenth century, Ruíz de Alarcón and Jacinto de la Serna, would have missed or ignored the practice, we must assume that snuffing simply did not exist in Mesoamerica, at least not in historic times.

Such negative evidence from post-Conquest times notwithstanding, based on newly discovered or newly identified archaeological evidence, the former presence of a ritual snuffing complex of considerable antiquity and evidently of long duration can now be established for Mesoamerica as well, from at least the beginning of the Middle Preclassic into the Early Classic, and possibly beyond. The evidence, though substantial, is at present insufficient to determine whether the practice of ritual snuffing was widespread and continuous throughout this long period of at least 1500 years, or occurred sporadically at certain times and in certain restricted areas, particularly along or close to the Pacific coast. In any event, the identification of an early snuffing complex in Mesoamerica raises a number of interesting cultural, historical, and ethnobotanical questions, to which I shall return below. For the present, let us examine some of the evidence that thus far is strictly artistic or artifactual, rather than botanical.

As noted, we owe much of our knowledge of the snuffing paraphernalia of South and Central America to the studies of S. Henry Wassén, and I would like to take this opportunity to acknowledge my own debt to this Swedish scholar in this general area of inquiry. It was, in fact, the identification by Wassén of a collection of curious, zoomorphic Brazilian stone artifacts, known as *zoolitos*, with the practice of snuffing that led me to suggest a similar function for the well-known Olmec jade artifacts popularly called "spoons" (Furst, 1968). The Brazilian *litos*, many of them bird-shaped, with shallow oval or rectangular depressions in the back, were found in the nineteenth century in the *sambaquis* (shell middens) of Santa Catarina, Brazil, and were first described in 1885 by the Brazilian archaeologist, Ladislau Netto.



FIG. 11.—Seated hollow figurine of man in act of snuffing from a gourd-shaped nose pipe. Facial expression suggests trance. Height, about 11 inches, collection of Kurt Stavenhagen, Mexico City.

As noted by Wassén (1967:251-254), Netto was far ahead of his time in explaining the cavities in the backs of the stone effigies as receptacles for some kind of vegetal powder with excitant properties, endowed by the Indians with supernatural power. Wassén agreed and, again using analogy, related them to the general Rio Trombetas and Amazonian snuffing complex. A more detailed discussion of the symbolism and stylistic relationships between the various kinds of

snuff tablets and other paraphernalia found in the Rio Trombetas region and other areas of Brazil, as well as in Uruguay, Argentina, Chile, and elsewhere can be found in Wassén (1967).

At least some of the Olmec spoons had long seemed to me to resemble long-tailed birds in flight, as seen in profile. Also, some of these artifacts of jade are decorated with bird-jaguar motifs, a common symbolic theme in South American use of psychotomimetic plants to achieve ecstatic trance states, and especially in snuffing paraphernalia. But it was not until I read Wassén's analysis of the Brazilian litos that it occurred to me that the characteristic shallow depressions in the Olmec spoons and their generalized bird shape might likewise be related to the use of snuff.

Five years ago, this was highly speculative. There was no direct evidence that the Olmec had used snuff or other psychotomimetics. Of course, the mushroom stones could be connected to a Preclassic cult of hallucinogenic mushrooms, but the earliest of these, although contemporary with La Venta, seemed not to be specifically Olmec. On the other hand, a good deal of Olmec material occurs in highland Guatemala and elsewhere in southern Mesoamerica where mushroom effigy stones have been found, from which it might be assumed that the Olmec would hardly have been ignorant of these cultic practices within or near their sphere of influence. Furthermore, the ecstatic vision quest seems to be fundamental to much, if not all, American Indian culture. The practice of snuffing itself had previously been shown to be very ancient, at least on the west coast of South America, where Junius B. Bird of the American Museum of Natural History had excavated a whalebone snuff tablet and associated bird-bone snuffing tube at Huaca Prieta, Perú. These important finds predate Olmec civilization, and knowledge of such practices could well have found its way northward into Mesoamerica by Olmec times. Finally, it must not be forgotten that snuffing was well established prehistorically (but perhaps not as early as Olmec times) in Costa Rica, an area with which the Olmec almost certainly had contact, possibly for the purpose of procuring jade of the preferred blue-gray, semitranslucent quality.

Finally, the existence of a snuffing complex in Mesoamerica, at least in western México, at a time equivalent to the transition between the Late Preclassic and Early Classic elsewhere in Mesoamerica, was already beyond question, in that I had examined and photographed in a private collection, a smallish, hollow, redware figurine from Colima, representing a seated man with a horn on the forehead and a gourd-shaped nose pipe held to one nostril. The facial expression suggested trance. In 1969, I came across a second effigy of this type (Fig. 11), also from Colima, larger and sculpturally more sophisticated, and similarly depicted in the act of using a gourd-shaped snuffing pipe. Again, the half-closed eyes suggest a state of trance.

In addition to these snuffing effigies, over the years we had found in various collections a small number of pottery snuffers or nose pipes from western México that closely resemble the well-known Costa Rican snuffers illustrated by Wassén and others. Especially interesting in this regard is a red-slipped snuffing pipe



FIG. 12.—Bifurcated snuffing pipe from Ixtlán del Río area, Nayarit, in form of stylized bird, *circa* 100 BC to AD 200-300. Length, 3 inches, collection of Mr. and Mrs. William Kaplan, New York.

with one nosepiece for each nostril, from the Ixtlán del Río area of southern Nayarit (Fig. 12). Ixtlán has two major occupation phases, one ("Early Ixtlán") characterized by the well-known shaft-and-chamber tombs, with their great array of burial figurines and other ceramics, dated *circa* 100 BC to AD 200-300, and a later one, essentially Postclassic, with the stone platforms and temples of the Ixtlán ceremonial center as one of its earliest manifestations. This and similar nose pipes belong to the earlier shaft-and-chamber tomb phase. Although not obvious at first sight, like many Costa Rican nose pipes, the Ixtlán snuffer is in fact a highly conventionalized bird effigy, with small nubs at the sides of the circular bowl to indicate wings, and a projection at the front for the head or beak. Such symbolism is of course hardly arbitrary; birds and bird spirits are widely connected with the ecstatic trance experience as symbols of celestial flight.

These few west coast examples seemed, until recently, to be all the evidence there was. Hence, snuffing, whatever the nature of the vegetal substance, appeared to be a relatively isolated phenomenon in time and space, associated both in Colima and Nayarit with the shaft-and-chamber tomb cultures (themselves a unique phenomenon in Mesoamerica, with possible South American connections). Further, the similarity of the western Mexican ceramic snuffers to those from Costa Rica, and their occurrence close to the Pacific coast, suggest a somewhat short-lived trait of alien origin that failed to take hold in Mesoamerica alongside other, longer-established cultic practices for which there was also evidence in the funerary art of the Pacific coast.

However, west coast snuffing was not to remain the isolated and short-lived phenomenon it appeared to be at first. New evidence for snuffing, of considerably greater antiquity, and with more complex artifacts, has come to light from Xo-

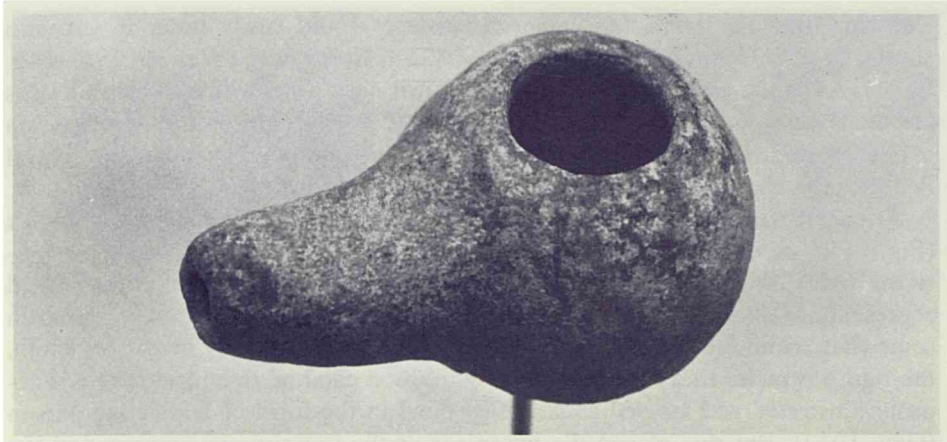


FIG. 13.—Snuffing pipe from Xochipala, Guerrero, *circa* 1300-1000 BC. Both this early Middle Preclassic nose pipe and the bifurcated snuffer from Nayarit closely resemble pottery nose pipes found in Costa Rica. Length, $2\frac{1}{4}$ inches, private collection.

chipala, Guerrero. The dating of Xochipala ceramics is still somewhat uncertain; Gay (1972), for example, suggested that it represents the very origins of Olmec art, predating even the San Lorenzo phase. This would place the astonishingly lifelike and highly sophisticated Xochipala figurines before 1300-1200 BC. However, the association of Xochipala ceramics with typically Olmec artifacts leads me to believe that Xochipala is no earlier than San Lorenzo in Veracruz, or the early Middle Preclassic material from Morelos, *i.e.*, *circa* 1300-1000 BC.

The lack of archaeology and the uncontrolled looting of the Xochipala burials since the site was accidentally discovered three years ago represents a scientific tragedy of major proportions. One can only guess at the evidence that was lost due to its lack of commercial value to the looters. In the meantime, as was to be expected, a considerable quantity of Xochipala forgeries have made their appearance on the art market, most of low quality and easily spotted, but some sufficiently well-made to pass, at least at first (and sometimes second) sight, for the real thing. Nevertheless, it has been possible to study and verify the authenticity of a number of Xochipala ceramics in private or museum collections. Among these were found several whose function as snuffing pipes appears beyond doubt. If, in fact, these date from the beginning of the Middle Preclassic, they would be only slightly more recent than Bird's Huaca Prieta snuffing implements and, of course, a thousand years, or more, older than the shaft-and-chamber tomb snuffers discussed above.

One Xochipala artifact, the purpose of which is beyond question and which thereby helps also to identify the function of the more complex effigy snuffers from the same context, is a small nose pipe of curiously Costa Rican-like appearance, consisting of an undecorated bowl with a horizontal, longitudinally perforated stem (Fig. 13).

So close is it to certain Costa Rican examples that, except for the characteristic Xochipala paste and the thin lime encrustation typical of ceramics found in this

site, this little Preclassic Mesoamerican snuffer could easily be confused with similar objects from Guanacaste or Línea Vieja, Costa Rica (Wassén, 1967:243, fig. 4). As in the case of the bifurcated Nayarit nose pipe, which likewise has its close analogies among the Línea Vieja snuffers, it is difficult not to speculate on a possible genetic connection between them, even though the known Central American pottery snuffers, as that from Nayarit, are considerably later.

A second Xochipala snuffing pipe I was able to examine is far more complex (Fig. 14). It is an effigy pipe of the superb craftsmanship and high aesthetic quality we have come to expect from Xochipala, measuring $5\frac{3}{4}$ inches in length, and representing a human figure lying on its back with knees drawn up, a position somewhat reminiscent of the Postclassic Chacmoos. Judging from the loincloth, the figure is male. In a recent museum exhibition catalog, this piece was erroneously illustrated and labeled as an effigy bowl in the form of a kneeling person (Gay, 1972). But this placed the nosepiece at the top curving forward and the bowl opening vertically to the front, which hardly seems logical. Once the function of the piece was recognized, the location of the hornlike nosepiece and the bowl immediately made sense. In any event, it is precisely in the supine position in which the piece is here illustrated that it fits naturally into the palm of the hand and the nosepiece into the nostril.

Yet another interesting effigy snuffer (Fig. 15) from Xochipala represents a male human, crouching animallike, with folded arms and legs drawn up tightly against the body. Traces remain on the underside of an appliquéd penis. The body is wrapped in a folded covering, probably representing woven textile or skin. The bowl opening is in the back of the figure but the nosepiece is again formed by a hornlike projection on top of the head. I am told that several other effigy nose pipes from Xochipala of similar design exist, but I have not seen these.

I should mention yet another kind of evidence, more circumstantial, but still potentially significant, for a snuffing complex in Olmec times. No one who has ever seen the Venezuelan Waika or any other South American Indians use snuff can fail to be impressed by the copious flow of mucus that immediately follows the inhalation of the potent powder. It appears that some Indians attach specific meaning to the nature of this mucus flow, using it for divinatory purposes. Wassén (1967:266) quoted the eighteenth century Jesuit missionary Juan Rivero to the effect that Arawakan-speaking Indians of Venezuela and eastern Colombia believed that nasal secretion from the right nostril following ingestion of yopo snuff meant success, from the left failure, and from both nostrils a neutral effect.

Interestingly enough, there are some Olmec figurines which have modelled or appliquéd lines of mucus secretion or some other substance (blood?) flowing from the nostrils. Needless to say, this curious phenomenon may signify something entirely different, in no way related to snuffing. On the other hand, inasmuch as the copious flow of mucus is a characteristic consequence of the use of snuff, and because it appears to have been endowed with divinatory significance, at least among some South American Indians, we cannot rule out a possible connection with the Preclassic Mesoamerican snuffing complex for which we have, after all, other evidence in the form of nose pipes.



FIG. 14.—Effigy snuffing pipe in form of reclining male figure, Xochipala, Guerrero, *circa* 1300-1000 bc. Length, $5\frac{3}{4}$ inches, private collection.

Snuffing was clearly not limited to the Formative of Guerrero or to the shaft-and-chamber tomb cultures of Colima or Nayarit, but seems to have been practiced also within the sphere of the Monte Albán culture, at least in the transition period from the Preclassic to the Early Classic, and very possibly for some time thereafter. A recent study of pottery objects ascribed to Oaxaca has turned up several that can be identified not as “spouted miniature effigy vessels,” as they



FIG. 15.—Effigy snuffing pipe, Xochipala, Guerrero, *circa* 1300-1000 bc. Length, $4\frac{3}{4}$ inches, private collection.



FIG. 16.—Snuffing pipe representing anthropomorphic duck. Monte Albán I-II, *circa* 300 BC, length, about 4 inches, private collection.

are usually called, but rather as snuffing pipes; some of these are rather similar in construction, if not in style and paste, to those from Xochipala (Figs. 16, 17; Paddock, 1966:119, fig. 67, top).

One interesting example (Fig. 16), of polished black clay, probably transitional from Monte Albán I to II, appears to represent a kind of duck person or duck spirit, or else transformation (nagualism?), in this case from human into duck, with a rounded body forming the bowl, and flipperlike feet in back. The forward half is anthropomorphic, with hands held palms together in front of the mouth, in a curiously Oriental gesture, the rest of the body is that of a duck. A conical, longitudinally perforated horn on its head forms the nosepiece, as in the effigy pipes from Xochipala.

Although considerations of space preclude a lengthy discussion of duck symbolism, it should be noted that the duck, either as a naturalistic bird or as a chimerical creature, sometimes embodying human as well as avian characteristics, are not uncommon in Precolumbian art. Ducks are especially prominent in the funerary art of the west coast (alone, in joined pairs, trios, and even quartets; joined to parrots or other birds; half human, half duck; *etc.*), but they occur also at Tlatilco and in Olmec art in general, as well as elsewhere. A study of duck mythology among the Zuñi and other Pueblo Indians of the southwestern United States and traditions about the duck as a supernatural among the Cora-Huichol of the Sierra Madre Occidental may throw light on the problem; for example, the duck is the supernatural protector of the Zuñi Corn Maidens and a duck also guides the blind Kiaklo, the Zuñi myth bearer, to the lake in the center of the

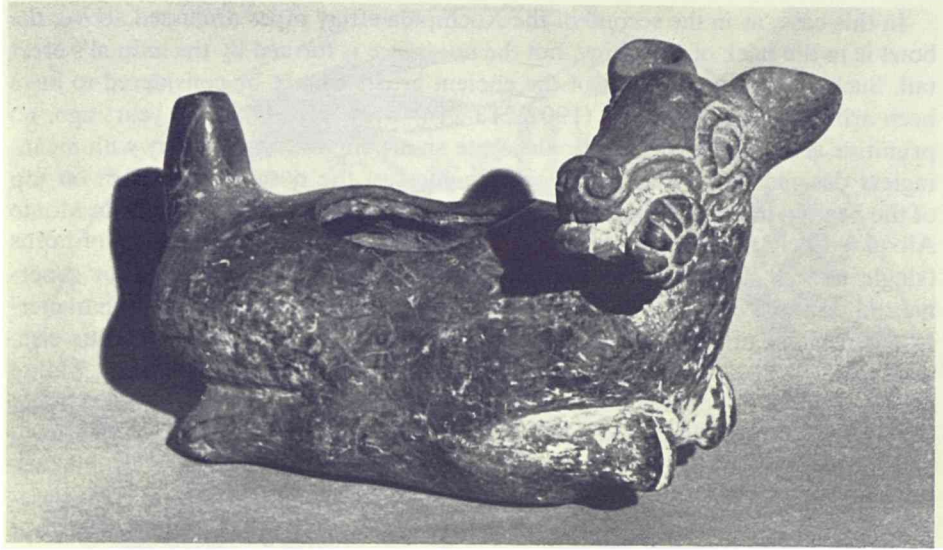


FIG. 17.—Snuffing pipe in form of reclining deer with peyote cactus in its mouth. Monte Albán I-II, *circa* 300 BC, length 5½ inches, private collection.

world; likewise, ducks are messengers of the gods, or else the gods themselves transform into ducks on certain occasions. Related myths occur among the Cora and Huichol. The Huichol also have an important mythic personage known as Duck Boy or Duck Person. Likewise, ducks are widely associated with shamanism, perhaps because, as wide-ranging water birds, they appear to inhabit several planes at once: the world above when they fly, the present world when they float on the surface, and the world below when they dive to feed at the bottom. At least that is how it has been explained to me by native shamans.

As interesting as the little Duck Person snuffer is in relation to these beliefs and the characteristically Indian concept of transformation, a second Monte Albán effigy snuffing pipe of gray clay, in the form of a deer resting on its stomach, with legs drawn up and head turned to the right (Fig. 17), is of even greater cultural and historical interest. The cloven hooves leave no doubt about the zoological identification; lacking antlers, the animal presumably is meant to be female. However, considering the frequent attribution of sexual dualism or ambiguity to the supernatural (and the deer must be regarded in that light), perhaps we should not be too insistent on sexual identification.

What makes this particular animal effigy especially interesting is the object it holds in its mouth: an unmistakable peyote cactus, with the characteristic ribs of the crown and a circle to represent the circle of fine hairs that grow in tufts in the center of the natural plant (the Huichol hold this to be the seat of the peyote's soul). Interestingly enough, exactly the same convention was employed by the Colima artist who created the hunchback peyotero (Fig. 7).⁵

5. I am greatly indebted to Miss Julie Jones of the Museum of Primitive Art, who recognized the significance of this archaeological deer-peyote association in relation to the well-known Huichol identification of the hallucinogenic cactus with the deer, and who drew my attention to the artifact on that account.

In this case, as in the second of the Xochipala effigy pipes discussed above, the bowl is in the back of the effigy, but the nosepiece is formed by the animal's erect tail. Such choices on the part of the ancient artists cannot be considered to have been arbitrary—as Lumholtz (1902:213-214) wrote more than 70 years ago, no primitive artist “ever sat down to decorate an article from mere fancy with meaningless designs.” If I may venture some guesses, the nosepiece as horn on top of the head in the two Xochipala human effigies and the Duck Person from Monte Albán is likely to be related to the well-known and widespread concept of horns (single as well as double) as symbols, and even source, of shamanic or supernatural power (Furst, 1965). Single horns on the front of the head are a characteristic especially of a certain class of Colima figurines, but they also occur elsewhere in Precolumbian art (*e.g.*, Tlatilco, Chalcatzingo, Xochipala, Monte Albán, *etc.*). In a contemporary ceremonial context, they are the identifying characteristic of the Hopi Kwanitaka, or One Horn priests, who serve Masauwu, god of the earth, owner of fire, and guardian of the dead, as well as Muiangwa, the germination god (Nequatewa, 1967:126; Talayesva, 1942). As for the nosepiece of the deer effigy pipe, this may have to do with the concept of the deer tail as magical power object in certain North American and Mesoamerican shamanic practices and beliefs. Among the Huichol, for example, the deer tail is an important part of the shaman's sacred paraphernalia, as it is also in Papago shamanism. Likewise, it is hardly insignificant that the name of one of the principal Huichol supernaturals is Tamátsi Máxa Kwaxí, which translates as Elder Brother Deer Tail (*tamátsi* = our elder brother, *máxa* = deer, *kwaxí* = tail).

The association of deer, hallucinogen, and shaman, which we recognize ethnographically in Huichol religion and archaeologically in the Monte Albán snuffing pipe, represents an important cultural and historical problem that remains to be explored seriously. Andean art dating to the fifth or sixth century AD suggests that there was something very like these Mesoamerican associations also in Perú. A common theme on Moche IV ceramics, for example, is a ritual deer hunt (Fig. 18), in which the hunter is clearly not meant to be an ordinary human but rather a god, culture hero, or great shaman (or perhaps all three at once). Moche painters almost always depict the deer together with a shrub or tree that, although somewhat conventionalized, is identifiable botanically as *Anadenanthera colubrina*, with the long, beanlike seed pods characteristic of this family (Richard Evans Schultes, personal communication). The seeds are widely made into a potent psychotomimetic snuff; they are also ingested in an alcoholic drink and, in some highland Quechua villages, play a role in the making of llampu, a sacred substance used in cattle increase rituals and other ceremonial contexts (Billie Jean Isbell and William H. Isbell, personal communication).

The deer, in any event, is often a semidivine, celestial animal for American Indians, connected with sun, fire, sky beings, and, especially, shamans. Among the Huichol, it is the shaman's spirit helper and companion; he wears a pair of feathered ceremonial arrows on his head that, in ritual contexts, symbolizes deer antlers, and the oblong, woven basket in which shamanic power objects are kept (*takwátsi*) is identified with the divine Deer Person, Káuyumarie, to the extent



FIG. 18.—Moche fine-line vase painting representing a mythological deer hunt. Northern Perú, *circa* AD 500. These mythic deer hunt scenes almost always depict deer in association with a tree or shrub, which from the characteristic seed pods can almost certainly be identified as *Anadenanthera colubrina*, source of the potent hallucinogenic snuff known as vilca in the Andes. Drawing by Alan Sawyer.

that Huichol shamans say “they are the same;” certain gods are deer and vice versa; the deer is mount and guide on the shaman’s celestial quests or flights as well as guardian and guide on the peyote hunt, and, of course, the “principal deer” is himself peyote and peyote deer.

Such concepts remind one of the role of the deer in Eurasian and Siberian shamanism. Over a wide area, the deer is a holy animal and often the celestial mount that carries the shaman to the other world and its spirit rulers. Even where the horse came to supplant the reindeer as earthly and spiritual mount, as among the Scythian nomads of southern Siberia more than two thousand years ago, the old mythology persisted, and the dead man’s horse that accompanied him into the grave was often symbolically transformed into a deer. Thus, some of the

horses found in the famous frozen tombs at Pazyryk in the Altai range, dating to the fourth and third century BC, wore antlered leather masks representing the heads of reindeer and stags. Likewise, ancient shaman's crowns from Korea were surmounted by deer horns, as are the Siberian shaman's headdresses of iron.

In parts of Siberia, moreover, there has long existed a direct association between deer (in this case, reindeer) and a sacred hallucinogen used by shamans: the *Amanita muscaria*, or fly agaric, mushroom, for which the reindeer is said to have an inordinate predilection, to the point of intoxication (Wasson, 1972: 204), and which some scholars regard as the Paleolithic or Mesolithic prototype for the Mexican mushroom cult.

It is certainly conceivable, not to say probable, that the esteem, even veneration, with which many American Indians regard the deer represents a survival from an ancient archaic shamanistic substratum extending clear across Eurasia into America—a substratum that forms the underlying basis of American Indian ideology, including that of Mesoamerican civilization, and that has its ultimate roots in Old World Paleolithic and Mesolithic hunting and gathering religion. The curious association of deer as celestial mount and the sacred hallucinogens that are employed to aid in that supernatural quest could well be a part of this very ancient belief system.

There remains the problem of identifying potential sources for the hallucinogenic snuffs that might have been used in Prehispanic México. South American snuffs are well known botanically and chemically; for Mesoamerica, on the other hand, we remain, for the present, woefully uninformed. However, there are some indications of the direction future ethnobotanical, taxonomic, and pharmacologic research might fruitfully take.

First, one cannot rule out tobacco. As mentioned, powdered piciétl was utilized for external application to the patient's body and reportedly may still be so employed today. It was also sucked with lime. While it is not used as snuff and evidently was not so used at the time of the Conquest, the practice of pulverizing dried tobacco leaves might possibly represent a survival of a more ancient use of tobacco as snuff.

Secondly, there is no reason why some, if not necessarily all, of the better-known Mesoamerican plant hallucinogens should not be psychotomimetically effective when taken through the nasal passages. Whether or not peyote and other hallucinogens were once used in the form of snuff, there is an extensive Mesoamerican population of shrubs and trees belonging to the *Mimosa* family that should be investigated. Among these are two relatives of the South American *Piptadenias*. The seeds and bark of many of the latter contain psychotomimetic constituents, although the principal members of this family to be utilized in the making of snuff are the above-mentioned *Anadenanthera piptadenia* and *A. colubrina*, both formerly placed in the genus *Piptadenia*. The Mexican species of *Piptadenia* are *Piptadenia flava*, a tree also found in Central America and Colombia, and *Piptadenia constricta*. Both occur along the west coast of México, from Sinaloa south to Guerrero at least. To my knowledge, neither has been tested for

psychotomimetic alkaloids, but it would not be surprising if they were found to contain active principles similar to those of their South American relatives.

There are more than 60 species each of *Mimosa* and *Acacia* in México, and some of these may, like related species in South America (*Mimosa hostilis* in Brazil, for example), contain hallucinogenic principles. Some of the Mexican *Mimosas* and *Acacias* enjoy a pharmaceutical as well as magical reputation among Indians. Some of this may be folklore. On the other hand, some plants to which American Indians or other nonwestern peoples have long ascribed medicinal, intoxicating, or contraceptive properties turned out to have precisely the attributes claimed for them when Western science finally bestirred itself to test them in the laboratory.

Finally, there appear yet two other possible candidates as potential sources of hallucinogenic snuff in southeastern México, both with South American connections. These are species of *Psychotria* and *Justicia*, the former a well-known additive especially in hallucinogenic potions prepared from the *Banisteriopsis caapi* vine in Ecuador, Colombia, Perú, and Brazil, the latter species either added to *Viola* snuff or even employed alone as a source of psychotropic snuff (Schultes 1972:45-46, 52). These possibilities emerge from a comment by Wassén (1972:37-38) on my earlier suggestion that snuffing might have been practiced by the Gulf Coast Olmec. In support of this, Wassén cited the following excerpt from a letter by Schultes, dated February 1969.

We are finding so many plants with tryptamines—the active principle of many of the snuffs of South America—that it is very possible that in the Mexican Gulf Coast area the Indians could have found a plant which, prepared in the form of a snuff, could intoxicate as does the snuff of the Waikas. One of these is *Psychotria*, a species of which in South America has now been found to have N,N-dimethyl-tryptamine. *Psychotria* occurs up as far as Vera Cruz and it is possible that other species have this principle. Furthermore, Holmstedt believes that he has found this same chemical in our species of *Justicia* which is added to *Viola* snuff by the Waikas. Other species of *Justicia* occur as far north as Vera Cruz and may possibly have this chemical constituent.

By all indications, snuffing originated in the tropical forests of the Amazon Basin, where it had its greatest development, not only in techniques employed but also in experimentation with a variety of additives to achieve maximum effectiveness of the principal active ingredients, and where it is still widely practiced. From the ethnographic evidence, we know that the particular plant or the techniques by which it is prepared and used represent only part of a much larger whole, in which ideology plays at least as great a role as does chemistry. The fact that prehistoric Mesoamerica, with its own well-developed and ancient cults of hallucinogenic plants, also shared with South America in an early, ethnobotanically and pharmacologically sophisticated snuffing complex, raises a number of new questions. Not the least of these concerns the extent and effect of external influences, and the kinds of cultural currents that contributed to the eventual rise of Mesoamerican civilization. If snuffing really did reach western México from the south, perhaps from Colombia, in the second millennium BC, is it likely that this trait complex was unaccompanied by others?

THE TOAD AS EARTH MOTHER:
A PROBLEM IN SYMBOLISM AND ETHNOPHARMACOLOGY

In an Aztec creation myth cited by Nicholson (1971:400), after the destruction of the world by a great flood the gods Quetzalcoatl and Tezcatlipoca looked down from on high on the horrendous toadlike earth monster, Tlaltecuhltli (Fig. 19), swimming in the primeval waters. Transforming themselves into serpents they descended and, grasping the toad monster from the right forelimb to the left hindlimb, and the left forelimb to the right hindlimb, respectively, split her in half. With the upper half they formed the earth, the other they carried away to the heavens.

This terrible damage to the earth monster, Tlaltecuhltli, angered the other gods. To make amends, they decreed that henceforth from her shall issue forth all the necessary plants to sustain man. Flowers, trees, and herbs were made from her hair; wells, springs, and small caverns from her eyes; rivers and large caves from her mouth; mountain valleys from her nose; mountains from her shoulders. But the wounded creature refused to bring forth the fruits to feed man unless she were soaked with blood and fed with human hearts. This act of creation, or, better, transformation, was said to have initiated the final historic age.

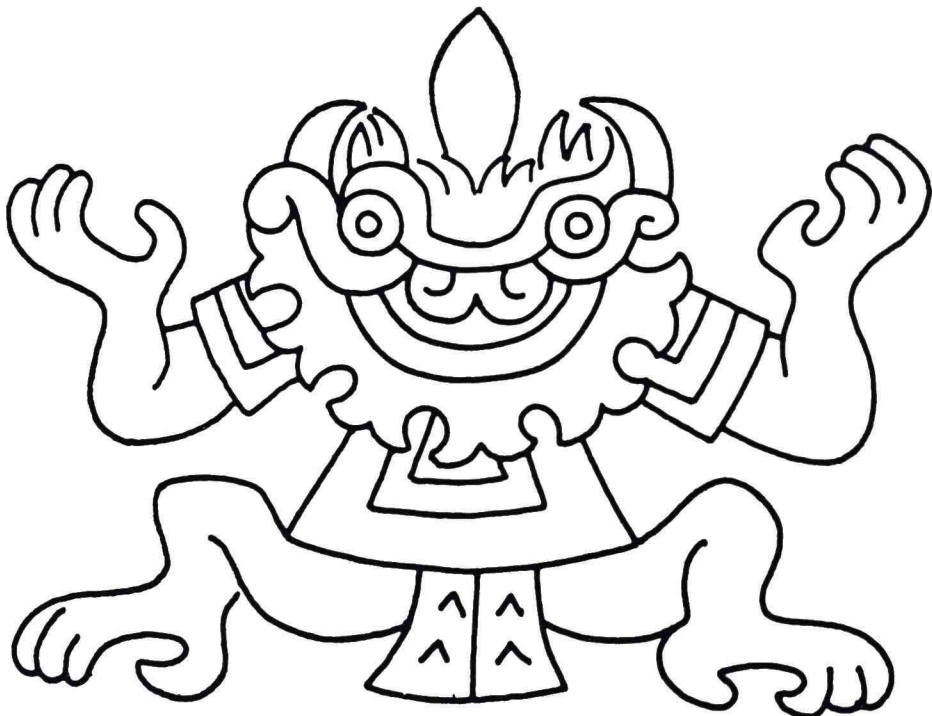


FIG. 19.—The Earth goddess Tlaltecuhltli, visualized as a monstrous toad with sacrificial obsidian knife in her jaws. Knife is said to stand both for human sacrifice and for light, which she swallows each night and disgorges at dawn. Drawing by Ernesto Alvarez, from page 16, Codex Borbonicus, a Preconquest Aztec ritual-divinatory manual.

As will become evident, the concept of Tlaltecuhli (that is, the earth or earth mother in the form of a monstrous toad with feline characteristics who, among other attributes, was originator of the natural features of the earth as well as originator of useful plants) is by no means only an Aztec phenomenon, nor even a predominantly Mesoamerican one. Rather, the earth mother as toad in the cosmology and ritual of the Aztecs seems to belong to a much wider, and far older, aboriginal ideological stratum that extends at least to Amazonia and the central Andes.

In Mesoamerican Prehispanic art, we find the toad widely represented—sometimes lifelike (Fig. 20), often with feline and other nonnaturalistic, symbolic attributes, such as fangs and claws of the jaguar. The monumental jaguar-toad altar from Izapa (Fig. 21) is one example, the feline toad at Yagul, Oaxaca, another. Even the magnificent monolithic Aztec *cuauhxicalli* in the form of a naturalistic crouching feline (Fig. 22) appears to have certain features on the underside of the paws that suggest a symbolic identification with Tlaltecuhli in her toad form,⁶ just as representations of the latter on the underside of certain Aztec monuments have fangs and claws that appear to identify the toad monster with the jaguar (Fig. 23).

Striking also are the well-known effigy yugos, dating from the Preclassic and Early Classic. Of these a number clearly represent a mythic monster toad, often with jaguar attributes. A recent publication by Ignacio Bernal (1970, figs. 7-14), with drawings by Andy Seuffert, includes a number of such “yokes” with representations of the monstrous toad in the collections of the Museo Nacional de Antropología. I would suggest that effigy yokes of this type represent the earth mother in her toad form; hence these images could be regarded as early prototypes of the Aztec Tlaltecuhli. The same could be said of the highly stylized feline images of the earth monster on the lower part of many stelae.

Nonnaturalistic toads occur also in Maya art, as well as in Veracruz, western México, and elsewhere, often with the parotoid poison glands characteristic of *Bufo marinus* particularly emphasized. Toads seem to have been of particular importance in the Remojades complex of the Classic period in Veracruz, to judge from the monumental size of some pottery toad sculptures from this area. Finally, it should be mentioned that in contemporary México, as in Guatemala, toads play a role in myth, sorcery, and shamanism, and in curing, a phenomenon that is only sketchily reported and urgently in need of investigation.

Toad symbolism, particularly in relation to the jaguar, is much better known from South America. It is here that the toad as earth mother or guardian is still the focus of an important and widespread mythological and ritual complex. It would seem, then, that it is to what we might call the southern manifestations of Tlaltecuhli that we should look for the sorts of ethnographic data that could help explain her origins, and perhaps illuminate to some degree her wider culture historical implications.

As we turn to South America, we are at once confronted with a set of traditions of which the genetic relationship to each other and to those of Mesoamerica can

6. I am indebted to Sr. José Luís Franco of Mexico City for drawing my attention to these hidden characters.



FIG. 20.—Colossal toad with clawed feet, prominent parotoid poison glands, and three sets of drill holes on each shoulder, probably for attachment of ritual ornaments. On belly, toad bears symbol for Chalchihuitl, precious stone or jade. In addition to jaguarlike claws, the otherwise naturalistic toad sculpture is identified with the feline by jaguar pads carved in relief on the underside of the four feet. The parotoid glands, identifying the species as *Bufo marinus*, are emphasized also on Maya and Veracruz toad effigies or effigy vessels. Although a dangerous poison, the skin secretion of *Bufo marinus* contains bufotenine, the effects of which might be hallucinogenic. Museo Nacional de Antropología, México.



FIG. 21.—Preclassic stone altar in form of jaguar-toad. Izapa, Pacific slope of Chiapas. Museo Nacional de Antropología, México.



FIG. 22.—Colossal *cuauhxicalli* (eagle vase) in form of a crouching feline, for deposit of human hearts and blood, length about 108 inches. Aztec, fifteenth to sixteenth century AD, Museo Nacional de Antropología, México. This magnificent basalt sculpture was originally painted white, with black spots. In walls of circular hole in the jaguar's back are decorated with relief of feathers, base with relief depicting two aspects of Texcatlipoca in the act of autosacrificial bloodletting.



FIG. 23.—Relief of Tlaltecuhltli with face of Tlaloc on underside of Aztec stone sculpture representing Quetzalcoatl as feathered serpent. Museo Nacional de Antropología, México. See also Fig. 3B. Tlaloc-faced "hocker" figures of the earth goddess in her monstrous toad form appear on a number of Aztec monuments and in paintings of the Aztec period.

hardly be doubted. In northern South America, the basic elements of the story are as follows:

Before the birth of the divine hero twins, their natural mother is killed by the Jaguar People. However, the unborn twins are saved by Toad Grandmother, who is mistress of the earth, owner of fire, as well as mother of the jaguars, and who herself has feline characteristics and can change back and forth between jaguar and amphibian forms. The manner in which she preserves the unborn twins differs somewhat from area to area—often it is the eggs with the children inside, or else the pregnant uterus, which she places close to her magical fire. Eventually the twins emerge and she rears them, teaching them to hunt, cure, *etc.* They, in turn, have vowed to avenge the death of their natural mother, and as the foster mother is also mother of the jaguars, they kill her and dismember and incinerate her body in a clearing in the forest. From the dismembered toad sprout first of all cassava, or bitter manioc, and other useful plants. Manioc, which in its natural state is poisonous, is identified with the milky secretion flowing from the venomous glands in the toad's skin. Apart from these details, the parallel between the dismemberment of Toad Grandmother by the divine twins and that of Tlaltecuhli by Tezcatlipoca and Quetzalcoatl is unmistakable.

It is important to note that these South American traditions are not restricted to one area or one language group or related languages. On the contrary, they transcend linguistic, cultural, and geographical boundaries. Basically similar versions of the tradition are shared among a wide variety of peoples, including Tropical Forest farmers, riverine fishermen, and hunter-gatherers. Related versions are found among Caribs, Arawakans, Tupians, Warao, Waika, and others. Moreover, the identification of toad and jaguar occur from one side of the subcontinent to the other. Judging from the feline toad effigies in Moche art, it prevailed prehistorically also in the Andes. And inasmuch as these feline toads in Moche art are sometimes covered with symbols of manioc and other vegetation, we can assume that the feline toad as originator of cultivated plants was likewise shared by the prehistoric Andeans.

As Zerries (1964) demonstrated in his monograph on the Waika of Venezuela, almost certainly some elements of the divine twin tradition were spread through culture contact; Warao mythology, for example, contains much that is traceable to Carib sources, and some linguistically unrelated peoples share related names for one or the other of the hero twins that may have been borrowed. However, the basic content of the tradition as a whole, and certainly the role played in it by the toad, would seem to be very ancient.

In addition to the association of a feline Toad Grandmother and the hero twins, there are also many related stories in which a First Indian or culture hero is taught hunting skills, *etc.*, by a toad or frog woman, who seems to be identical with the earth goddess in toad form in the twin tradition. She appears as mentor of shamans, being herself a great shamanness, capable of transformation, especially between toad and jaguar forms. Mythical jaguars may be known as Toad Woman and vice versa, and stories abound in which an Indian takes aim at a giant supernatural toad, only to have her disappear and reappear elsewhere in the

form of a gigantic black jaguar. In many of these tales, as also in the hero twin tradition, the toad is clearly dualistic and her relationship to man ambivalent. On the one hand, she is protector, mentor of shamans, foster mother, teacher of hunting skills, regenerator of the earth, bringer of fire and cultivated plants, *etc.*, whereas on the other hand she is antagonist who embodies misfortune, illness, and death.

In many respects the most interesting South American version of the earth mother as a monstrous toad is that of the Tacana of lowland Bolivia, whose mythology formed the subject of a massive monograph by the German ethnologist, Karen Hissink (1961).

In the male-dominated pantheon of the Tacana, the earth mother is one of the few female *edutzi*, or gods, but she is clearly of fundamental importance in the supernatural scheme of things. She is variously known as Pachamama, a term borrowed from Quechua, or by one of several indigenous Tacana names. The most common of these is Eaua Quinahi, literally earth guardian. Other names are Anu Eaua, Grandmother Earth, or Eaua Edutzi, Earth Goddess.

In her human form, she is seen as a monstrous, old, whitehaired, cannibalistic woman living alone beneath the earth, with enormous breasts, gigantic arms and a huge mouth and vulva. Breasts and vulva, of course, symbolize her generative, creative aspect, whereas the great mouth, through which she swallows the dead and evil-doers, emphasizes her cannibalistic side.

It is her animal form, however, that interests us most in the present context. She is a toad, specifically the large venomous Bururu toad (*Bufo marinus*, or some closely related species). To represent her, a large, live, female toad of the genus *Bufo* is kept in a circular hole, approximately 30 centimeters deep, which is dug beneath the main altar in the center of the cult house, or temple—somewhat reminiscent of the sipapu, or sacred emergence hole, in a Hopi kiva, and the equivalent emergence hole of the subterranean gods in the Huichol *tukipa* (or *calihuey*).

The toad's home in the temple is kept covered with a cloth, or, more usually, a flat disk of cedar wood. Perhaps symbolizing the cannibalistic aspect of the earth goddess, she is regularly fed small live frogs by the *yanacona* (a Quechua term that the Tacana use for their shamans). On ceremonial occasions, the *yanacona* places offerings of chicha, meat, manioc, and bananas on the cedar disk. There is also a special ritual chicha, brewed from manioc tubers, which the *yanacona* pours directly into the hole as an offering to Earth Mother (reminiscent of the Mexican ritual of pouring pulque on the earth). According to Tacana tradition, Earth Mother taught the first people to make this manioc chicha, to be used both for her own special cult and to help hunters magically to take better aim. Manioc itself was also originated by Eaua Quinahi, as were other products of Tropical Forest agriculture. These beliefs in the toad as bringer of cultivated plants are similar to those found in Venezuela, the Guianas, and Brazil.

Interestingly enough, rather in the manner of Tlaltecuhli in the Mexican creation myth, Eaua Quinahi survived the cataclysmic destruction of a previous creation by a great flood. From this flood she managed to save fire and a certain

amount of clay. She attempts to keep these vital things from the culture hero and the edutzi of the upper world, but through trickery they manage to steal fire and sufficient clay to rebuild the drowned earth, which is gradually enlarged beneath and around her.

Thus, we see her as typically dualistic. Essentially she is a creator goddess: it is she who saved clay and fire from the great deluge and eventually she does share these, however reluctantly, with the edutzi and the first people. She is also originator of cultivated food plants and tropical forest horticulture. In a very real sense, she is a culture bringer—from her, men learn to use fire, and women, potter's clay; she teaches the first shaman and his female helper how to prepare coca, how to brew ritual manioc beer, and how to make the first hallucinogenic snuff, which is so essential to communication with the edutzi and through which use the shaman, in his vital role as mediator between man and the supernatural, enables himself to transcend the limitations of the human condition and travel freely through the different planes of the universe. Further, she is guardian and mistress of various animal species (especially those that make their home under the earth), of the earth herself, and of fire, of cultivated and various wild plants, and of potter's clay and the tools and vessels that are fashioned from it.

Eaua Quinahi also commands a pair of anthropomorphic bird-jaguars. The Tacana have several different kinds of flying felines, some hostile to man and others protective, but those belonging to Eaua Quinahi have a special vital function assigned to them in creation times by the earth goddess herself. The male of the pair was ordered to assist the two Earth Bearers by flying beneath them and supporting them in midair when they tire of their burden; it is this which causes the regular alternation of night and day. The other, his daughter, functions as Bringer of the Seasons and of Rain, and as Bearer of the Moon, whose cycle of waning and waxing is related to her constant flight back and forth from one end of the world to the other at the behest of Eaua Quinahi.

In her negative role, Eaua Quinahi is first of all the primordial antagonist of man and the other edutzi, because she refused to let go of her treasures of fire and clay. By her cannibalistic nature she is a figure of death and the underworld, devouring the dead and intervening in negative ways in different aspects of human existence. For example she takes women who do not follow the proper ritual procedures in the preparation of potter's clay and the making of pots. Further, she punishes transgressions against the delicate balance of the universe, especially incest. As a matter of fact, that was precisely the origin of her pair of flying jaguars. These were originally an Indian and his daughter, whom Eaua Quinahi transformed into flying felines because the man had planned to sleep with his daughter in violation of the incest taboo. So much for the toad-earth mother in Tacana mythology and ritual.

Very briefly, some interesting parallels from Asia should be noted. Especially in China and Japan numerous traditions are found in which toads appear as demons skilled in the magic arts, transformers, mentors, spirit helpers, and alter egos of curing shamans, *etc.* There are a number of apparently quite ancient tales of sages living in mountain caves in the company of giant toads that taught them

their magical knowledge and functioned as their spirit companions and avatars. Some toads were feared as monstrous supernatural beings capable of inflicting death and destruction, others were highly regarded as benevolent demons that could draw down the clouds and bring rain and, perhaps most significantly in the light of what is to follow, possessed magical powers to conjure up the most beautiful and radiant visions (Volker, 1950:157-170).

Why should this be so? Why should such apparently lowly creatures be widely regarded as magical? Why the toad as agent of transformation, teacher or helper of shamans, owner of the arts of curing, originator even of coca and hallucinogens? Why, indeed, the association of toad and toxic mushrooms? We know of the toadstool and the folklore that associates toads, mushrooms, and magical transformation in the Old World. But something of the sort may have prevailed also in highland Guatemala. Only recently Lowy (1971) described a newly discovered Preclassic mushroom effigy stone in which a toad is represented beneath the mushroom cap.

It must be obvious that something more is involved in the origin of such complex ideas than simple rain magic, even though frogs and toads are in fact widely associated with the coming of rain. Recent research and a reevaluation of older data indicate that this other dimension has to do with the toxic properties of certain frogs and toads, and beyond these, the somewhat surprising discovery that certain species are not merely poisonous but hallucinogenic.

Before getting into this, some of the better-known cultural uses of toad or frog poisons should be considered briefly. In his two-part monograph on the frog motif in South American art and mythology, published nearly 40 years ago, Wassén (1934) brought together ethnographic data on the use of frog venoms for blowgun dart poison and also cited a variety of magical rituals and myths involving these powerful venoms. It was his conclusion that apart from the well-known association of frogs with rain, the prominence of the motif was probably in some way related to the various magical and practical uses to which the poisons were put. One of the most unusual of these is tapirage—the use of frog or toad venom to bring about a change in the color of the natural plumage of parrots. Feathers are pulled from the living bird, a little poison is smeared on the wound, and the new feathers are said to grow back in a different color—surely a phenomenon that cannot help but confirm the magical transformational powers of the venomous species of frog or toad.

I became interested in the ethnopharmacology of toads and frogs some years ago, when Gertrude Dole and Robert Carneiro described to me a rather extraordinary hunting ritual they had observed in 1961 among the Amahuaca of the Peruvian montaña. These Indians have several magical rites designed to improve a hunter's luck. The strongest magic of all is for a man to inoculate himself with an extremely potent frog poison. This is scraped off the back of a certain frog or toad with a small stick and rubbed into self-inflicted burns on the arms or chest. Within a short time the hunter becomes violently ill, suffering uncontrollable vomiting, diarrhea, convulsions and loss of consciousness. For some time thereafter, while still under the influence of the poison, he experiences hallucina-

tions that he regards as supernatural encounters with the spirits of the forest. This phase is accompanied by the drinking of ayahuasca, the powerful hallucinogenic drink brewed in many parts of Amazonia from the *Banisteriopsis* vine. It is not clear how much of the ecstatic trance experience can be ascribed to the frog poison, and how much to the effects of the ayahuasca. I am told by toxicologists that some constituents of frog poisons act on the central nervous system, so that effects similar to those induced by the botanical hallucinogens are not out of the question. Of course, the radical purging of the system by means of the poison would tend to heighten the effects of the ayahuasca drink. In any event, the two aspects of the ritual are conceptually and functionally related.

The Amahuaca, incidentally, are not alone among Peruvian Indians in such magical use of frog poisons. Kenneth Kensinger (personal communication) in 1966 observed similar practices among the Cashinahua, except that the latter employed a different species, and that they interpreted the experience as one of purification, designed to expel a sicknesslike condition of bad luck, mainly in hunting. In this case also, the poison ordeal was followed by the drinking of the hallucinogenic ayahuasca.

Roth (1915) reported very similar beliefs and magical practices among the Indians of the Guianas. According to Roth, the poisonous exudations and spawn of certain frogs or toads were rubbed into cuts made in the skin, or introduced into the eyes, nose, mouth and ears of the hunter. These practices received their charter in myths, the common theme of which is that a primordial hunter received his skill as a gift from a toad or frog woman, who rubbed her venom into his sensory organs to heighten their acuity. After suffering the same drastic symptoms reported ethnographically from the Peruvian montaña, the mythic First Hunter found himself imbued with miraculous skill in the pursuit of game. Likewise, Guianan Indian shamans employed toads and venomous frogs in ritual curing, rubbing the animals over the body of the patient, or else introducing the poison into cuts. I am told that something of the sort survives in highland Guatemala, at least in symbolic form, in that the toad is passed over the patient's body without touching it.⁷

Some of the South and Central American species of venomous frogs, especially certain tree frogs, have been well studied by toxicologists and herpetologists and their poisons analyzed (Daly and Witkop, 1971; Daly and Myers, 1967). Some are extraordinarily powerful; the venom of one colorful species of Panamanian tree frog, which measures less than an inch, is sufficient to kill 1000 mice. In fact, the poisons of some of these little amphibians are said to constitute the most powerful natural venoms known to man. These poisons, however, do not contain what could be called hallucinogens, even if some of their constituents may affect the central nervous system.

It is a different story with certain toads. Although we have enough information to allow ourselves some educated speculation, it is a problem that is far from

7. During a discussion at the XII Mesa Redonda of the Sociedad Mexicana de Antropología in Cholula in June 1972, several colleagues reported comparable practices in Oaxaca and Chiapas. Mexican curanderos employing toads were said to be very secretive about their knowledge, especially with respect to the "curing" of toad poison to remove its more dangerous properties.

solved. Among faunal remains at San Lorenzo, Michael D. Coe (1971) found three kinds of skeletal material predominating: fish, man, and, surprisingly, *Bufo marinus*. Surprisingly, because this poisonous toad is most unlikely to have been used as food, inasmuch as the skin of this species contains large poison glands, the contents of which would permeate the flesh in the skinning process.

But if not as food, what purpose might *Bufo marinus* have served the Olmec? The answer may be found in the pharmacology of this toad, and, in part, in certain practices involving toads in the Guatemalan highlands. The exudates from the skin glands of this species contain, among other constituents, bufotenine (5-OH-DMT). Bufotenine is an indole alkaloid also present in South American trees from which hallucinogenic snuffs are made. However, the action of bufotenine is still controversial, in that laboratory experiments on humans have so far failed to demonstrate conclusively that it is responsible for true psychotomimetic, or hallucinogenic, effects.

The reason is that bufotenine does not seem to penetrate the blood-brain barrier, which most investigators believe it would have to do to produce psychotomimetic effects (Holmstedt and Lindgren, 1967). On the other hand, Harris Isbell (1967:377-378) of the University of Kentucky Medical Center, who experimented on himself with bufotenine, suggests that despite its apparent inability to cross the blood-brain barrier, bufotenine may yet be found to have some kind of central action that would make it psychotomimetically effective.⁸ In any event the question obviously arises whether *Bufo marinus* could have played a role in ritual intoxication in Olmec times. And if so, how?

A partial answer may in fact be available—first, in the writings of the seventeenth century English Dominican, Thomas Gage, and second, in the manner in which some contemporary Indians of Guatemala prepare chicha for ceremonial occasions. Gage labored among the Pokoman Maya in highland Guatemala between 1625 and 1647; his first-hand account of his adventures was originally published in England in 1648. The following abbreviated quotation is from the 1958 University of Oklahoma Press edition, edited by J. Eric S. Thompson:

The Indians generally are much given to drinking, and if they have nothing else, they drink of their poor and simple chocolate, without sugar or many compounds, or of atole, until their bellies be ready to burst. . . . Among themselves they make drinks far stronger than wine. These they confection in those great jars that come from Spain. They put in them a little water, and fill up the jar with some molasses or juice of the sugar-cane, or some honey to sweeten it. Then, to strengthen it, they put in roots and leaves of tobacco, with other kinds of roots which grow there and which they know to be strong in operation. Nay, to my knowledge, *in some places they have put in a live toad, and closed up the jar for a fortnight or a month, till all that they have put in be thoroughly steeped, the toad consumed, and the drink well strengthened.* [italics mine]

This drink they call chicha. It stinketh most filthily, and certainly is the cause of many Indians' death, especially where they use the toad's poison with it.

In his recent book, *Maya History and Religion*, Thompson (1970), took note of this "tale of uncommonly strong waters"; however, he was primarily interested

8. Since the above was written, I have been informed by a graduate student in anthropology at the Universidad de las Americas in Cholula, Mexico, that self-experimentation with bufotenine caused him to experience sharply increased blood pressure and visual hallucinations in the form of intense flashes of light.

in the use of tobacco as an intoxicant, and probably did not realize that Gage may have provided a partial answer to a question Thompson himself posed elsewhere in his book concerning the nature of hallucinogens employed among the Maya.

I was informed by my colleague, Robert M. Carmack, that the practice of steeping venomous toads, presumably of the species *Bufo marinus*, in fermenting chicha still survives in the Guatemalan highlands, at least among the Quiché, and that, as in Gage's time, the express purpose is to render the beverage more potent. Perhaps the Indians know something the pharmacologists have so far missed. There are, as mentioned, a number of chemical constituents in *Bufo* poison. Their action in concert may be different from that of bufotenine alone. Perhaps bufotenine has a different effect when taken in alcohol. Or else it may not really need to cross the blood-brain barrier. In any event, whatever the ultimate psychopharmacological verdict, it is not unreasonable to suppose that what Gage observed in the seventeenth century, and Carmack in the twentieth, represents a survival from the prehispanic past that may reach back to Olmec times and thus account for the *Bufo marinus* remains at San Lorenzo.

If the potential hallucinogenic effects of bufotenine are as yet unclear and perhaps even questionable, the same reservations do not apply to the alkaloids recently discovered in surprisingly large amounts in the skin glands of yet another species of American toad, *Bufo alvarius*. While bufotenine, or to use its proper chemical formula, 5-Hydroxy-N, N-dimethyltryptamine, or 5-OH-DMT, is present in South American trees, the seeds or bark of which are made into hallucinogenic snuff, the real active component has been found to be another, related indole alkaloid: 5-Methoxy-N, N-dimethyltryptamine, or 5-MeO-DMT. This is the main constituent responsible for the psychotomimetic effects of several snuffs made from the species *Anadenanthera* and *Virola* (Schultes, 1972).

It is this same hallucinogen that has been found to occur also in *Bufo alvarius*, in what the investigators report to be "enormous amounts" (Erspamer *et al.*, 1967:1149-1164; Daly, 1967:381). What this means is that if *Bufo alvarius* rather than *Bufo marinus* were to be steeped in a fermenting beverage, or its toxic secretion ingested, in whatever manner, there would be little question of its hallucinogenic effects.

The problem lies in the present-day distribution of *Bufo alvarius*. Unlike *Bufo marinus*, which is found from México south to Patagonia, *Bufo alvarius* is a North American desert toad, its native habitat restricted mainly to Arizona and Sonora. Furthermore, we lack the kinds of cultural data for *Bufo alvarius* that we have for other species. Was it ever utilized by man? If so, by whom, and when? Was this toad anciently more widely distributed than it is today? The area to which *Bufo alvarius* is presently native was once inhabited by archaic desert cultures; it is also the putative homeland of the Uto-Aztecs, from which they expanded southward into México as early as 1500 BC. Was it the shamans of the preagricultural desert cultures who discovered the potent psychotomimetic effects of toad poison and whose ecstatic trance experiences gave rise to the now widespread beliefs in the toad as a transforming shamanness, mother of felines, and earth monster?

Perhaps. Or is all this older still? One thinks of the widespread toad motif north of México, including the Northwest Coast. How are we to explain the association of toads or frogs with shamanism in British Columbia, México, South America, *and* in Asia? What about the widespread identification of the toad with the uterus in the Old World? Or toads with toxic mushrooms? Even the magical-medicinal use of toad poisons appears to have its Asian counterpart. Are we perhaps dealing with yet another manifestation of a very remote, common Asian-American shamanistic Ur-kultur?

We will never know for certain. But we must at least concede that the phenomenon of Tlaltecuhltli may not be comprehensible solely in the context of Mesoamerica, nor that of Euaa Quinahi and her tropical forest analogues in a purely South American framework.

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CLIMATE AND ICONOGRAPHY IN PALENQUE SCULPTURE

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Two years ago I discussed the iconography of the temple tablets at Palenque (Figs. 1, 2, 3) as referring to historical persons and events (Kubler, 1969:18-22). I would like to explore further the climatic interpretation that I advanced in the same paper. This was suggested by the striking difference of costumes worn by the two officiants who are thrice repeated on the tablets. In 1969, I claimed that the same personages were portrayed on all three tablets, and that the shorter figure, wearing voluminous mufflers and wrappings in some discomfort had come from a colder climate than the tall, bare-chested man who wears only light hip-cloths. I also suggested that the rattlesnake (*Crotalus*) signs on the short man's chest, and the four-way hatchings on his mufflers are related to the iconography of Teotihuacán and associated places. Extending this argument, I then suggested that "a political union between northern and southern peoples, between highlanders and lowlanders, is being celebrated by the common acceptance of the worship customary at Palenque" (Kubler, 1969:19). No one has yet contested such claims, and I still believe them worth discussion.

Now, I would like to address myself to additional questions concerning these three reliefs, which are generally accepted as masterpieces of sculpture.

1. Might the names, titles, ages, and origins of the persons shown on the reliefs be approximated by analysis of the adjoining inscriptions?
2. How might the symbolic content of the three reliefs be described, both as to historical and geographical origins?
3. What are the Mesoamerican parallels for the format of the three reliefs at Palenque?

Important Maya persons are so closely associated with dates repeated in their biographies that it is possible to judge their importance by the repetitions of such dates. The Calendar Round (CR) date heading the inscriptions accompanying the short figure is 9 akbal 6 xul (or 9.10.8.9.3 = AD 641) on Temple of the Cross and Temple of the Sun. An isolated Sacred Round day, 5 eznab, appears near the short man on Temple of the Cross and Temple of the Foliated Cross. We will return later to the associations of this day name with obsidian. Hereafter, the Temple of the Cross, the Temple of the Sun, the Temple of the Inscriptions, and the Temple of the Foliated Cross will be referred to as TC, TS, TI, and TFC.

The tall, bare-chested man in all three reliefs is explained by captions beginning with the CR date 8 oc 3 kayab (or 9.12.11.12.10 = AD 683), marking an interval of 42 years after the dates accompanying his short companion. The short man's date reappears nowhere else at Palenque or in the Maya corpus, but the tall man's date reappears at N505 (the position of glyph on tablet as recorded in Maudsley, 1889-1902) on the historical, or right-hand, side of the TFC tablet,

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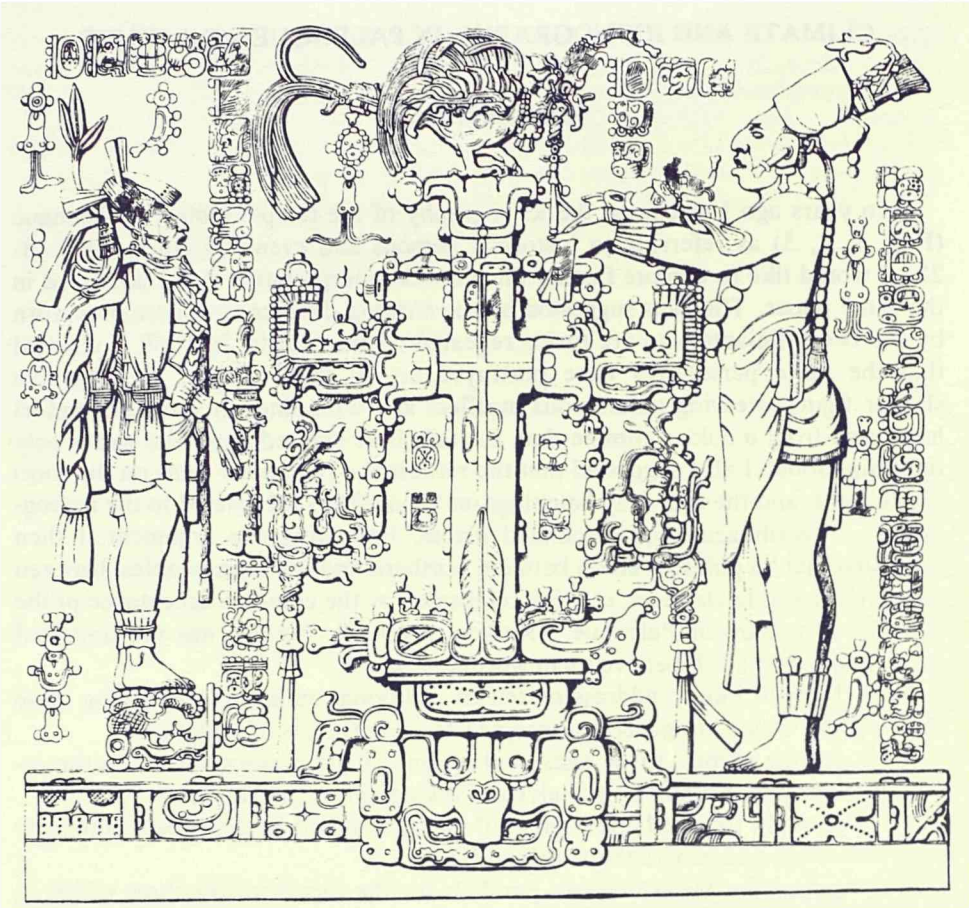


FIG. 1.—Relief from the Temple of the Cross, Palenque (after Maudsley, 1899-1902, vol. 4; pl. 76).

as well as on the west tablet at the TI, and as date G on the Palace tablet. Thompson (1952:68) alluded to yet another occurrence of date G on a lost inscription, which was presumably among the series published by Dupaix (Saville, 1928: 129-136). Berlin (1965:336) listed five of these dated passages.

These frequencies support the interpretation that the tall man had more local importance, with six distinct occurrences of the date associated with him, than the short man, whose date appears only twice, and only on two of the tablets. These dates also lead us to believe that the short man was associated with events occurring 42 years earlier than those connected with the tall man. But both men appear to be about the same age of mature manhood. If the sculptor chose to show them at the same historical moment, rather than each in his own time scheme, the dates in the captions might be less about these men than about the event or person they are both celebrating. We shall return later to the nature of that event, which may have concerned the life history of a ruler at Palenque named Sunshield, buried in the great sarcophagus beneath the nearby TI. The

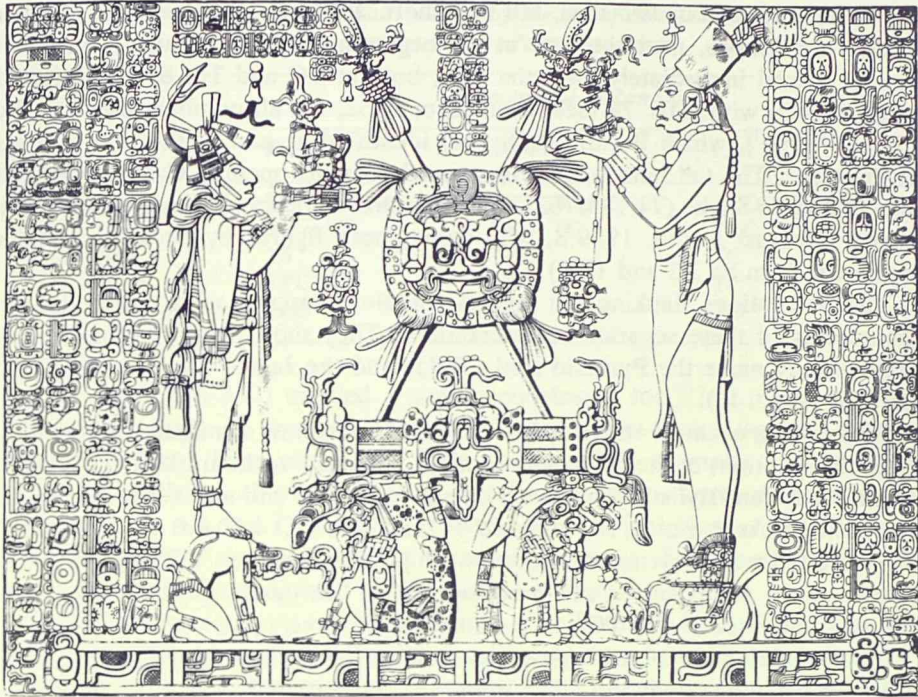


FIG. 2.—Relief from the Temple of the Sun, Palenque (after Maudsley, 1899-1902, vol. 4, pl. 88).

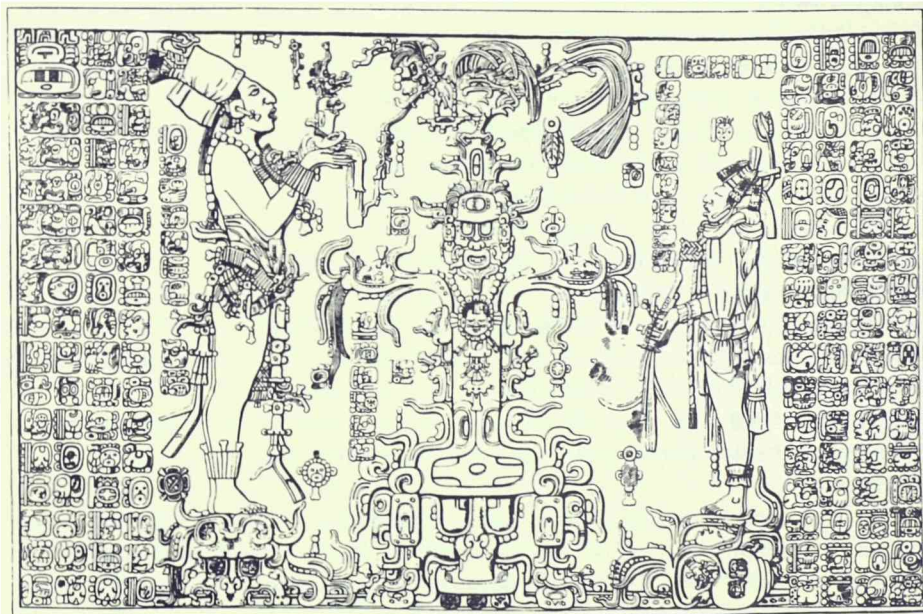


FIG. 3.—Relief from the Temple of the Foliated Cross, Palenque (after Maudsley, 1899-1902, vol. 4, pl. 81).

names or titles of our two men, tall and short, are likely to appear, as in other classic inscriptions, near the date at the beginning of each caption. The short man is named immediately after the date, both at TC and TS, by the pyramid glyph (T685) with affix 74 (see Thompson, 1962, for all numbers preceded by "T" or "affix"), which Berlin (1968:140) identified as part of the title of lords at Palenque. The tall man is likewise named near his opening Calendar Round date as Jaguar-Snake (74.184.762), and this name appears six times on the three tablets (contrast Berlin, 1959:8, who names both figures by isolated calendar signs near them on TC and TFC).

The inscriptions flanking our figures therefore support with repeated titles the identity of these separate representations. They show people whom we can provisionally name the Pyramid lord (T685) and the Jaguar-Snake lord (T762: Barthel, 1965:146).

We now can examine whether the representations show significant differences. Here the questions of their dating become prominent. Proskouriakoff (1950:137) reached different stylistic judgments, one as to motifs, and another as to overall composition. As to motifs, she assigned TC and TS to $9.14.10.0.0 \pm 2k$, and TFC to $9.15.0.0.0 \pm 2k$, leaving the question of priority between TC and TS unresolved. As to composition, she proposed TS as "earliest," TFC as "more advanced," and implied that TC was the latest of the three.

If we examine the physiological signs of age in the tall figure, still another order appears. The body on TC is the oldest and heaviest, with a large paunch and a deep facial furrow from nostril to mouth. On TS, the same person appears 10 years younger, and, on TFC, the slender body and uplifted glance suggest the youngest of the three portraits. Using this criterion, which seriates the sculpture by the age of the subject, we obtain TFC as earliest, TS in the middling position, and TC as the most recent of the three works. The short figure provides another valuable clue in resolving the question of seriation. Proskouriakoff (1950:137) noted the archaic mode in the perspective rendering of the mat pectoral on TFC, and the Late Classic mode of the same form as a flat mat on TC. Tabling these results, we are offered a number of choices (Table 1). Thus Proskouriakoff's estimate based on motifs diverge from her estimates based on composition, but her assessment of the perspective convention as archaic or as Late Classic confirms the seriation as to the age of the portrayed subject. It is of interest to note that the epigraphic dating of the sculpture agrees only with her dating by motifs. When we stress epigraphic dates and separate motifs, TFC is last, but if we consider overall composition, physiological age, and perspective conventions, TC appears last, and TFC first. In correspondence Proskouriakoff has urged such a change of method in respect to local conditions and habits in the study of Maya sculpture.

The question about the geographical origins of the two figures can be approached through study of the name glyphs we have tentatively identified. The tall man's name is the more certain because it is preceded by the *jog* sign, T757, which Proskouriakoff (1968:249) interpreted as "directing attention to the subject of the accompanying picture," in the sense of "here is portrayed or recorded."

TABLE 1.—*A comparison of the results yielded by the use of diverse criteria for the chronological placement of the Palenque tablets.*

Criteria	Chronological Placement		
	First	Second	Last
Dates	TC(9.10.10.0.0)	TS(9.13.0.0.0?)	TFC(9.13.0.0.0)
Motifs	TC or TS	TS or TC	TFC
Composition	TS	TFC	TC
Age of subject	TFC	TS	TC
Perspective-convention	TFC	[TS]	TC

Berlin (1965:336-337) implied a similar conclusion for T757 linked to T713. The name glyph of the tall man, T762, or Jaguar-Snake, appears only at Palenque, where Thompson (1962:362) catalogued 26 examples on nine monuments and buildings. Berlin (1965:336) analyzed its six occurrences with the date 8 oc 3 kayab. On the TFC tablet, it shares the terminal block at N17 with the locative sign for Palenque (T793 emblem). Thus, Jaguar-Snake's connection with Palenque seems assured, and I shall return to it below.

The short man's glyph is 188, 74:685:4. The Pyramid main sign has no preceding *jog*, but its position following the opening date suggests that it signifies a name or an action. Maya names are often composed of zoomorphic elements (Berlin, 1968:141) and occasionally designate objects, as in the case of Sunshield (T624). "Pyramid" can be taken both as an object and as an activity, in the sense of "he of the pyramid," or "pyramid builder." Affix 188 has been interpreted by Proskouriakoff (1960:456) as implying an inaugural date, and by Barthel (1968:129) as a title of rank. The main sign, T685, is rare in Maya writing, Thompson (1962:290-291) listed seven examples (four at Palenque, one at Copan, one at Tikal, and one in Codex Perez), of which three refer to the short, muffled figure. Thus, the name seems non-Maya, as does the costume, which prominently displays another rare and outlandish glyph, T656 (four-way hatching at Teotihuacán, Kubler, 1968:15, item 61).

The sign T656, appears five times on the three tablets as a badge gathering the muffler ends. It appears also at Uaxactun in the early classic mural at M1 beneath the hut and at Xcalumkin. But the center of its distribution is at early classic Teotihuacán (Kubler, 1969:15). There it appears painted in a feathered diadem (Seler, 1923, 5:512-515), as well as incised upon a candelero and in a feathered surround like a bird's eye sign (Gamio, 1922; Séjourné, 1964:156). The stela in Teotihuacán style at Piedra Labrada (Veracruz) repeats this glyph three times (Blom and LaFarge, 1926, 1:41) in a column headed by the so-called Reptile-Eye glyph. Later it reappears at Xochicalco (Kubler, 1968:15). To these examples the *Codex en Croix* in Paris should be added (Dibble, 1942): It is illustrated with a 52-year schema on each of its three leaves, recording events from AD 1403 until after 1569. Each leaf diagrams the 52-year cycle in four indications of 13 years. The meaning of T656 is not established by this colonial doc-

ument, which was probably written at Texcoco, but the origin of the grapheme in the Valley of Mexico seems assured by such examples from different periods.

It should, moreover, be noted that the function, form, and meaning of pyramids differed greatly between Maya lowland and Mexican highland peoples. Michael Coe (1956:394) and Ruz Lhuillier (1968:153) have supposed that the conception of the pyramidal platform as a burial place was limited to the Maya peoples. The most splendid example is the TI at Palenque, with crypt and sarcophagus commemorating a dynastic ruler, as in several other rich Maya burials. In the Valley of Mexico the burial function is usually absent from pyramidal platforms, as well as elsewhere in highland México. Pyramidal decorations and texts about pyramids point instead to an association with water and its worship. Thus Muñoz Camargo (1948:224f), the colonial historian of Tlaxcala, related that at the time of Cortes' arrival in Cholula, the inhabitants firmly expected their *idolo*, Quetzalcoatl, to destroy the invaders by great torrents of water flooding from the temples and shrines. Torquemada (1723:440) later added that during Cortes' stay, the Cholulans believed that the floods would burst forth from the flanks of the great pyramid itself if they broke through its crust.

Such water associations reappear in Aztec beliefs reported by Sahagún. Because springs and rivers come from mountains, the mountains were huge vessels of water constantly in danger of being broken and destroying the earth by floods (Robelo, 1905, 5:226-227). The connection with pyramids as artificial mounds is clear in Cholula, where the great platform was known as the Tlachihualtepec (Kubler, 1968:120), or the "mountain made by hand." Parts of it were of Teotihuacán date (Marquina, 1951:121), and at Teotihuacán the stone-clad platform, traditionally called the Pyramid of Quetzalcoatl in the Ciudadela, bore carved and painted designs of waves and seashells, indicating the watery symbolism of these platform terraces.

The outlandish cold weather costume worn by the "pyramid" can now be shown to resemble types familiar at Teotihuacán. On TC and TS, we see the wearer's right profile, and at TFC the left is shown. The costume has many parts: 1) a neck muffler hangs down the back in a twisted coil; 2) a short cape of three panels falls to the rear and sides with disks marked by glyph T656; 3) a corselet of overlapping segments shows knotted bands over chest and abdomen; 4) a loincloth wrapped about the waist has a doubled apron fold hanging in front; 5) on the chest is a plaited-mat pectoral, from which a tasseled rope hangs to below the knees, flanked at TC by rattlesnake (*Crotalus*) elements; 6) the pointed cap seems to be made of many stiffly folded and intersecting strips of cloth or paper with indistinct glyphlike markings.

The capelet and muffler characterize the costume of many figures in Teotihuacán iconography. Examples are the priests of the Teopanacoxco mural (Kubler, 1968, fig. 45), who wear stiffly stylized mufflers, like collars, over capelets of two or more panels. Another example from Las Colinas near Calpulalpan (Kubler, 1968, fig. 41) shows four processional figures wearing three-panelled capelets and mufflers falling nearly to their heels.

Returning to Maya traits in the three panels, the pedestals beneath the officiants and the objects in their hands belong to classic Maya writing and ritual. On the TS tablet, the officiants stand on the backs of supernatural figures indicated by glyphs on their flesh. Their hands hold effigy figurines of other supernaturals. Flanking the central panoply with its sunshield image are two glyphs of skeletal long-nosed heads bearing affixes and coefficients for the numbers 7 on the left and 9 or 10 on the right. Beneath the panoply, supporting a ceremonial bar, are two more seated supernaturals. The one on the left is clearly the same as the smoker on the east side of the TC sanctuary doorway. This large assembly of supernaturals, shown as offerings, as glyphs, and as heraldic supporters, is unique in Maya figural art, and it suggests the obeisance of supernatural forces to the rulership of Sunshield, whose glyph and panoply dominate the scene, spread out over a ground frieze of earth signs (*caban*) alternating with sun heads (T1017). More sun heads terminate this ground frieze as if to mark the limits of Sunshield's power by the scope of the sun.

The other tablets have fewer supernatural figures. At the TC, a skeletal head supports a stylized corn plant. A mythological bird perching atop the plant faces Jaguar-Snake, who proffers a reclining supernatural figurine upon his stiffly outstretched arms. Facing him, the short "pyramid" figure stands upon the glyph we saw at the TS on the side of Jaguar-Snake. He carries a scepter repeating the forms of the pedestal of the plant, which are a skeletal long-nosed head wearing a badge of shell, crossed bands, and leaf forms. These have been interpreted as pertaining to the ritual burning of the fields in Maya agriculture (Kubler, 1969: 46). The ground frieze here bears night signs (*akbal*, moon, Venus) beneath the short figure, and day signs (sky, sun, day, sky) beneath Jaguar-Snake.

At the TFC, the "planetary" ground frieze is omitted, but the corn plant rising from a skeletal head, with a mythological bird perched upon its crest and facing Jaguar-Snake, repeats the scheme of the TX. As at the TX, the short officiant stands on the south side of the tablet with his feet resting upon the leaf of a corn plant rooted in a conch where a supernatural figurine dwells like a hermit crab. The relationship resembles that of the TS, where the short figure stands upon the back of a supernatural with the head of a sun glyph (T1010). The Jaguar-Snake at the TFC stands upon a three-faced skull (frontal view compounded with two profiles). From the top of the skull stylized corn plants grow. As at the TS, the tall officiant holds a figurine, and his short companion holds a scepter bearing a long-nosed mask.

Thus, the TS and the TFC both share the same scheme of worship addressed to a stylized plant rising from a skull and supporting a mythological bird. This scheme of worship reappears at the TC, but it is addressed to a panoply, as if to enhance that cult by the adjacent comparisons with the worship of natural phenomena such as plants and birds.

In these three cult scenes, the short figure appears as an honored officiant, but in foreign dress and without paraphernalia of his own. His pedestals and instruments, however, are all of traditional Maya forms.

The claim that the six figures on the three tablets represent only two persons still requires examination. The various ruler portraits at Palenque have not yet been sorted out, but there is no reason to doubt their existence. Sunshield is probably portrayed on the Tablet of the Slaves (Ruz, 1952, fig. 12), and other likenesses will perhaps also be identified when the ruler lists have been established.

If the tablet figures are accepted as portraits, and as portraits of only two persons, it is striking to note that the shorter figure shows no signs of aging, unlike the tall figure, who appears youngest on TFC and progressively older on TS and TC.

If this tall subject had aged between portraits, it is obvious that the date with which he is associated (8 oc 3 kayab, 9.12.11.12.10), fixes some event. On TFC, his "seating" in office is noted at N7 as of some six years (6.11.6) after 9.12.11.12.10, and under the regency of three "deities" at N9-010. His lineage may be noted at N11-12, and his birth at E11.

At the TS tablet, an older Jaguar-Snake again accompanies 8 oc 3 kayab, followed by an ending sign at L2. The name of Sunshield (L5) comes after the 5 ben-ich katun glyph, which may serve to mark the chronological position of an event in relation to a reign (Proskouriakoff, 1960:472, 1963:153, 1964:197).

The TC tablet likewise marks an ending at L3 for the Jaguar-Snake, connected with another distance number, 6.13.6, from 8 oc 3 kayab. The three regents are collectively mentioned as ancestors (T748, Proskouriakoff, 1963:183) at 08. A new clause mentions Jaguar-Snake again at 013 after an ending sign.

These indications on the three tablets appear to document a term of office under the regency of Berlin's "triad" of "gods," during Sunshield's reign, by a ranking member of Palenque aristocracy.

On the Palace tablet, Jaguar-Snake's glyph may be visible although much eroded at L9: the skulls at K11 and K14 may report his death. On the west tablet at TI, the message may be similar, conveyed by "death fist" (T669b at S11) and "skull" (at S12), in the reign of Sunshield (T12). Both messages accompany the 8 oc 3 kayab date.

As to the inscriptions accompanying the portraits of "He of the pyramid," (in the same order as before, TFC, TS, TC), the TFC inscription lacks a date, but the fifth ben-ich of Sunshield's reign at Palenque is indicated at IJK. An isolated day sign, 5 eznab, appears over our man's head. This recurs on the TC tablet in front of him, and it may refer to his foreign calendar-name, of which Thompson (1960:86-87) noted the associations with obsidian. That obsidian flaking was a principal industry of Teotihuacán at this time (Millon, 1970:1081) is possibly relevant.

At the TS the date 9 akbal 6 xul (9.10.8.9.3) precedes and 13 ahau 18 kankin (9.10.10.0.0) follows the name glyph. At K1 is a title (110.539) along the lines of "Red or fiery Jaguar-lord": it reappears in Jaguar-Snake's caption (at 01) on the TC tablet, and it possibly designates the office or rank of both men.

The TC tablet, mentioning 5 eznab, and the reign of Sunshield as well as the 13 ahau 18 kankin date, appear to repeat important elements from the other tablet captions, as if to compound and join parts of their messages.

The compositional scheme of the three reliefs has on central axis a frontal cult image, symmetrically flanked by officiants in profile. The scheme is rare in Maya art of any period and in any province. There is at Tikal an early prefiguration of it in the program of stela 31, where a ruler figure on the face of the stone is flanked on its left and right sides by warriors of differing heights in Teotihuacán dress, each with his own identifying caption of glyphs above his head. Satterthwaite (personal communication, 25 March 1970) favors a dedicatory date at 9.4.0.0.0 for the main text. He cited an unpublished opinion of Proskouriakoff, who dated the sculptural style between 9.0.0.0.0 and 9.3.0.0.0, at least two centuries earlier than the Palenque tablets.

This comparison leads one to look again at Teotihuacán. There the compositional scheme seems more at home than among the Maya peoples, inasmuch as we find it used in mural painting at Teopancaxco and on the upper wall at Tepantitla, as well as in pottery designs where offerings are brought to a cult image (von Winning, 1949:137).

This compositional scheme reappears also at Monte Albán in Tombs 104 and 105, where the murals are from about AD 500. The processional profile figures advancing upon the central cult image wear heavy, full clothing like that of the Teotihuacán murals. Both sites were closely connected in Early Classic time as we know from other resemblances and from the evidence of interregional trade. Thus, the reliefs at Palenque could well be non-Maya in compositional scheme as well as in the costume of the smaller officiant. The source of the scheme would be by this argument highland central and southern México.

Another much later example of the axially symmetrical composition of cult image and flanking officiants is the case of the completion-symbol image of the Sacred Year of 260 days, as represented in Codex Madrid and in Codex Fejervary-Mayer (Liverpool). Here the format of the cruciform completion symbol is clearly Maya, but the pairs of deities in the panels of these Postclassic manuscripts, which do not antedate AD 1350, are distinctly of highland Mexican origin. In this situation, the matrix is Maya, but its figural iconography is of highland Mexican, Postclassic origin. Behind the axial symmetry of the panels, we can suppose early Classic prototypes as to compositional schemata, pointing to origins or parallels in the Valley of Mexico and in the Oaxacan highlands. The apparent parallels between the Fejervary-Mayer page and the Palenque temple tablets are confined to compositional devices and to axial plant forms with birds in their branches. The nine human representations, however, are of Mexican deities, unlike the two historical personages thrice repeated at the dynastic court of Palenque. Thus the differences between Maya reliefs and the Mixtec manuscript recall the differences between Classic and Postclassic societies, and between highland and lowland cultures.

DISCUSSION

The two men shown in the three temples are officiants in rites celebrated during the rule of the personage named Sunshield. He was buried in the sarcophagus beneath the Temple of Inscriptions, where the terminal date on the west

tablet (Berlin, 1951:128, following Spinden, 1924) is 8 oc 3 kayab, 9.12.11.12.10 (AD 683). This date is repeated three times in the inscriptions describing the taller of the two men, whose name is Jaguar-Snake (T762). If 683 is the date of Sunshield's sarcophagus (Fuente, 1965:124), and Sunshield's remains in the sarcophagus are of a man aged 40 to 50 (Ruz, 1955:25-46), we may suppose that he was born about 640. The date in two inscriptions explaining the short, muffled figure is 9 akbal 6 xul, 9.10.8.9.3 (AD 641). Let us therefore suppose that the two officiants stand in rites of the beginning and ending of a period defined by the life span of Sunshield.

Striking differences of size and costume distinguish these officiants. The smaller man wears a costume reminiscent of mountain climate and Teotihuacán iconography. He is a foreigner in the rain forest of Palenque, not only by costume but also by his name, which is the rare pyramid glyph. This name is linked with Sunshield's in the opening clause of the Tablet of the 96 Glyphs (Berlin, 1968), as of 9.11.0.0.0 (AD 652) when Sunshield was still a boy. The pyramid glyph may connote "builder," or even "tutor," perhaps in the sense of the Alttolteken about whom Lehmann (1933) wrote in order to account for the Teotihuacán presence in Maya lands.

Having begun with questions, I conclude with more questions. Was the "pyramid" a member of the same lineage as the ruler, or a ruler in his own right, preceding Sunshield? The same questions arise with Jaguar-Snake. Was he Sunshield's successor? Until the ruler lists of Palenque are further sorted, these questions cannot be answered. But it remains significant that these two men, thrice repeated, are differentiated by costume as a native and an outlander, and by their associated dates as persons connected with the beginning and the ending of a reign. Was it not an ecumenical rule harmonizing highland and lowland spheres, in the repeated linking of these two figures?

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THE MOIST TROPICS, THE ARID LANDS, AND THE APPEARANCE OF GREAT ART STYLES IN THE NEW WORLD

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There is a long standing debate concerning the type of geographical setting in which agricultural systems first arose. Most scholars who have addressed themselves to the problem have looked to the arid and semiarid regions of the world; and research in such zones has, indeed, produced a vast body of data relevant to the origins of those cereal crops now the mainstays of Western industrial civilization. The ease with which direct evidence of early agricultural systems can be obtained in the arid and semiarid zones of the world has been offered as proof that agricultural systems arose in such areas, but this plethora of data is merely proof that dry caves are good places to look for really ancient plant remains. Accidents of preservation should not be accepted as the basic constraints on our understanding of the logic of economic evolution.

The contrary view, that man first systematically increased the availability of essential plant species in the moist tropics, and that this pattern of selective plant propagation spread out of the moist tropics stimulating later experimentation in the arid and semiarid regions of the world, has always had some adherents, but their numbers have been few compared to those favoring an arid and semiarid land origin. The case for the moist tropics was most eloquently presented by Carl O. Sauer (1952). Paul Mangelsdorf's (1953) review of Sauer's book indicated the intense hostility that most scholars felt toward the idea that root crop agriculture on the flood plains of major river systems within the tropical forest zones of the world was earlier than seed crop agriculture in arid and semiarid lands. This hostility has not abated with the passage of time.

Sauer's few adherents have continued to update the conceptual structure of Sauer's position in terms of new evidence and current thinking on the complex relationship between economic pattern and environmental setting. Two recent papers of David R. Harris (1971, 1972) are the most thorough and convincing examples of such reworking.

It is interesting to compare the logical structure of Sauer's argument with that of his opponents' position. Those who have defended the priority of the arid and semiarid lands have proceeded inductively, have relied almost entirely on the large body of preserved plant remains available, and have constructed models that account for, but in no way go beyond, the body of data in hand. By way of contrast, Sauer and his followers have been systemic in their orientation and remarkably eclectic as to the range of data they have considered relevant to the problem. Both Sauer and Harris have reconstructed the probable nature of proto-agriculture as a total system and have related the requirements of this total system to the characteristics of specific environmental types. If one has any tolerance

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for this kind of reasoning, one must admit that their arguments are both coherent and impressive. Unfortunately, as Bateson (1972:400) noted, many people find such arguments unconvincing. In view of the almost religious zeal with which the "new archaeologists" have embraced deductive approaches to the problems of archaeology, both the formal structure and the informational implications of Sauer's model should be receiving increasing approval among younger students of the problems of agricultural evolution.

Beyond its attractiveness as an example of a kind of scientific explanation that is becoming progressively more popular these days, Sauer's model deserves reconsideration in terms of a small but rapidly increasing mass of data that tends to verify it at precisely those points where Mangelsdorf suggested the model was eternally unverifiable (1953:90). The recent research of Solheim (1970) and Gorman (1969) in Southeast Asia suggests that Sauer's predictions concerning the early importance of this area were startlingly accurate; whereas the work of the Reichel-Dolmatoffs on the tropical riverine flood plains of northern Colombia (Reichel-Dolmatoff and Dussan de Reichel, 1956; Reichel-Dolmatoff, 1965*a*, 1965*b*), and my own work (Lathrap, 1958*a*, 1962, 1968*b*, 1970) in the Upper Amazon Basin indicates that Sauer was equally prophetic in his general outline of New World agricultural development.

I am an unabashed propagandist for the cultural and agricultural priority of the moist tropics and I intend to use the early appearance of various manifestations of complex art style in northern South America as a demonstration of the essential correctness of Sauer's model. Beyond this, I hope to propose, by an extension of Sauer's model, an explanation for the nearly simultaneous appearance of the two earliest "Great Art Styles" of the New World, Chavín in Perú and Olmec in Mesoamerica. While focusing on the precocious appearance of efficient agricultural systems and iconographically complex art styles in the moist tropics of northern South America and lower Central America, my explanation cannot ignore the existence or significance of the more arid sections of nuclear America, the Central Andes to the south and west and the Mexican Plateau to the north. I will suggest that it was a confrontation between the rapidly expanding agricultural system centered on the riverine flood plains of northern South America and systems of agriculture largely indigenous to oasis settings in the high Andes and Mexican Plateau, respectively, that triggered the appearance of "Great Art" in the New World.

THE APPEARANCE OF ART ON THE COAST OF PERU

Sites such as Toquepala in the far southern highlands of Perú (Muelle, 1970) have produced art that in its thematic material and probable purpose is comparable to the Upper Paleolithic art of western Europe, and similar manifestations are widespread in the northwestern quadrant of Argentina. The recent study of Reichel-Dolmatoff (1971*a*:82-83) showed that cave art survives in South America and at least in the northwestern Amazon serves the purpose of ensuring hunting success, the function most frequently attributed to the cave art of the European Upper Paleolithic. Nonetheless, the extant corpus of art left to us by

early South American societies dependent on hunting or mixed hunting and gathering economies does not approach the richness and stylistic sophistication of European cave art.

Huaca Prieta, the deep preceramic midden on the North Coast of Perú near the mouth of the Chicama Valley, is not the oldest site in which we find technically sophisticated and iconographically complex art in association with early agricultural systems; but it was the first to be discovered and described in detail (Bird, 1948). The economy that resulted in this huge accumulation of refuse depended largely on the collection of shell fish and other food resources of the seashore, but also utilized a number of cultivated vegetable foods. Bird (1963:30) offered the date of 2125 BC as most probable for the beginning of occupation at Huaca Prieta.

Were it not for the total aridity of the Peruvian coast, resulting in the nearly total preservation of what would in other situations be perishable materials, we would be unaware of the agricultural segment of the diet of the inhabitants of Huaca Prieta. We would also have a very low opinion of the level of technological and artistic achievement of the inhabitants of the site. Except for a fragment of a ground stone bowl (Bird, 1948:25), the lithic material is comparable to that of the basal Paleolithic of the Old World. Other aspects of technology involving non-perishable materials were similarly unelaborated. It is only in the medium of textiles that there remains a large body of manufactures that shows high technological skill and a developed art style. Bird (1963) discussed the designs and techniques at length. The majority of the textiles are twined and thereby differ technologically from later coastal Peruvian textile styles, but to a surprising degree stylistic devices typical of later Peruvian textiles are foreshadowed in these early textile designs. Engel and others have since found similar decorated textiles from a range of sites on the North, North-central, and Central Coast of Perú (Engel, 1963; Lanning, 1967).

Certain kinds of evidence can be recovered only from extremely dry situations such as Huaca Prieta. One might infer the presence of an advanced textile industry in an open site in the moist tropics east of the Andes because of an abundance of spindle whorls. Occasional textile impressions on ceramic objects might also be recovered. Such clues, however, give no indication of the style of decoration or the complexity of techniques involved. Even in the case of the Huaca Prieta textiles, differences in yarn colors had almost entirely disappeared and the designs were discovered by Bird (1963:31) and his associates only by plotting the course of each warp yarn through a textile.

At Huaca Prieta the available media, in addition to textiles and gourds, include bark cloth, matting, basketry, wood, shell, bone, and stone. No decoration has been found executed in any of these materials, a situation which forces us to the conclusion that textiles were the major medium used in artistic expression. What is more, textiles were the major medium from the beginning of the occupation of the site. The complex techniques appear in the earliest levels and were already fully developed. Curiously, in the upper strata there is a suggestion of cultural, or at least artistic, degeneration. (Bird, 1963:31-32)

The developed textile art of Huaca Prieta was dependent on the availability of a high quality fiber for the spinning of yarn. The Huaca Prieta yarns are of an

improved, long fiber, cultivated cotton, probably of the same species still cultivated on the coast of Perú when the Spanish arrived (Stephens, personal communication, 1972). This cotton, *Gossypium barbadense*, has certain cytogenetic peculiarities that have given rise to an extensive literature (Hutchinson *et al.*, 1947; Stephens, 1967). This is not the place to present an extended review of the cotton problem; but the genetic structure of *Gossypium barbadense* is such that it appears to have one genome (half of its genetic material) derivable from an African species of *Gossypium* and another genome derivable from a New World wild species of the genus *Gossypium*. The presence of the Africanlike genome in *Gossypium barbadense* has been explained variously by continental drift, by transmission of seeds through some nonhuman agency such as birds, or flotation (Stephens, 1966), or by human transport of an African *Gossypium* already under cultivation from western Africa to eastern South America (Schwerin, 1970). Obviously, the last of these three alternative explanations has as a corollary that cultivated *Gossypium* was introduced to the coast of Perú from east of the Andes as a fully developed cultigen. Even the other two alternatives suggest that the ultimate origins of domesticated *Gossypium barbadense* are to be sought east of the Andes.

Recently *Gossypium barbadense* has been collected from localities far to the north of Huaca Prieta in situations along the Perú-Ecuador border, around the Gulf of Guayaquil, and on the Santa Elena peninsula. The material was derived from plant communities not under human control. Stephens (1965:356), who has worked most intensively with the problems of the origins of New World cultivated cottons, has indicated the great difficulty in distinguishing between truly wild cotton and feral cotton. Unlike most developed cultigens the New World cultivated cottons have retained weedy characteristics that permit them to maintain themselves without human support in a variety of ecological settings. Stephens (personal communication) refused to state flatly that these Ecuadorian cottons are wild rather than feral, though he favored that position. He did indicate that if feral, they were derived from a far more primitive strain of cultivated *G. barbadense* than any under cultivation today. In either case, coastal Ecuador is indicated as a possible immediate source for the developed cotton and the developed textile industry that appears in such coastal sites as Huaca Prieta.

The above comments do not start to indicate the complexities surrounding the origin of the two New World species of domesticated cotton (Stephens, 1967). At present one can only observe that if *Gossypium barbadense* should prove to have been domesticated west of the Andes, it would be in contrast to those other cultigens present at Huaca Prieta, the histories of which have been worked out in detail. For instance the work of Pickersgill on the ajís (chilis) shows that at least two cultivars of the genus *Capsicum* were introduced from east of the Andes in an advanced state of cultivation (Pickersgill, 1969).

The earliest iconographically consistent and stylistically complex art to emerge on the coast of Perú appears in this region in a fully developed state suggesting a period of evolution elsewhere. The art style in question was dependent on, and developed in the context of, a high quality textile fiber derived from a much

modified cultigen, *Gossypium barbadense*. Though most of the major iconographic themes that characterize the later art styles of coastal Perú are missing from the textile art of Huaca Prieta, many of their organizational clichés are already present along with the ubiquitous interlocking fish-snake theme, probably the most common motif in Precolumbian Peruvian art (Bird, 1963:32).

Bird has discussed one other category of art from the Huaca Prieta midden (1963:29). Two carefully incised and carved containers made from the rind of the bottle gourd, *Lagenaria siceraria*, were associated with a burial deep within the preceramic midden. Judging from the radiocarbon assays that bracket the burial, Bird suggested a date of about 1950 B.C. Bird pointed out that a few other fragments of gourd rind from Huaca Prieta did show traces of incised or pyro-engraved decoration, but that none of the other examples showed complex design organization or careful execution comparable to the two complete gourd containers. He concluded: "The lack of similar decorated pieces in the refuse suggests that the two containers were not made on the site but were importations" (Bird, 1963:29).

Bird was the first to indicate that the Huaca Prieta gourd containers were stylistically exotic. Lanning (1967:76-77), however, following the insight of his student, Betsy Hill, has offered a suggestion as to the source of these stylistic influences.

Interestingly, the designs on the Huaca Prieta gourds are closely similar to the faces carved on stone figurines and pottery bowls of the Valdivia 3 phase, about 2300 B.C. In fact, they are so similar to a Valdivia 3 piece in the Columbia University collection that they could have been copied directly from it by an observant artist. We cannot know whether the Huaca Prieta gourd carver actually saw an Ecuadorean bowl or figurine, or whether the designs come from some intermediate region in far northern Peru, but there is undoubtedly a direct relationship between Ecuadorean stone and pottery designs and northern Peruvian gourd carving at this time.

Fig. 1 illustrates the total accuracy of Lanning's observation on the stylistic identities between the Huaca Prieta gourd and the excised human faces characteristic of a limited segment of the Valdivia ceramic sequence. One of the two gourds from Huaca Prieta is redrawn from Bird's illustrations and juxtapositioned with three sherds and a nearly complete bowl from the Valdivia type site, G-31. The excellent comparative material from G-31 was made available to me by Presley Norton. The stylistic similarities extend beyond the conventions of reducing the human face to a relief design on two planes. In both the actual gourd from Huaca Prieta and the similar bowls from G-31, the face elements typically appear four times around the vessel with abstract excised elements used as fillers between the four faces.

The reader will have noted that there is at least the hint of a disagreement between the position taken by Bird on the two carved gourds and Lanning's statement. Whereas Bird was explicit that the objects were carved elsewhere and were trade items at the Peruvian coastal site, Lanning at least suggested that the specimens could have been carved at Huaca Prieta by an artist who had been temporarily exposed to Valdivia models. It now is possible to be more specific about the nature of the connecting link between the two related artistic manifestations.

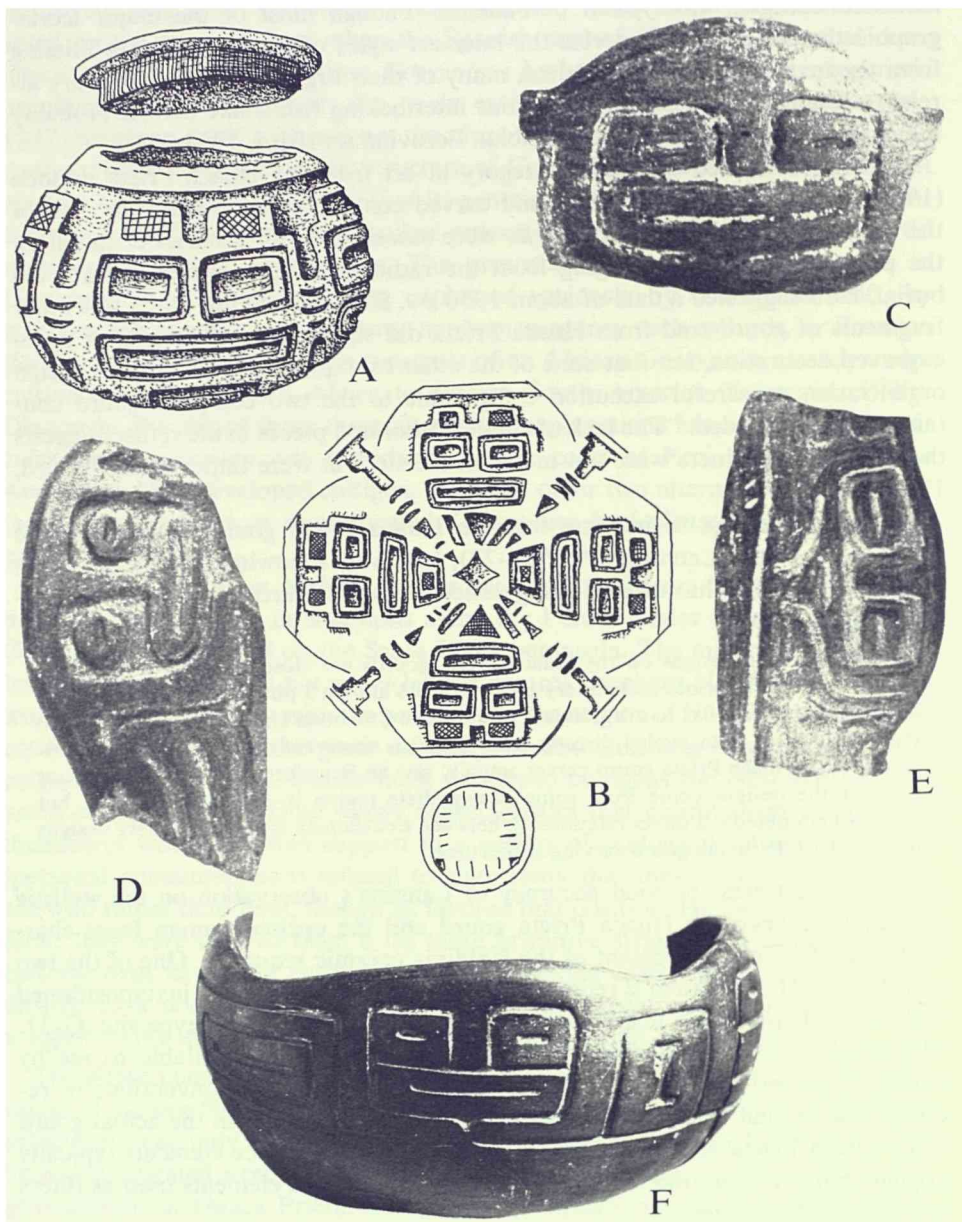


FIG. 1.—Carved bottle gourd from Huaca Prieta and carved ceramic bowls from the Valdivia site, G-31: A, side view of one of the two carved bottle gourds associated with a burial in the Preceramic level of the Peruvian site of Huaca Prieta (redrawn from Bird, 1963, fig. 1c); B, exploded view of A (redrawn from Bird, 1963, fig. 16); C-E, rim sherds of carved Valdivia bowls from Valdivia site, collection of Presley Norton; F, nearly complete carved bowl from the Valdivia site, collection of Presley Norton.

Meggers *et al.* (1965) presented a comprehensive classification of Valdivia ceramic decoration. The coherent style of carving shared by the two Huaca Prieta containers and a limited range of Valdivia ceramic bowls is more or less coterminous with their type, Valdivia Excised. The discussion of this type and the accompanying illustration (Meggers *et al.*, 1965, fig. 31) indicated that this configuration of decoration occurs on a limited range of vessel shapes. Meggers *et al.* distinguished four shape categories but none of the four varies widely from the abstract geometric form that might be described as a simple, somewhat flattened hemisphere. The form might also be described as what results when one halves the kettle race of the bottle gourd in the horizontal plane. Meggers *et al.* (1965:58) were hindered in recognizing this last similarity by the fact that “no base sherds, clearly associated with excised decoration, were found.” Fortunately, Presley Norton’s collection of ceramics from G-31 contains a number of complete, or nearly complete, examples of bowls decorated in the carved style shared by Valdivia and Huaca Prieta.

It is remarkable how closely the whole Valdivia carved bowls mimic the form of halved bottle gourds. This similarity is not just in terms of the total silhouette of the vessel, but also extends to a feature that can be explained neither in terms of function nor ease of manufacture. The base of these vessels is marked by a small, precisely circular depression on the exterior and a corresponding interior, conical mound, both exactly centered. This peculiar configuration is always found in both halves of a kettle race bottle gourd when it is cut horizontally.

The fruit of the cultivated bottle gourd comes in two distinct forms. This difference in fruit form is evidently under genetic control and gourd vines producing the two forms of fruit are maintained as distinct races or cultivars, though both are of the single species *Lagenaria siceraria* (Bailey, 1937). In the one form, which is usually referred to as the kettle race, the fruit takes a form that is circular in horizontal cross section but markedly flattened along the vertical axis while at both poles of the vertical axis there is a marked depression or dimple. Fig. 5B conveys this basic form of the kettle race more adequately than is possible with additional verbal description. The distal dimple is the scar left by the blossom, and the proximal one is the seat of the stem. When the stem is cut away to afford an even working surface (Fig. 5D), a very sharply defined circular area results. There is a marked interior conical protuberance that corresponds to each of these exterior dimples, but the proximal cone is the more sharply defined (Fig. 5C).

The other form of cultivated bottle gourd exemplifies the common name. Connecting the spherical or egg shaped body to the stem is a long, constricted, and frequently twisted neck. These bottle-shaped bottle gourds were used as flasks and net floats, and more recently as darning eggs and bird houses. Both of these races of bottle gourd were maintained at Huaca Prieta, as distinct cultivars, and Bird (1948, fig. 10) recovered a number of gourd floats still attached to their nets.

Fig. 2 offers an exterior and interior view of an elaborately carved Valdivia bowl that shows all of the features we have been discussing. The stylization of the human faces is of the kind already illustrated (Fig. 1). Anyone who has

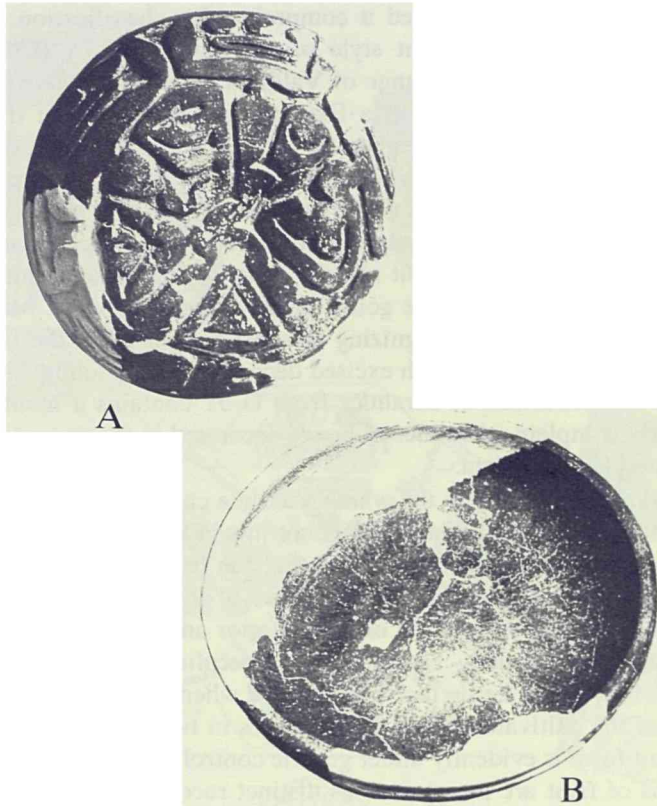


FIG. 2.—Carved bowl from the Valdivia site, G-31, collection of Presley Norton: A, bottom view; B, interior view—note the marked depression in A and the conical protuberance in the center of B, which are precise copies of features occurring in bottle gourds.

handled the modern carved gourds or mates produced in the Central Highlands of Perú will be struck by the total similarity of the form of this bowl and the configuration of the modern mate (compare Figs. 2 and 5A). The interior conical protuberance of this bowl is particularly well developed and should be compared to a modern example (Fig. 5C, an interior view of the lid of the specimen illustrated in Fig. 5B).

Fig. 3 depicts another elaborately carved Valdivia bowl, this one with a red slip. The basal view (Fig. 3A) shows a dimple with a sharply defined margin, which may well be compared to the detail of the cut away stem on a modern mate (Fig. 5D). The four somewhat asymmetrical protuberances may be a purely decorative feature, or on the other hand might foreshadow the modern practice of cutting the gourd into two sections in such a way that the lid can be fitted back on the body in one position only. Note the square end of the upper left projection of the lid in Fig. 5C.

Fig. 4 shows two other examples of carved bowls, the configurations of which could not be more gourdlike. The designs are geometric and simpler than the previous examples. The slightly asymmetrical, dentate rim of the one shown in

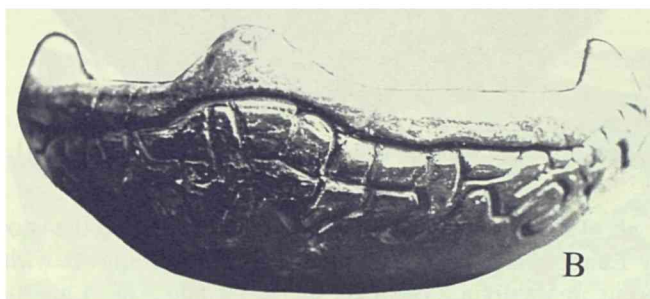


FIG. 3.—Red slipped and carved ceramic bowl from the Valdivia site, G-31, collection of Presley Norton: A, bottom view; B, side view—note the sharply defined circular depression in the center of A.

Fig. 4A again suggests the modern pattern of a dentate juncture between the body and lid (compare with Fig. 5B,C). Both vessels show the line of pendent excised triangles that Meggers *et al.* (1965, fig. 31, 3) indicated are a cliché of Valdivia carved bowls. Interestingly, this row of pendent excised triangles is still a cliché of modern Peruvian mates (Fig. 5A).

It appears to me that there is only one conclusion that can be drawn from the preceding observations. All Valdivia vessels that share the complex and sophisticated carved style appearing on the two Huaca Prieta mates are detailed and deliberate copies of halved and carved bottle gourds of the kettle race. In the terminology favored by early British anthropologists, Valdivia Excised bowls are skeuomorphs of bottle gourds. There seems to have been a strongly held feeling on the part of the Valdivia artist that this stylistic configuration was appropriate only if the object was a real or synthetic *Lagenaria*.

As Lanning (1967:76-77) noted, this stylistic configuration appears in Valdivia 3. The style has a few antecedents in earlier Valdivia sherds (Meggers *et al.*, 1965, pl. 102b), and excision does occur as rows of minute, pendent triangles

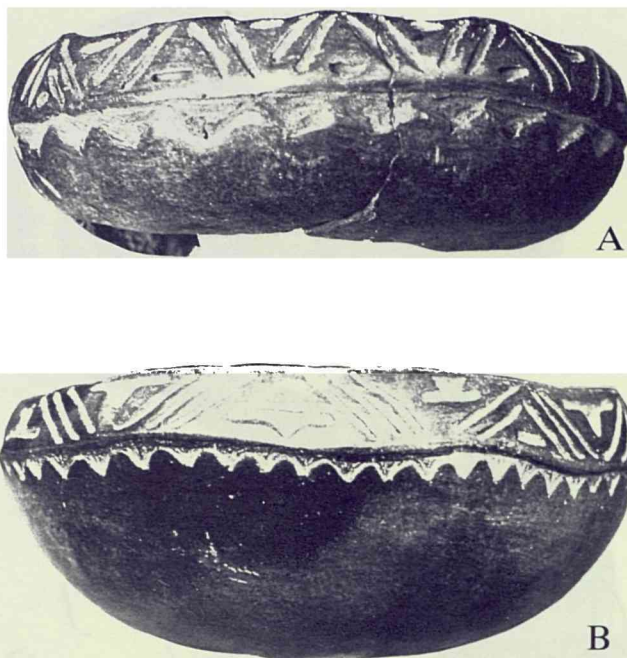


FIG. 4.—Two gourd-shaped, carved bowls from the Valdivia site, G-31, collection of Presley Norton.

(Meggers *et al.*, 1965, pl. 61f, 62e) in Valdivia 2. Also, the stone figurines mentioned by Lanning as sharing the mode of facial treatment with this carved gourd style occur in Valdivia 2 contexts such as Loma Alta. Lanning mentioned the possibility of a third center of development from which the style might have been dispersed both to Huaca Prieta and Valdivia, but the above observations make it likely that this early and exuberant experimentation with gourd carving was centered at or near such an early Valdivia phase site as Loma Alta or Valdivia itself (G-31). What is certain is that the style developed on carved gourds and was transferred to ceramics only for a relatively brief interlude.

Decorated bottle gourds were an effective medium for the long distance transmission of complex artistic configurations. Evidently the people responsible for Valdivia culture were the manufacturers and purveyors of beautifully executed mates to a large area of northwestern South America.

There are other suggestions that decorated gourd containers had a pervasive influence on early ceramic vessel forms and early modes of ceramic decoration in northern South America. The forms of the more carefully decorated bowls of Valdivia 2, especially those of the style designated Valdivia Fine-line Incised (Meggers *et al.*, 1965, fig. 32) are also somewhat suggestive of halved bottle gourds, though the details of stem and flower scars were not compulsively depicted. The same observation might be made on the bowl forms of other early and simple South American ceramic complexes such as Puerto Hormiga and Monagrillo.

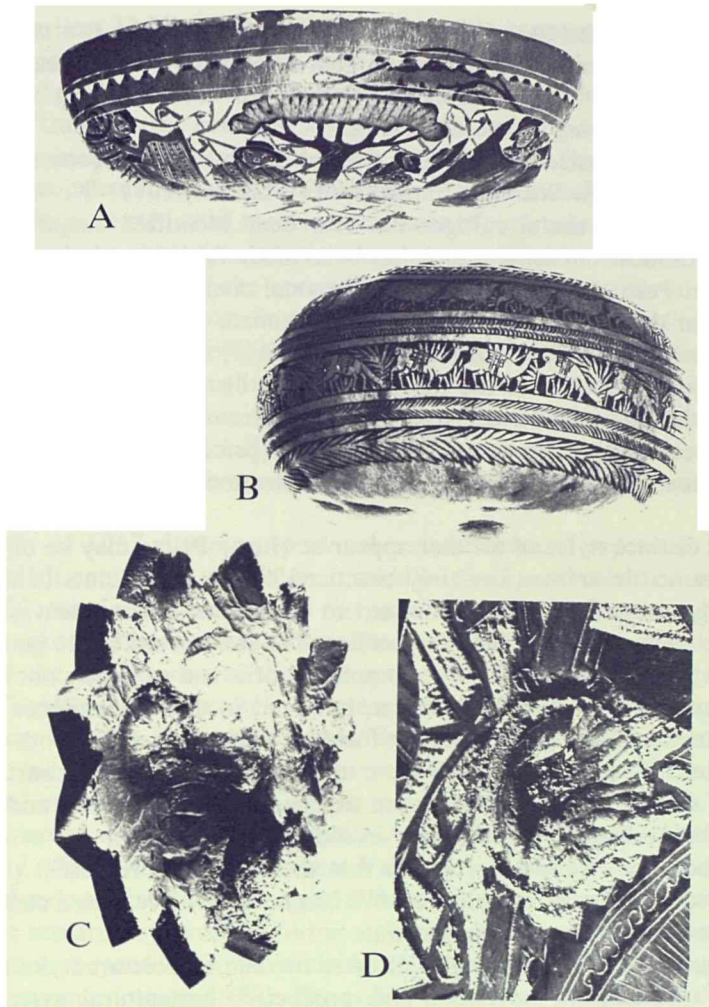


FIG. 5.—Modern Peruvian carved bottle gourds, mates: A, side view of large halved bottle gourd with carved and burned decoration—note row of pendent, excised triangles, and marked depression in the bottom; B, side view of pyroengraved bottle gourd with lid—note the depression in the bottom of the container which represents the flower scar; C, interior view of lid of mate illustrated in B—note marked conical protuberance; D, detail of the bottom of mate illustrated in A, with the sharply defined circular depression resulting from the cutting-away of the stem—compare with FIG. 3A.

Zoned cross hatching is widespread among the early ceramic complexes in tropical South America, and in some instances, the way in which this technique is used to produce a total design is almost identical to Valdivia Fine-line Incised. These parallels are most striking if one concentrates on the ceramics of the component at Momíl, which the Reichel-Dolmatoffs have designated Ib (compare Reichel-Dolmatoff and Dusan de Reichel, 1956, láms. VII 6, 7, 9; XVIII 2, 4; XIX 2, 4, with Meggers *et al.*, 1965, pls. 61-64). These similarities are so close as to have strong implications concerning chronological alignment, and one may also

speculate as to whether the mode of transmission between the two cultures was through ceramic examples or decorated gourd containers. It is clear from the Huaca Prieta gourds already discussed that zoned cross-hatching was a productive mode for carving actual mates (Fig. 1A, B).

It cannot be emphasized too strongly that the bottle gourd, *Lagenaria siceraria*, is unknown in the New World as a wild plant (Whitaker, 1971). No wild or feral relative of this most useful cultigen has ever been identified outside of Africa even though a most intensive search has been made for such relatives in coastal and highland Perú (Barbara Pickersgill, personal communication, 1971). I will not discuss at this point the problem of the ultimate origin of cultivated bottle gourds, but will merely note that it appears at Huaca Prieta as an essential part of the technology with both of the morphologically distinct varieties in use. The presence of these two forms, explicable only in terms of their utility to particular domains of culture, argues for a long period of prior cultivation. Wherever it may have been, this long period of prior domestication was not on the arid coast of Perú.

The two distinct styles of art that appear at Huaca Prieta may be of different origins. The textile art was certainly practiced by the inhabitants of that community and was sufficiently acclimatized to its coastal environment to include local motifs such as the crab and the condor. The two carved bottle gourds were specimens traded from elsewhere in completed form and evidently not emulated by local artisans. Both styles are similar, however, in their dependence on a developed cultivated plant as the medium for their execution, and in both cases the origin of the cultivated plant would seem to be elsewhere than the coast of Perú. Because of the remarkable preservation in coastal Peruvian sites, and because Bird examined all other conceivable media at Huaca Prieta for evidence of artistic elaboration, we can be certain that the two styles represent the actual appearance of complex art in this area. We can never achieve such a certainty for the more humid regions of South America.

I am arguing then that the origins of these two remarkable art styles are to be sought in a context of advanced and productive agricultural systems. The problem is to localize such early but advanced agricultural systems both as to general geographical range and specific ecological setting. It is in reference to this problem that I wish to consider the nature of Valdivia culture.

The origin of Valdivia culture is a problem that has given rise to much speculation in recent years. The appearance of a complex ceramic art style on the coast of Ecuador sometime between 2000 and 3000 BC did not fit comfortably with preexisting theories of New World cultural development. Estrada (1961) and Meggers *et al.* (1965) have suggested a derivation from Jomon, the Japanese Neolithic culture. In support of their contention, they have stressed the coastal orientation of Valdivia culture and the degree of its dependence on fishing and shell fish collecting for the basic food supply. Willey, in his recent summary of South American cultural history (1971:275-276), has completely accepted this view of Valdivia economy.

Many New World archaeologists have remained unconvinced about the Jomon-Valdivia linkage (Bischof, 1967; Coe, 1967; Lathrap, 1967). The similarities

between earliest Valdivia ceramics and the wide range of Jomon components that have provided the materials for the comparative plates of Meggers *et al.* (1965:pls. 160-186) seem insufficiently precise to provide a truss for the argument for a trans-Pacific contact around 3000 BC and originating in the vicinity of Nagasaki sometime in October (Meggers *et al.*, 1965:167).

A precise calculation of the probability of the Jomon-Valdivia linkage must await an adequate statistical model as the basis of such calculations. A solution of this problem, acceptable to most of the current combatants, is more likely to come from an understanding of the economic underpinning of Valdivia. Should Valdivia prove to be a transplanting of the economic strategies practiced by coastal Jomon communities as of 3000 BC, most anthropologists would accept the idea of a site unit intrusion from Japan to Ecuador. Indications that the Valdivia site, G-31, and other coastal manifestations of this cultural pattern represent a coastward expansion of an already flourishing agricultural system focused on the recent alluvial soils of riverine flood plains would lessen the necessity for a Japanese prototype.

As early as 1967, Lanning (personal communication) expressed his opinion that the shell content of the Valdivia midden, G-31, and other coastal Valdivia sites, G-31, was incompatible with the hypothesis that the largest segment of the caloric intake of the inhabitants came from shellfish. He suggested that the middens had the appearance of the garbage of a largely agricultural community. Carlos Zevallos Menéndez (1971) presented a fully developed argument that agriculture was the basis of Valdivia economy. Many of his points were inferential, but at the core of his argument there was direct evidence for the cultivation of maize by Valdivia 4 to 5 times, in the form of a cast of a germinated kernel of maize within a securely dated Valdivia sherd (Zevallos, 1971, lám. 6). In 1970, I offered the suggestion that Valdivia was a coastward extension of an already developed branch of Tropical Forest culture (Lathrap, 1970:66).

Recent research by Presley Norton and Jorge C. Marcos would seem to settle the question beyond reasonable doubt (Norton, 1971, 1972; Marcos, 1972, personal communication, 1972). The earlier impression that sites of Valdivia culture were largely or entirely located on the coast and oriented mainly toward the exploitation of littoral resources has been completely dispelled by surveys that have extended inland, up the flood plain of such rivers as the Valdivia and the Chanduy. The Loma Alta site, well up the Valdivia River from the coast, is typical of the numerous inland Valdivia sites and has been investigated by Norton through a series of well-controlled excavations (Norton, 1971, 1972).

It can be dated with reference either to the overly simplistic, four segment sequence of Meggers *et al.* (1965) or to the more precise sequence of Betsy Hill. The Valdivia component at Loma Alta, though nearly a meter deep, is entirely Early Valdivia A in the Meggers *et al.* terminology, or 1 and 2 in the refined sequence developed by Hill (personal communication, 1971). In other words, the Valdivia materials from Loma Alta are earlier than the earliest ceramic materials that have been systematically described from the Valdivia site itself.

Though the distance from the Valdivia site at the mouth of the Valdivia River to the Loma Alta site is not great, there is a marked difference in vegetational

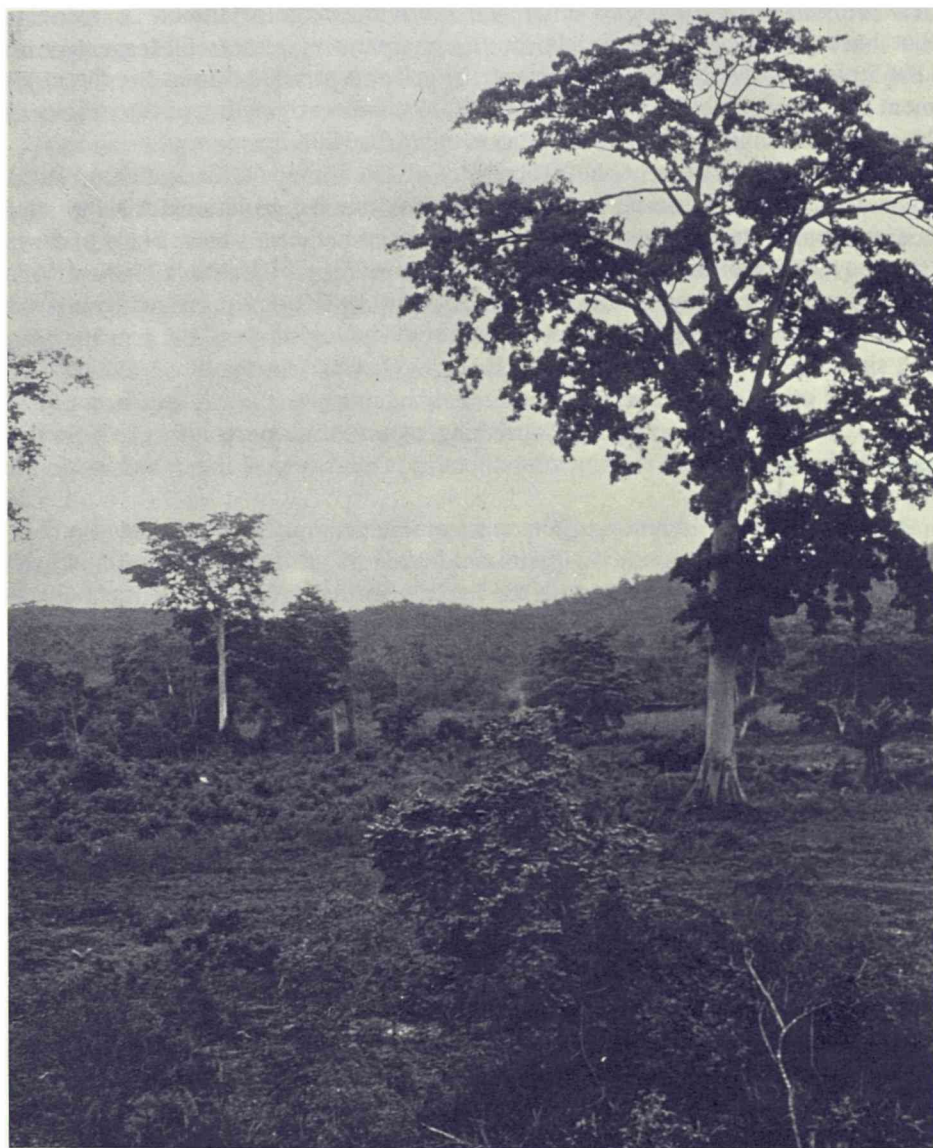


FIG. 6.—View of the flood plain of the upper Valdivia River, from the archaeological site of Loma Alta. Note the remains of the high canopy, tropical forest among the areas cleared for farming.

cover. Whereas the hills ringing the flood plain of the upper Valdivia are covered with a mixed thorn forest including cactus, various thorny leguminous trees, and *Ceiba pentandra*, the flood plain itself, where not cleared for agriculture, supports high-canopied, tropical forest (Fig. 6). This fairly luxuriant plant cover contrasts with the adjacent coast, a zone of extreme aridity and nearly lunar aspect (Meggers *et al.*, 1965, pls. 1-3).



FIG. 7.—Manos from the Valdivia 1-2 component at the Loma Alta site.

The view from the Loma Alta site (Fig. 6) should afford some insight into the strategy of community location operative among early Valdivia societies. The site is on a low hill, off, but immediately adjacent to, the limited level flood plain of the Valdivia River. The flood plain consists of recent alluvium, the fertility of which is renewed periodically by further deposition. The water table is high in the flood plain, so that cultivation could be maintained throughout most or all of the year without irrigation. The site location is such that it dominates all but wastes none of this limited pocket of prime agricultural land. This pattern of proximity to self irrigating, prime farm land is repeated by the Early Formative components of the Huánuco Basin, such as the Kotosh site, and by the Late Preceramic ceremonial center of Chuquitanta on the lower Chillón River near Lima on the coast of Perú (Lanning, 1967:78; Engel, 1966). The contents of the Loma Alta midden support the suspicion that the site was located so as to facilitate agricultural pursuits. Hand mills (manos and metates) are very common, and the manos are of the same form associated with hard evidence for maize agriculture at the Valdivia phase site of San Pablo (Zevallos, 1971, lám. 7B). Two Loma Alta manos (Fig.

7) were photographed against a pile of excavated midden from the Early Valdivia component. Possibly, a more artistic background could have been selected, but the interested reader is enabled to examine the patch of midden carefully and verify the nearly total lack of mollusk remains at the site.

I have defined elsewhere the essential characteristics of Tropical Forest Culture in South America (Lathrap, 1970:45-47) emphasizing the dependence on a developed agricultural system and the tendency to practice this system on riverine flood plains within the zone of full blown tropical forest. Loma Alta as an example of early Valdivia Culture fulfills this definition precisely and my previous hypothesis concerning the ultimate origins of Valdivia culture (Lathrap, 1970:66-67) is strongly supported by this evidence.

Much of our understanding of the origins of domesticated plants and of agricultural systems must rest on evidence other than palpable, preserved remains from archaeological sites. Cytogenetic and morphological studies of cultivated plants and the inferred or demonstrated range of their closest wild relatives are among the best evidence bearing on such problems; but the elegance and conclusiveness of an argument such as Pickersgill's (1969) on the origin of the cultivated ajís of coastal Perú seems lost on many archaeologists. Indeed many archaeologists appear uneasy if they cannot handle actual things and sort them into neat piles to be counted. Potsherds endure in moist, acid soils where wood, basketry, textiles, and even bone and teeth, have disappeared; and dated distributions of potsherds have an enduring fascination for most archaeologists.

Ceramics can be taken as a precise measure neither of total cultural complexity nor of the degree of dependence on agriculture as a basis for subsistence. They do, however, afford an indication of technical competence in at least one cultural domain and are a frequent repository of artistic impulses.

EARLY CERAMIC COMPLEXES OF NORTHERN SOUTH AMERICA

The rational conclusion from the above discussion would be that the Valdivia phase is not a unique cultural phenomenon. Neither the early appearance of technically competent pottery nor the indications of stable and relatively large communities are out of place in northern South America during the third millennium BC. There is no need to invoke catastrophism, in the form of Jomon fishermen. Valdivia is to be understood as the normal working out of the potential of agricultural systems largely, or entirely, indigenous to South America and focused on the exploitation of active, riverine flood plains.

Three discussions of the cultural relationships among the early ceramic complexes of northern South America are readily available (Meggers *et al.*, 1965; Ford, 1969; Willey, 1971). All three are so similar in their treatment of the evidence, they are best considered as varying statements of the same argument. Only the organization, phrasing, and geographical limits of the discussion are altered from one variant to another. The version of Meggers *et al.* (1965:157-178) has clear temporal priority. What is shared by the three is the acceptance of the idea that Valdivia A, as defined by Meggers *et al.*, is the earliest pottery in the New

World and that the earliest known styles in other areas of northern South America are directly derived from Valdivia A, an argument with several flaws of logic.

This is not the place for a full discussion of the dating of the Valdivia sequence as developed by Meggers *et al.*, and refined by Betsy Hill. The work of Norton (1971) at Loma Alta, already alluded to, and recent work by Bischof and Viteri (1972) at the Valdivia site, G-31, must first be fully assimilated. All that need be said here is that there was never any reason for believing that occupation at G-31 started earlier than 2700 BC. The support for this flat statement is presented most cogently by Meggers *et al.* (1965, fig. 94). An examination of the graphic array of radiocarbon assays in their stratigraphic context at G-31 shows that if sample M-1320 (5150 ± 150 radiocarbon years) is accepted, every other date at the site must be rejected as erroneous or out of place stratigraphically. If M-1320 is rejected, the rest of the samples suggest no human occupation at this location earlier than 2700 BC. On the other hand, four consistent radiocarbon assays from the base of Loma Alta site—ISGS-142, $3050 \text{ BC} \pm 190$; ISGS-146, $2800 \text{ BC} \pm 120$; I-7075, $2970 \text{ BC} \pm 120$; and I-7076, $3060 \text{ BC} \pm 120$ —suggest that occupation at this inland site did begin before 3000 BC.

With G-31 permanently out of the running, Puerto Hormiga, with acceptable radiocarbon assays earlier than 3000 BC (Reichel-Dolmatoff, 1965*b*), is the other ceramic complex with the oldest directly associated radiocarbon assays. However, I don't believe that it is the oldest known ceramic complex in Colombia and will comment further on that point later in this paper. At the moment, it strikes me as fatuous to erect a model in which all of the known early ceramic complexes of northern South America are treated as direct lineal descendants of either Puerto Hormiga or Loma Alta. Given the vast areas of tropical lowlands in the northern half of South America, and given the small number of man hours of field work devoted to this area compared to the vast expenditures in the coast and highlands of Perú, and in all areas of Mesoamerica, it would be silly to expect that we had already discovered the earliest ceramics of the area. What is impressive is the large number of early complexes already known.

This symposium does not seem the appropriate place for a detailed discussion of the ceramic sequences of tropical South America and their alignment. Recent discussions of these problems are available (Lathrap, 1971*a*; Braun, 1971). A casual survey of the range of decorative elaborations found on the early pottery of Amazonia and northern South America is more in order. We will center our attention on styles in the 3000 to 1200 BC range, but the survey is meant to be suggestive as to the level of artistic excellence rather than a definitive catalog of known complexes in this time range.

The imitation mates already illustrated, though among the more spectacular and pleasing examples of Valdivia art, do not come close to exhausting the striking decorative modes of this remarkably varied ceramic tradition. From its known inception, the ceramics are marked by high technical competence and a remarkably virtuosity in surface finish. Even vessels clearly intended for culinary purposes frequently received surface finishes of extreme complexity and regularity (Meggers *et al.*, 1965, pls. 77, 87). In fact as one handles a considerable

amount of Valdivia ceramics, even earliest Valdivia ceramics, one is impressed that they are a very poor candidate for the protoceramics of a continent or hemisphere. We will not present further examples, however, inasmuch as Valdivia ceramics have been illustrated more thoroughly in available published sources than most of the other materials to be discussed.

The ceramics from the lower levels of the Cerro Narrío site in the South Highlands of Ecuador are an appropriate first stop on our tour of the early ceramics of northern South America, inasmuch as there are interesting ties between these materials and Valdivia culture. The excavations by Collier and Murra (1943) at the Cerro Narrío site were well executed and the cultural sequence was well defined in an excellent publication, but the sequence was dated with the extreme conservatism characteristic of most archaeological writing during the 1940's. We now know (Braun, 1971) that much of the sequence at Cerro Narrío overlapped the sequence at the Valdivia site and that the two centers of developing culture mutually exerted stylistic influences. Collier and Murra (1943:50-51) characterized the earliest pottery at Cerro Narrío: "Narrío Red-on-Buff Fine is a spectacular pottery, thin and very delicate, which is typical of the lower levels at Cerro Narrío. . . . One whole jar is owned by the colegio in Cuenca. It is so light that the breeze in the corridor blew it about when we were photographing it."

The aesthetic effect of the materials thus comes from a very high level of technological controls: extreme thinness of vessel walls (as little as 1.3 millimeters); well-polished surfaces; thorough firing to give a ware of a hardness up to 5 on the Mohs scale. Elaborate forms and complex designs are not part of the decorative scheme.

Early Cerro Narrío is the only one of the really early ceramic styles located in a true highland setting (an elevation of 3100 meters above sea level), but there can be no doubt about its chronological relationship, either to the sequence on the coast of Ecuador or to the sequence developed by Lanning (1963), for the Chirapiura area of the far North Coast of Perú. The relatively meager data relating to subsistence economy suggests dependence on agriculture, with maize an important crop (Collier and Murra, 1943:38).

Father Pedro Porras has only recently commenced a most important program of research in the jungle of the Upper Amazon in far southeastern Ecuador near the Peruvian border. The preliminary report of Father Porras presented at the meetings of the Society for American Archaeology (May 1972) indicated a wealth of meticulously decorated ceramics that must be assigned to the Early Formative.

The Huánuco Basin provides a quantity of evidence bearing on the argument of this paper. The location of the basin on the eastern slope of the Andes at an elevation of slightly under 2000 meters could be considered at the boundary between the Central Andes as a cultural or ecological zone and the jungle of the Upper Amazon. Were the Huánuco Basin not in the rain shadow of a still more easterly range of the Andes, it would be within the zone of low, dense jungle known as *ceja* (Lathrap, 1970:34). Such dense jungle starts at the crest of Cerro Carpish only a few miles to the east. The Huánuco Basin consists of two con-

verging strips of active, alluvial flood plain; the larger is along the Río Huallaga and the narrower along the Río Higuera, which joins the Huallaga at the modern city of Huánuco. The narrow flood plains have a high water table making them particularly attractive to early agriculturalists lacking developed systems of canal irrigation. As pointed out earlier, this situation parallels that of the flood plain of the upper Río Valdivia at the Loma Alta site. The edge of the flood plain in the Huánuco Basin is lined with deep occupation sites in most instances showing numerous construction levels, spanning long cultural sequence (Izumi and Sono, 1963; Izumi, 1971). The pattern of site location off of, but immediately adjacent to, prime farm land strongly suggests an emphasis on farming.

The sequence is also of particular interest because we can observe the introduction of pottery and the context into which it was introduced. Many of the sites have as their lowest occupation level a nonceramic complex that has been designated Mito (Izumi, 1971). Masonry architecture is elaborate and tools and ornaments in stone and bone indicate a considerable sophistication in manufacturing procedures. Unfired clay figurines are present including little models of the bottle gourd, confirming our suspicions of agriculture and an interest in this ubiquitous cultigen (Izumi, 1971, fig. 9).

The second phase in the sequence is marked by the appearance of a remarkable group of ceramics at some time shortly after 2000 BC. As has been pointed out elsewhere (Lathrap, 1965, 1970:106), there appear to be two completely distinct traditions of ceramic manufacture that blend to form the Waira-jirca ceramic style. One of these strains is widespread in the Central Highlands and coastal regions of Perú and can essentially be duplicated in almost any of the earliest ceramic components throughout this region. Vessel forms are entirely, or almost entirely, restricted to large vessels lacking external rim modification and with a body form varying from globular to egg shaped. In a number of these complexes, such as Chira on the Central Coast of Perú (Lanning, 1967:85; Lathrap, 1966) and Early Guañape in the Viru Valley (Strong and Evans, 1952, fig. 35, 1) pottery is essentially or entirely undecorated, but the Waira-jirca vessels of this neckless olla tradition frequently carry decoration in a band immediately below the rim, executed by an operation that varies between deep, line burnishing and shallow, broad-line incision. The range of decorative motifs is limited and the rules of design organization are unenterprisingly simple and adhered to rigidly.

The other group of pottery is of a far more diversified aspect. The range of distinct shape categories is large, including double-spout-and-bridge bottles, and a number of bowl and jar forms. Most vessels are characterized by a markedly composite silhouette and a distinct carination or keel between the side and bottom of the vessel (Fig. 8C, D). The sides of bowls are often strongly concave. In horizontal cross section, the vessels frequently diverge from the circular, with boat-shaped vessels, subtriangular vessels, and even bean-shaped vessels being well represented. The decorative techniques that are utilized extensively included broad line incision and fine line, zoned, hatched incision; red slipping; modeling and applique; excision; highly polished, black smudged surfaces; and the application of red, yellow, and white pigments as post-fired paints almost certainly in

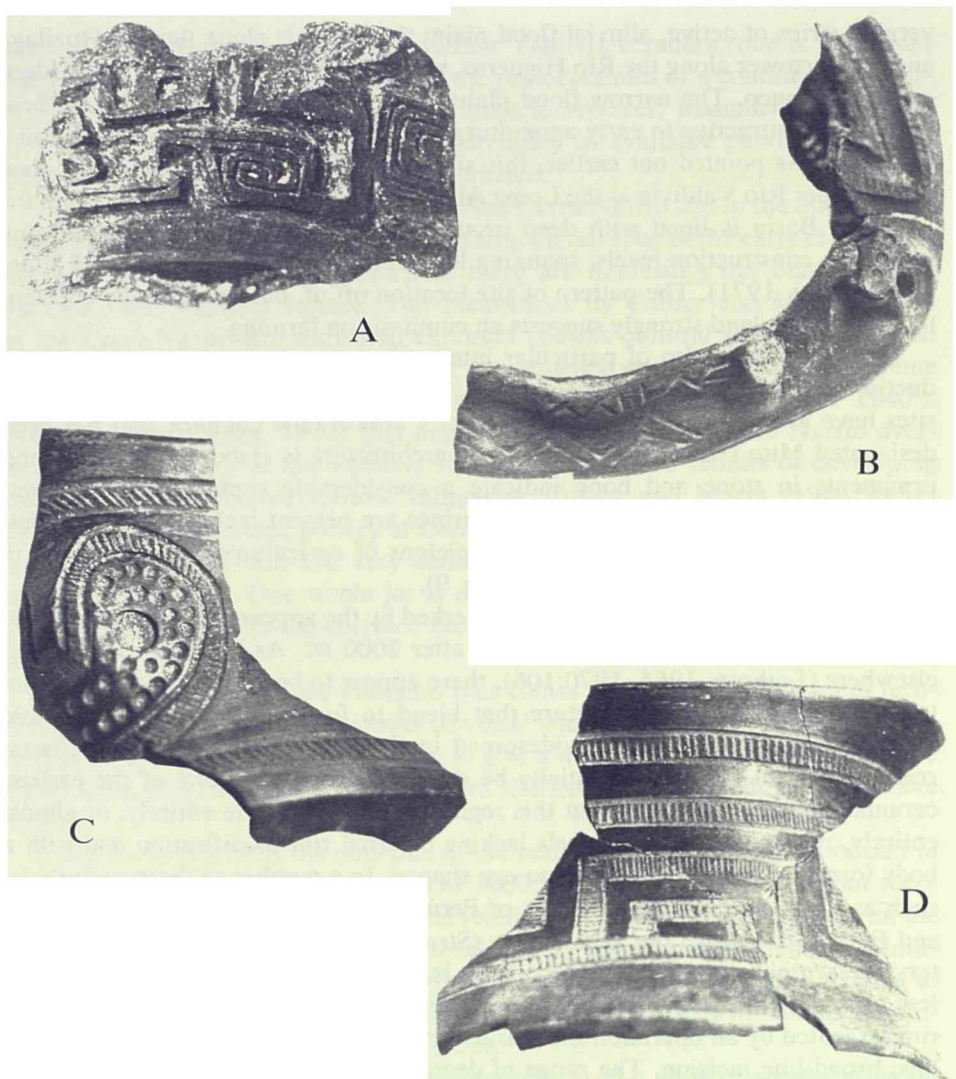


FIG. 8.—Sherds of ceramic vessels from the oldest ceramic using occupation at the Shillacoto site, Huánuco, Perú. This component is designated Shillacoto-Waira-jirca: A, rare, elaborately carved sherd with postfired, resin-based paint, thought to be a trade sherd at the Shillacoto site; B, broad, basal flange with modeled snakes and toad; C, fragment of concave-sided vessel with carved and zoned-hatched decoration combined with postfired painting in the form of an owl's face; D, typical zoned-hatched decoration.

a resin base. The post-fired paints are typically used to fill incisions (Fig. 9B), excised areas (Fig. 8A), or, most frequently, textured areas (Fig. 8C and D). The total effect is spectacular, even flamboyant. The technological mastery and artistic sophistication of these Waira-jirca ceramics does not suggest the initial stages of ceramic manufacturing even though they are the earliest ceramics in the Huánuco Basin. While the neckless ollas of Waira-jirca are similar to almost all

of the other early ceramic complexes of the Central Andes, there are no prototypes for the other strain of Waira-jirca ceramics in any other early ceramics of the Highland and Coastal zones of Perú. All of these facts suggest a long prior developmental history for the post-fired painted Waira-jirca pottery in some zone outside of the Central Andes. Can it be accidental that the Huánuco Basin is at the edge of the Amazon Basin and the moist tropical forest?

The Waira-jirca ceramics of the Kotosh site have been magnificently described (Izumi and Sono, 1963). The Shillacoto site has been enveloped and partially destroyed by the growth of the modern city of Huánuco. The excavations of Chiaki Kano at Shillacoto have brought to light a Waira-jirca component with more varied and elaborate ceramic materials than those present at Kotosh. It would appear that in the first half of the second millennium BC, Shillacoto was the more prestigious ceremonial center of the two. Kano (1970, 1972*a*, 1972*b*; Izumi *et al.*, 1972) has discussed the Shillacoto materials. He has graciously permitted me to include some illustrations of the Waira-jirca component at Shillacoto.

The heavily carved or excised sherd (Fig. 8A) shows a fragment of design of great complexity. The style suggests certain of the carved Valdivia bowls already discussed at length as skeuomorphs of mates (Meggers *et al.*, 1965, pls. 56n; 59b, c; 60k, 1). Even closer resemblances are to be found among decorated ceramics of the Early Shakimu complex that has been identified at various points in the central and upper Ucayali and Huallaga valleys (Lathrap, 1970:92-93). Though the design is of a kind that at Valdivia was appropriate to carved gourds, the Shillacoto carved sherd is from a sharply carinated bowl not at all gourdlike in form. Kano feels that the piece is a trade item in the Huánuco Basin inasmuch as only a couple of other shreds from Shillacoto showed similar characteristics.

Very broad, basal flanges (ledges of clay extending horizontally from the inflection between the side and bottom of a vessel) are a particular hallmark of the Early Tutishcainyo complex of the central Ucayali. No other ceramic unit in the New World, with the possible exception of the Early Classic Maya pottery of the Petén, shows this characteristic developed to the degree that is typical of Early Tutishcainyo. The Waira-jirca component at the Kotosh site lacked such extreme basal flanges; but a few flanges of this highly distinctive form do occur in the Waira-jirca component at Shillacoto. In cross section, the basal flange illustrated (Fig. 8B) is identical to Early Tutishcainyo examples, but the droll modeled toads and snakes have no parallel in Early Tutishcainyo. They are rather more suggestive of late modeled styles of the Central Amazon (Lathrap, 1970, fig. 42). I am not suggesting direct historical connections between this divergent example of Waira-jirca art and such styles as Santarém, but I suspect that it is significant that this example of art from the edge of the tropical forest developed themes of long standing importance to the art and mythology of Tropical Forest culture.

The most frequent mode of decoration on the Waira-jirca ceramics is the use of resin-based paints on areas of strongly textured surfaces. The color scheme, Indian red (red ocher), yellow orange (yellow ocher) and flat white, is strikingly

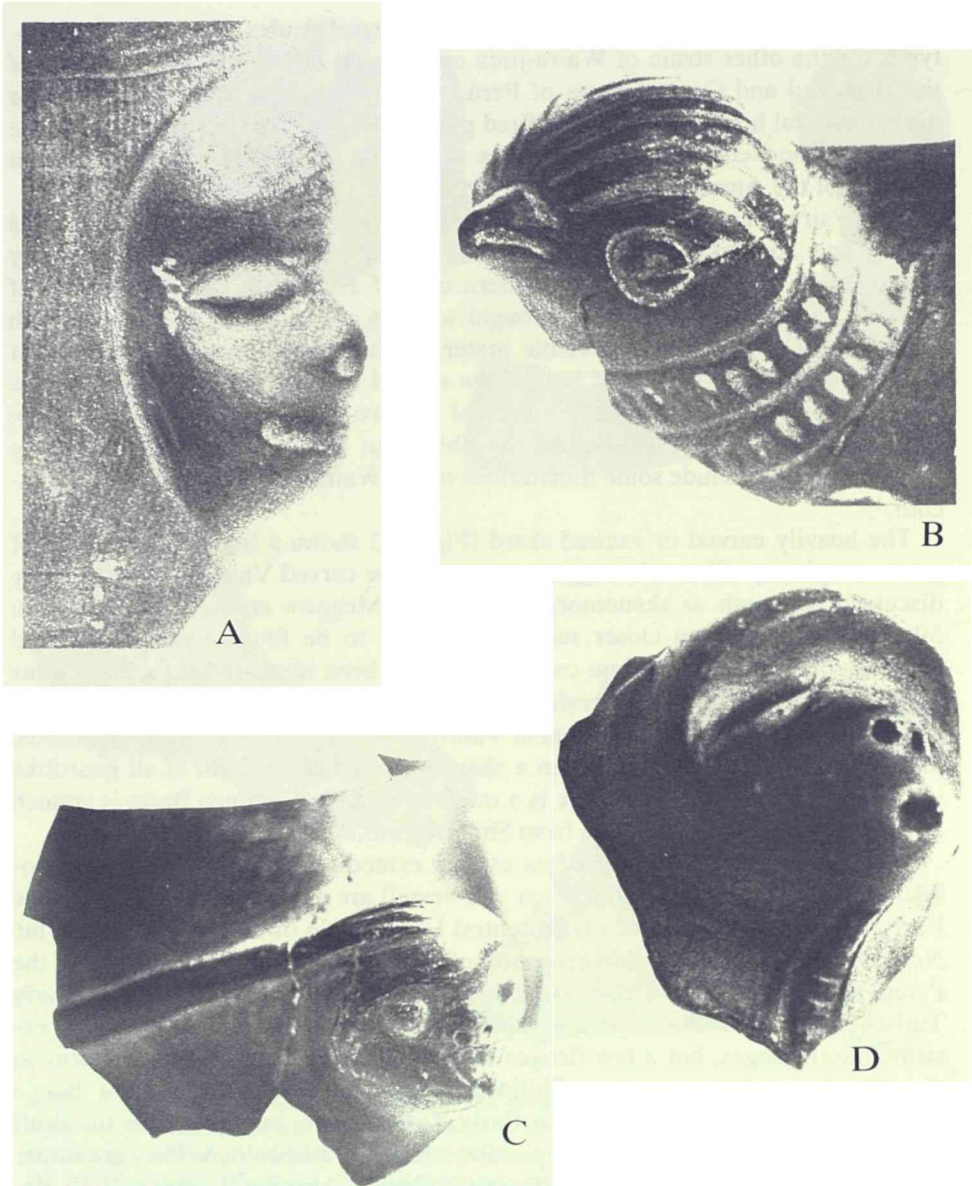


FIG. 9.—Sherds with modeled decoration from the Shillacoto-Waira-jirca component at the Shillacoto site: A, detail of one of three human faces punched out from the interior of a three-cornered bowl, with a red slip over the modeled and incised decoration; B, modeled bird-head, adorno with brilliantly polished, smudged black surfaces and three-color post-fired paint in the incisions; C, monkey head adorno; D, adorno of the head of a male spider monkey.

contrastive and is rendered more so by the “shoe-shine black” against which it is often arrayed (Fig. 9B). The hachured footing for these resin-based paints usually takes the form of bands strictly controlled by the modular width principle

(Rowe, 1962:14). Such bands are used either alone or in conjunction with excised areas, and may be organized into purely geometric designs (Fig. 8D) or naturalistic representations (Fig. 8C). I would interpret this last design as the face of the spectacled owl, *Pulsatrix perspicillata*, the dominant, nocturnal, predatory bird of the jungles of the Amazon Basin.

The modeling on the Waira-jirca ceramics from Shillacoto is sensitive and shows considerable powers of observation. The human face (Fig. 9A) from a red-slipped, three-cornered bowl offers the prototype for the famous Kotosh-Kotosh specimens (Izumi and Sono, 1963: pl. 3). The bird head is a spectacular example of the use of contrasting resin-based paints as a fill for incised lines (Fig. 9B) and is probably some species of falcon. The two monkey heads (Fig. 9C, D) come as close to audible potsherds as one is ever likely to get. The monkey holding his head is probably a capuchin (*Cebus* sp.), and the other (Fig. 9D) is certainly a spider monkey (*Ateles* sp.). My colleague, Lewis Klein, pointed out to me that the hoodlike crest appearing here and in other early Peruvian depictions of monkeys (Lathrap, 1970, pl. 23) is a realistic representation of the head hair of a spider monkey. The artist who did this piece was very familiar with male spider monkeys.

Along with the depictions of monkeys, there are a number of jaguars in the Waira-jirca art of the Shillacoto site (Kano, 1972*b*, figs. a, b). All of the thematic material in Waira-jirca art is compatible with the hypothesis that this elaborately conceived and brilliantly painted style originated in the jungle.

Immediately over Cerro Carpish from the Huánuco Basin and at the bottom of the Huallaga Gorge there is a huge limestone cave known as the Cave of the Owls (Gruta de las Lechuzas). At an altitude of less than 500 meters, the site is clearly within the tropical forest. The deep guano deposits on the floor of this cave have produced a well-made and carefully decorated style of pottery, designated Cave of the Owls Fine Ware (Lathrap and Roys, 1963). A few of the specimens of Cave of the Owls Fine Ware conform completely to the norms of Waira-jirca pottery, but the majority shows a different range of vessel shapes and rim profiles. The most frequent form is rather suggestive of certain Valdivia vessels (Meggers *et al.*, 1965, fig. 48, 3) as are the small vertical handles immediately below the rim, which would have served better to engage string for suspension than as finger holds. Such small handles also occur on the Early Cerro Narrío materials. What ties the Cave of the Owls Fine Ware closely to the Waira-jirca materials is the use of zoned, fine-line hatching as a footing for resin-based paint. The bands of painted hatching are less formally organized and the modeled faces pushed out from the sides of the vessels (Fig. 10A) are more stylized than their Waira-jirca counterpart (Fig. 9A).

Near the modern Peruvian city of Pucallpa, on the floor of the Amazon Basin, we find another very ancient ceramic complex. The Early Tutishcainyo ceramic complex is dated to around 2000 BC on a number of lines of evidence (Lathrap, 1971*a*). The pottery is thin and carefully formed, and shows a number of shape categories requiring considerable technological control for their manufacture. Double-spout-and-bridge bottles occur, and the majority of form cate-

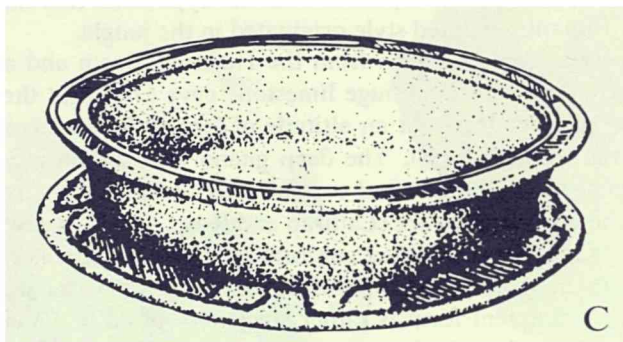
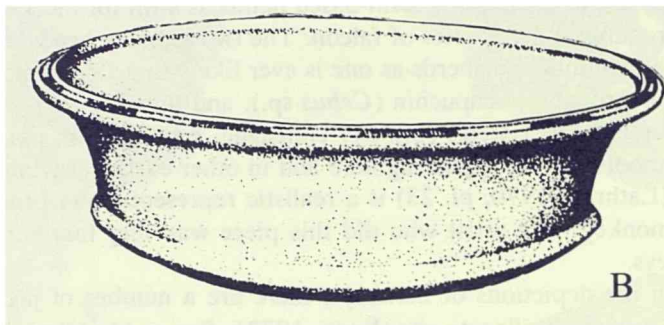
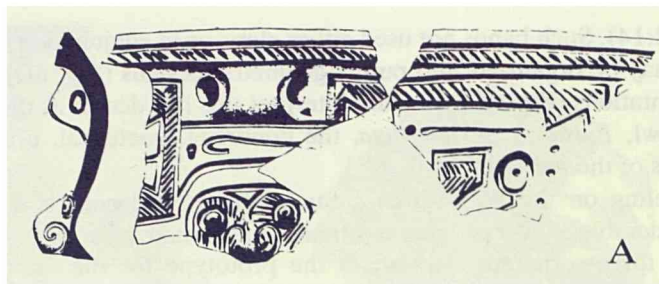


FIG. 10.—Ceramics of Peruvian montaña: A, fragment of modeled and zoned-hatched vessel from the Cave of the Owls near Tingo María; B, Early Tutishcainyo bowl with zoned-hatched rim and sharp carination at the basal angle; C, most typical form of Early Tutishcainyo bowl with zoned-hatching on the labial flange and broad, basal flange.

gories show composite silhouettes and the very sharp carination already noted as typical of Waira-jirca. The single most common vessel form is marked by the kind of extreme basal flange (Fig. 10C), noted above as a rare feature in the Waira-jirca component at Shillacoto. Essentially there are no plain vessels in Early Tutishcainyo (Lathrap, 1958*a*, 1962). The predominant form of decoration is fine-line, zoned hatching very similar to the norms in Waira-jirca, but varying from diagonal hatching, to cross hatching, and to tiers of short, vertical incisions. As in Waira-jirca the zoned, textured areas served as a footing for vivid paint applied after the vessel was fired, and probably in a resin base. The surfaces of the Early Tutishcainyo ceramics are badly eroded and the presence of the post-

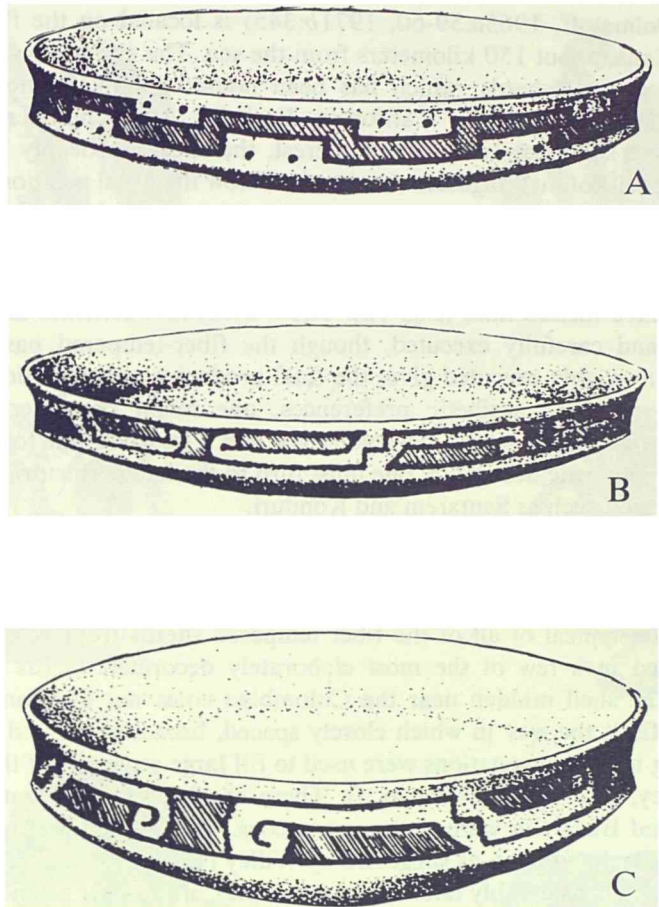


FIG. 11.—Typical, shallow Early Tutishcainyo bowls with zoned-hatched decoration.

fired paint can only be verified by meticulously cleaning out the bottoms of the fine-line hatched incisions with a sharp metal probe. When this kind of examination is made, red ocher paint proves to be common. Yellow ocher and white also appear to be present, but because they contrast less sharply with the paste of the sherds, their presence is more difficult to verify. There are indications that the original surfaces of the Early Tutishcainyo ceramics frequently showed the kind of lustrous black smudging typical of the better preserved Waira-jirca ceramics. The intended aesthetic impact of the accurately reconstructed Early Tutishcainyo vessels (Figs. 10B, C; 11A-C) should be gauged by perceiving the textured areas as a vivid, Indian red, and the smooth areas as a lustrous dark gray or black. Though geometric designs are the norm, naturalistic representations, including jaguars, occur.

The tropical lowlands of Colombia have produced the largest number of early ceramic complexes. The most interesting of these for the purposes of our discussion is, unfortunately, the most poorly known. A site known as Bucarelia

(Reichel-Dolmatoff, 1965a:59-60, 1971b:345) is located on the flood plain of the Magdalena, about 150 kilometers from the sea. The site has produced a fair-sized collection of sherds, which has been housed in the Lowie Museum of Anthropology, University of California, Berkeley, for a number of decades. Though these sherds are of greatest interest, the site is so deeply buried in the alluvial deposits of the Magdalena and so far below the usual position of the water table that systematic investigations have yet to be attempted (Reichel-Dolmatoff, personal communication, 1970). Large, vertical loop handles and complex modeled animal heads are attached to vessels with an all-over decoration of densely packed incised lines (Fig. 12). These decorative schemes are elaborately conceived and carefully executed, though the fiber-tempered paste on which they were invariably executed gives the final product a rather rustic appearance. Depending on one's aesthetic preferences, one might characterize the total effect as delightfully baroque or revoltingly late Victorian, but for comparable complexity in plastic decoration one must turn to the late prehistoric styles of the central Amazon such as Santarém and Kondurí.

The economic orientation of the people responsible for the Bucarelia pottery was clearly to the resources of the interior flood plains (Reichel-Dolmatoff, 1971b); the very early date of this complex is also beyond question. The manner of decoration typical of all of the fiber tempered sherds from Bucarelia is precisely copied in a few of the most elaborately decorated sherds from Puerto Hormiga, the shell midden near the Colombian coast not far from Cartagena. Most specific is the way in which closely spaced, broadline incised lines invariably ending in deep punctations were used to fill large segments of the decorative field (Willey, 1971, figs. 5-19a, b, f). There can be no doubt but that Puerto Hormiga and Bucarelia were contemporaneous. The incised and punctated designs of Bucarelia are not, as suggested by Willey (1971:271) "more like those of Barlovento," a considerably later ceramic complex of the Caribbean coast.

At present, Puerto Hormiga is the New World ceramic complex with the oldest directly associated radiocarbon assays. There is no reason for doubting that the earliest pottery at Puerto Hormiga predates 3000 BC by a considerable margin. As Reichel-Dolmatoff pointed out (1965b), the several distinct modes of tempering involved in the manufacture of the various ceramic wares present at Puerto Hormiga make one suspect that it is considerably removed from the beginnings of pottery in northern South America, and that more than one historically distinct ceramic tradition contributed to manufacturing and artistic patterns represented at that site. Most Puerto Hormiga pottery is plain and the vessel forms show little variation, but decoration, when it occurs, is well standardized and some of the modeled decoration, such as the small animal (Fig. 13A) and the lug turned into a human face (Fig. 13B), show great sophistication for such early pottery.

The shell middens in the immediate vicinity of the Colombian coastal city of Cartagena have yielded other distinct ceramic complexes that fall into the temporal range we are considering: Canapote, Tesca, and Barlovento (Bischof, 1966). These show a remarkable range of controlled decorative techniques and

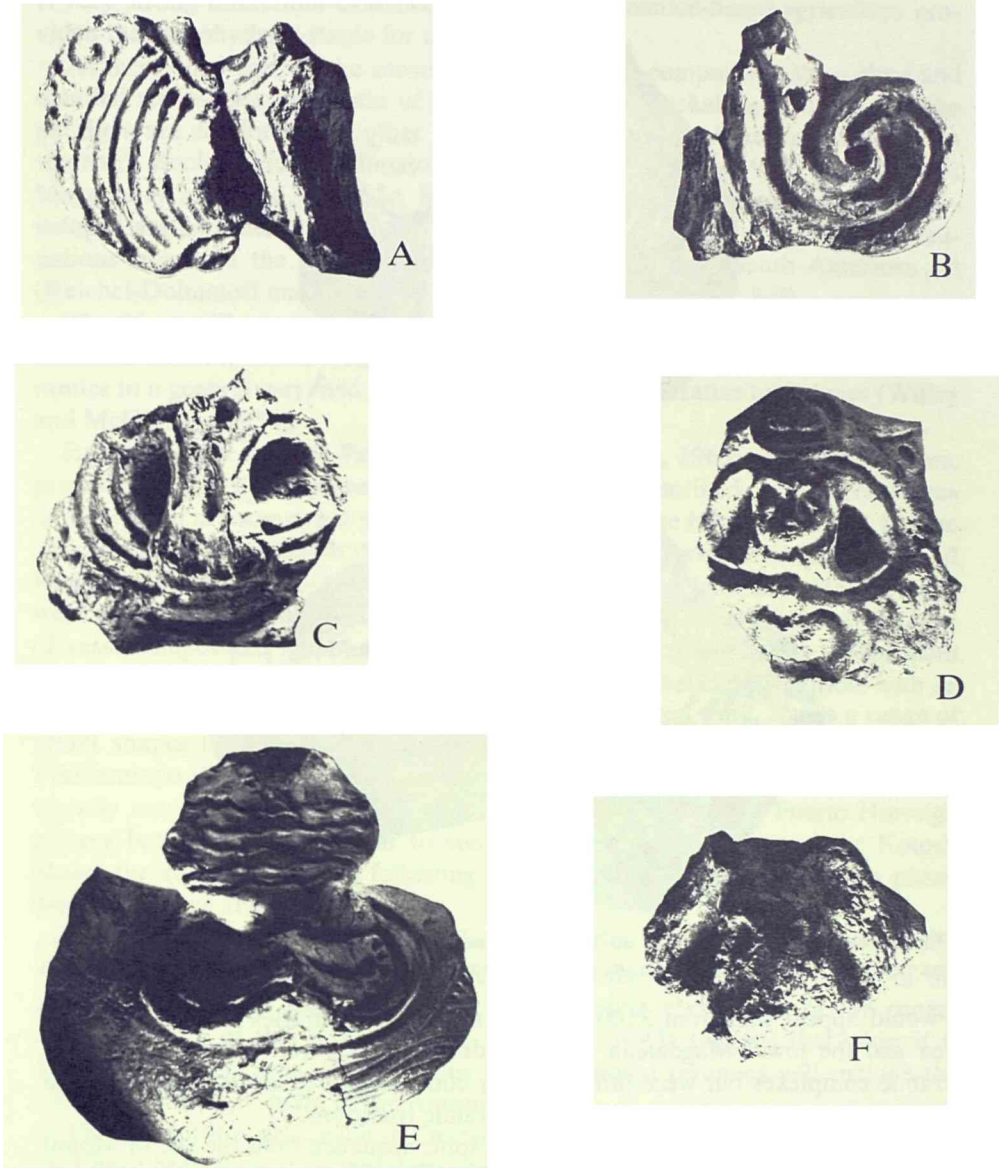


FIG. 12.—Sherds with elaborate modeled-incised decoration from the site of Burcarelia on the lower Magdalena near Zambrano, Colombia. The heavy fiber tempering of the pottery is clearly visible, especially in C and F. Most of the decoration is geometric or highly stylized, but F is a realistic bat head adorno.

modes of tempering. Bischof suggested (personal communication, 1972) that there would be considerable difficulty in arranging Puerto Hormiga, Canapote, Tesca, and Barlovento into a single continuous developmental sequence and squaring such a developmental sequence with the available radiocarbon assays.

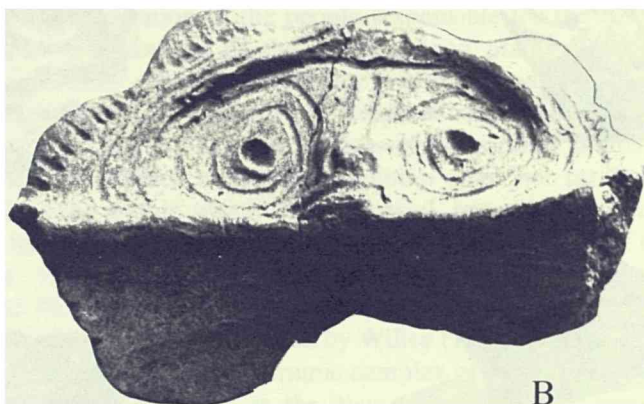
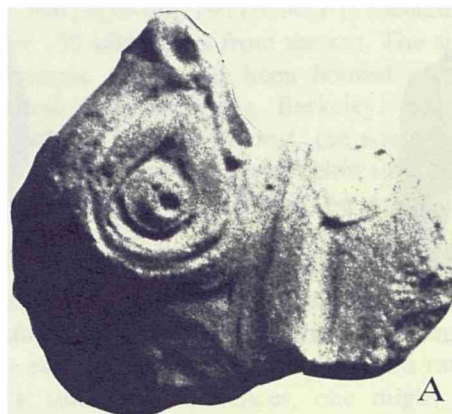


FIG. 13.—Modeled decoration on bowl fragments from the shell midden of Puerto Hormiga near the modern Colombian sea port of Cartagena.

It would appear that from 3100 to 1200 BC the communities of the Cartagena area and the lower Magdalena not only developed several stylistically diverse ceramic complexes but were influenced by communities in other areas that also were supporting more than rudimentary ceramic traditions.

Also to be considered is the long stratigraphic sequence from the site of Momíl in the flood plain of the Río Sinú, a major Colombian river entering the Caribbean; radiocarbon dates are lacking, but there are five distinct and culturally differentiated components in the lower half of the midden (Momíl I), whereas the upper half of the midden (Momíl II) contains a kind of polychrome pottery that can be cross dated fairly securely in the later half of the first millennium BC (Reichel-Dolmatoff and Dussan de Reichel, 1956; Lathrap, 1958*b*). It would be remarkable if the three earliest of the five components of Momíl I did not date from the second millennium BC and the earliest could well go back into the third. Momíl I shows maximum utilization of riverine protein resources, and there

is very strong inferential evidence that intensive, manioc-based agriculture provided the carbohydrate staple for the diet.

As mentioned earlier, the second and third oldest components show close and detailed similarities to certain of the Valdivia and Machalilla ceramics and the parallels are reinforced by other shared items of material culture, such as toy shaman's stools (Reichel-Dolmatoff and Dussan de Reichel, 1956, lám. XX, 11; Meggers *et al.*, 1965, fig. 63). Much of Momíl I pottery shows a highly developed aesthetic sense and a carved bone monkey from one of the earlier occupations is one of the more remarkable examples of early South American art (Reichel-Dolmatoff and Dussan de Reichel, 1956, lám. XXV, 8-9).

The Monagrillo ceramics of the Pacific coast of Panamá are securely dated to the third millennium BC, would appear to be related to the Puerto Hormiga ceramics in a general way, and present a fair range of decorative techniques (Willey and McGimsey, 1954).

Except for the Rancho Peludo (Rouse and Cruxent, 1963*a*, 1963*b*) ceramics, precise dating of which presents some problems, the described ceramic complexes of Venezuela are somewhat younger than the time range here considered, but the archaeological situation on the lower Orinoco deserves brief notice (Cruxent and Rouse, 1958-59, 1:211-227). There is evidence that no later than 800 BC there were two distinct ceramic traditions in the region so completely different in range of vessel shapes and emphasis on decorative techniques that a long independent history for each of the two traditions is indicated. The Saladoid tradition, with its emphasis on slip-painted decoration and thin, hard-fired ware, shows a range of vessel shapes that are strongly suggestive of the simpler bowl forms of Early Tutishcainyo. The other, Barrancoid, shows a range of plastic decoration only vaguely reminiscent of the plastic decoration on Bucarelia and Puerto Hormiga pottery but remarkably similar to some of the modeled pottery of the Kotosh phase, the ceramic complex following and evolving from the Waira-jirca phase discussed above at some length.

There is a radiocarbon date of 980 ± 200 BC for a point near the end of the Ananatuba phase, the earliest ceramic phase so far known at the mouth of the Amazon on Marajó (Simões, 1969). The moderate elaboration of the zoned-incised pottery of this phase (Willey, 1971, fig. 6-43) suggests that when it is fully mapped our area of precocious and elaborated ceramics will include the entire alluvial flood plain of the Amazon Basin.

Throughout this discussion of the early ceramic styles of tropical South America, I have been suggesting that there are legitimate historical linkages among various of these diverse styles, even those as far apart as the lower Orinoco in Venezuela and the Upper Amazon Basin in Perú. Given the vast area and the small amount of research that has been accomplished so far, it would be premature to arrange all of these styles in a single straight line of stylistic evolution. What we have in hand are a few stylistic cousins, so to speak; we have yet to discover the mothers and grandmothers, and, for reasons discussed above, neither Bucarelia nor Puerto Hormiga is any more appropriate in the role of founding ancestor than Valdivia proved to be.

Most of the ceramic complexes considered herein predate 1500 BC, although a few as late as 800 BC have been scrutinized. In most instances, there is also a strong indication that the societies responsible for these ceramics had a preference for recent, alluvial lands in the flood plains of major river systems. Communities with a coastal orientation do occur, but their prominence in our sample would appear to relate to the relative ease of archaeological field work in the vicinity of a large city such as Cartagena. Cerro Narrío and the other sites of similar culture in the southern highlands of Ecuador are the major exception to these observations. I would suggest that the precocious penetration of intensive agriculturalists into the highlands of the northern Andes is an indication of just how completely the alluvial soils of the adjacent lowlands had been colonized by 2500 BC, but this is put forth as an hypothesis to be tested, not as a truth to be cherished and defended.

We have already noted the nonappearance of pottery at Huaca Prieta in the Chicama Valley on the North Coast of Perú. Pottery is absent in this particular valley in the time range of 1800-1900 BC. Elsewhere on the Peruvian coast, pottery does appear by 1800 BC, though the distribution is spotty and certain coastal sites, such as Asia, appear to remain aceramic as late as 1400 BC (Lanning, 1967: 77; Engel, 1963). In every instance, these earliest Peruvian coastal styles are technologically and artistically less complex than the contemporary pottery found to the north on the coast, in the highlands, and in the montaña of Ecuador, in the lowlands of Colombia, and to the east in the Upper Amazon of Perú. Such elaborations as do appear, for instance the double-spout-and-bridge bottles of Hacha, the earliest ceramic complex of the South Coast, derive directly from the early ceramics of the Upper Amazon.

If we turn to Mesoamerica, we find that prior to 1500 BC there were no ceramics with any pretensions to technological or artistic elaboration. The Pox pottery of coastal Guerrero (Brush, 1965) and the related Purron phase pottery of the Tehuacan Valley sequence are several cuts below Puerto Hormiga or Monagrillo in these respects; and Puerto Hormiga and Monagrillo represent the simplest early South American ceramics so far discovered. Even though MacNeish claimed otherwise, a careful examination of the data presented by MacNeish *et al.* (1970, *cf.* fig. 8 with fig. 10 and examine distribution, tables 12 and 13) on the nature of the Purron phase pottery and on the nature of the following Ajalpan phase, suggest that there was minimal cultural continuity from the miserable Purron pottery to the far more differentiated and technologically sophisticated pottery of the Ajalpan phase, which appeared subsequent to 1500 BC.

It cannot be without significance to the present discussion that the earliest known Mesoamerican pottery showing a variety of well-executed decorative motifs and a range of sharply defined and standardized shape categories appears near the southern edge of Mesoamerica, in a low lying, alluvial plain. Gareth Lowe, who discovered these ceramics, has designated the material as the Barra phase and has discussed their importance in a thorough and perceptive way (Green and Lowe, 1967:56-57). He suggested (Green and Lowe, 1967:57) a close relationship between the Barra ceramics and the ceramics of the Machalilla phase

of coastal Ecuador. I would fault Lowe only to the degree that he pointed to coastal Ecuador as the precise source of these stylistic elements. It is now clear that Machalilla is a direct outgrowth of the preceding Valdivia phase rather than a site unit intrusion of some completely exotic ethnic unit (Lathrap, 1967). Insofar as there are new elements in Machalilla, they can be ascribed to earlier complexes in highland Ecuador and eastern Perú, as I suggested a number of years ago (Lathrap, 1963). We now know that ceramics very like Machalilla are found over a wide segment of northern South America. Late Cerro Nariño (Meggers, 1966: 62-65; Braun, 1971), in the southern highlands of Ecuador, Late Tutishcainyo in the eastern lowlands of Perú, a component recently discovered by Reichel-Dolmatoff (personal communication, 1972) in the Magdalena flood plain, and even the earliest ceramic complex at the famous Colombian site of San Agustín are all strikingly like Machalilla (Reichel-Dolmatoff, 1972, pl. 83; Duque, 1964, graficos I-XII), and there is every reason to suspect that Machalilla, *per se*, is not the source of these influences.

If Machalilla, in strict sense, need not be the source of Barra, at least it can be said that all of the characteristics of Barra ceramics have close parallels in one or another of the early ceramic styles of northern South America. Furthermore, all of the later and more elaborate ceramics of the Mesoamerican Preclassic can be derived from Barra or a complex very like it (Coe, 1968:45-46; Lowe, 1971: 223). Lowe also discussed at length reasons for believing that the Barra economy was largely dependent on manioc, a crop brought under cultivation in northern South America and usually serving as the staple in South American Tropical Forest agricultural systems.

The archaeological evidence just presented, scattered and fragmentary though it may be, seems to me to be compatible with only one model of cultural development. During the period from 3100 to 1300 BC, the Upper Amazon, Ecuador, and Colombia formed the area of cultural climax in the New World and stood in the position of cultural donor to the adjoining and culturally marginal regions of Highland and Coastal Perú to the south and west and Mesoamerica to the north. The cultural pattern that was reaching this climax of intensity was already recognizably what I have defined elsewhere as Tropical Forest culture (Lathrap, 1970:45-67). It is unfortunate that we must estimate the degree of this influence almost entirely from the evidence of ceramics and ceramic style. Only in unique settings, such as Huaca Prieta, can we show that this impingement also included a style of elaborately carved gourds and quite probably a whole textile technology and art.

The impinging of Tropical Forest culture on the adjacent areas of arid land offers the context in which I wish to discuss the appearance of the two great, seminal art styles of the New World, Chavín and Olmec, at about 1200 BC.

THE SUDDEN APPEARANCE OF CHAVIN AND OLMEC

In his 1961 presidential address to the American Anthropological Association, Gordon R. Willey (1962) discussed at length the marked parallels between the appearance of Olmec in the moist tropical lowlands of southeastern Mesoamerica

and the appearance of Chavín at the site of Chavín de Huantár in the upper Río Marañón on the eastern edge of the Peruvian Andes. Olmec is the mother culture of all later Mesoamerican cultures, as Covarrubias (1967) and Stirling (1965, 1968) perceived very early in the development of Olmec studies, and as their less sensitive colleagues in Mesoamerican culture history came to recognize only gradually. In Olmec are to be found the prototypes for all of the iconographic features that distinguish Mayan art. Again it was Covarrubias (1957) who sketched the nature of these derivations, but the studies of Coe (1965*a*, 1965*b*) and his student, Joralemon (1971), have fleshed out the leads offered by Covarrubias to the point that there can be no doubt about the continuities (see also Miles, 1965).

To an equal degree, Chavín is the mother culture of the later civilizations of the Central Andes, a truth first understood by Tello (1930, 1939, 1960), but for a long time scornfully rejected by most of his North American-based colleagues working in Central Andean cultural history. The degree of this rejection perhaps is expressed best by Bennett (1939:121), who, as late as 1937, was explicitly combating Tello's position on the priority of Chavín and dating Chavín to the Middle Horizon.

Recently, there has been much well-conceived field work that clarified our understanding of how Olmec style and culture spread through many of the regions of Mesoamerica from its original hearth in the moist tropics of the southeastern Gulf coast of México (Flannery, 1968*a*; Grove, 1968*a*, 1968*b*, 1970). But all of these studies lead us back to the early ceremonial center of San Lorenzo, where Olmec art appears as a fully developed configuration applied to monumental stone carving (Coe, 1968; Lowe, 1971). Likewise, there have been excellent studies of the spread of Chavín influence through the central Andes and of the mechanisms most likely responsible for this spread (Patterson, 1971). But again, all of these studies focus our attention back to the great ceremonial center of Chavín de Huantár, where Chavín art appears as a fully developed art style in monumental stone carving (Rowe, 1962; Lumbreras, 1971).

The Olmec art of San Lorenzo and the earliest examples of Chavín art at Chavín de Huantár are known to us precisely because they were rendered in huge masses of the most intractable and durable materials, basalt in the case of Olmec and granite in the case of Chavín. The maturity of Olmec art at San Lorenzo and the complexity of even the earliest Chavín monuments, such as the Lanzón, suggest that a long period of stylistic development extends backward in time from the earliest preserved examples of the two great art styles. The observations already made on the art of Huaca Prieta might suggest that such experimentation was in perishable media.

We know of the Chavín art of Chavín de Huantár and the monumental sculptures of San Lorenzo because the societies that produced these two great art styles, and maintained the religious systems that they embody, were able and willing to expend a vast number of man hours of both unskilled and highly skilled labor to make these iconographic expressions manifest in the most expensive way conceivable. This conspicuous consumption of energy, time, and skill is most



FIG. 14.—One side of the Obelisk Tello showing the head, body, and tail of the Great Cayman of the Water. Note the care with which this granite prism was finished.

obvious in the case of the Olmec sites of San Lorenzo and La Venta where all of the huge blocks of stone had to be brought to the ceremonial centers from considerable distances (Williams and Heizer, 1965), but the lapidarylike finish on some of the Chavín monuments (Fig. 14) was not easily achieved considering that the material was granite and metal tools were unknown. Even the smaller and more portable examples of the two early art styles were rendered in rare and technologically demanding materials, jade for the Olmec artist and gold for the Chavín artist. All of these data indicate the calculated expenditure of a large segment of the economic surplus produced by a sizable support population (Heizer, 1968). This lavishing of what must have been most of the "gross national income" is the prime fact to keep in mind as we speculate on the reasons for the almost simultaneous emergence of these two great art styles.

The heartland of Olmec culture is firmly located within the moist tropical lowlands of Veracruz and Tabasco, and Coe (1969) has demonstrated that the economy was geared to the exploitation of the active flood plain of the major rivers, with emphasis on the fish and reptile protein available in the rivers and lakes, and on the rich alluvial farm lands of the natural levees.

The site of Chavín de Huantár is high up in the eastern Andes, but as I have demonstrated elsewhere (Lathrap, 1971*a*) almost all of the faunal elements involved in Chavín iconography are creatures of the dense tropical forests of the Amazon Basin. Recently, I undertook an analysis of the iconographic implications of the most complicated, and beautifully executed, monument of Chavín art, the Obelisk Tello (Fig. 14). My original intent was to provide a context for discussing the clear representation of manioc on this monument. Because manioc is the basic food crop of the Tropical Forest agricultural system, I thought it interesting that manioc was given the place of honor on this most complex of all Chavín monuments. As usual, the research refused to stay within the intended bounds, and by the time I had finished, the study had resulted in two fairly complicated papers (Lathrap, 1971*b*, 1973). The major conclusion of these papers is the certainty that both Chavín art and Olmec art are embodiments of the same system of religious beliefs. The myth trapped in the polished granite prism known as the Obelisk Tello can also be shown to have generated much of Olmec art.

Summarized as baldly and briefly as possible this core myth must have run somewhat as follows: In the beginning, there was a great cayman which was both the whole universe and from which all differentiated elements of the universe emanated. Originally his significance was mainly as lord of the waters and donor of the fishes ("Master of the Fishes," Lévi-Strauss, 1967). By a process of duplication, this primal cayman was transformed into two deities, a celestial deity signified as such by his association with the harpy eagle, *Harpia harpyja*, and a deity of the underworld and water signified as such by an association with two species of mollusks and aquatic vegetation. A great cayman of the sky, a water being moved into the heavens, is, of course, a rain god. These great caymans are also venerated as the donors of important crops, but in every case the staple crops in question were presented to man through the cayman's servant and intermediary, the jaguar.

That the cayman was selected as the supreme deity is strong evidence as to the hearth land of the people who maintained this religious system. The cayman is a creature of the flood plains of the major rivers within the tropical forests.

Inasmuch as the societies responsible for Olmec and Chavín art shared the same religious system, it is likely that they derived from a common ancestry at a point in time long before 1200 BC, the date from which we have our earliest examples of the two art styles. A rapid conquest or missionization from one of these centers to the other can be ruled out. If missionization were the case, one would expect the two artistic traditions to be similar in their stylistic characteristics and not just in their iconographic content. Actually, as Willey (1962:5) and others have noted, the stylistic divergence between Olmec and Chavín could scarcely be more extreme.

I offer the following model as the most parsimonious explanation for the identity of religious system shared by Olmec and Chavín. Between 4000 and 3000 BC, the group ancestral to both Chavín and Olmec societies was located somewhere on the tropical flood plains of the Amazon Basin or of northern South America. If I had to hazard a more specific guess as to the precise location, I would favor the flood plain of the lower Magdalena. The society was maintained by an efficient economic system involving root-crop agriculture with manioc as the staple, and with crops related to manufacturing and fishing (such as cotton, the bottle gourd, and fish poisons) also present as developed cultigens. The hard evidence from sites of the Valdivia phase of Loma Alta and San Pablo alluded to above suggests that maize was already of considerable importance. These people depended heavily on fishing and other riverine resources such as manatee and turtle. This society had already elaborated the myth cycle outlined above; and probably already had a complex art style in the service of this sacred text. We have already noted two highly perishable media that could have served as the vehicle for such a style, but because of the widespread ritual importance of painted bark cloth in lowland South America (Reichel-Dolmatoff, 1969), I suspect that the style may have been executed on that material.

This efficient economic system would have generated expanding populations, which in turn would have colonized other areas of riverine flood plain within the moist tropics. I have discussed elsewhere at length the high carrying capacity of the flood plains within the tropical forest, and have also pointed out the severely limited extent of this desirable ecological habitat (Lathrap, 1968*a*; 1968*b*; 1970: 28). These processes and constraints would lead to rapid outward colonization linearly along the major river systems. Until all of the areas of riverine flood plain were densely settled, there would be no incentive to enter other life zones less desirable in terms of the economic strategies of these people. By 1900 BC, or perhaps even earlier, this continuing pattern of outward migration and colonization would have brought the lineal descendants of our original society to the eastern slopes of the Andes and by 1500 BC to the southeastern edge of the Mexican Plateau.

What were the factors, then, that caused Olmec and Chavín societies almost simultaneously to become the tightly integrated and authoritarian states that

could demand and achieve the rendering of their religious and state art in the most expensive and durable materials possible? The ecological diversity of México (Sanders, 1968:101-105; Flannery, 1968*a*, 1968*b*:82-83; Coe and Flannery, 1964; Rathje, 1971, 1972; Lowe, 1971) and the Central Andes has been put forward as an explanation of the emergence of civilization in these areas. To oversimplify, the close proximity of various microecological zones would serve as a stimulus for the exchange of the natural products and cultivated crops specific to these microenvironments. Trade would be stimulated and more complex and restrictive social systems would arise to channel and maximize trade. But ecological diversity in and of itself seems an inadequate explanation. Ecuador, Colombia (Reichel-Dolmatoff, 1972:10-11), and several areas of lower Central America contain zones of marked ecological diversity as extreme as those to be found in Mesoamerica and Perú. The expanding colonies would have impinged on the complex ecological mosaics of Colombia far earlier than on those of Mesoamerica or Perú, yet nothing comparable to Olmec or Chavín appeared (Willey, 1962:9).

Carneiro (1961:60) has suggested that societies will continue to expand outward as long as land is available, rather than evolve upward into more complex and restrictive systems. Available land should always be seen as land appropriate to the economic system of the particular society. He suggested that some kind of bounding mechanism is a necessary precondition for an upward development of human society. As indicated above, the area of alluvial flood plain in northern South America and lower Central America is severely limited and the expanding agricultural societies were from early on laterally constricted in their choice of movement. One might suggest as a hypothesis to be tested by further research that by 1300-1400 BC the whole available area of tropical, alluvial flood plain within northern South America, Central America, and lower Mesoamerica was fairly densely settled.

Harner (1970) made another suggestion that seems complementary rather than contradictory to the thinking of Carneiro. Harner offered very persuasive reasons for believing that the rise of civilization (the appearance of progressively more complex features of socio-political organization) follows rather than precedes increased population densities. There is a significant lag between the appearance of the requisite population density and the attainment of the socio-political structures apparently most efficient for that density (Carneiro, 1967). Harner (1970:82) suggested that competition for scarce goods, such as prime agricultural land, might be the biggest stimulus to achieving these expensive and restrictive systems. The ideas of Carneiro and Harner offer additional constraints in considering the context in which Olmec and Chavín appeared.

As long as our expanding groups of flood plain agriculturalists were confronted with only scattered groups of hunters, or hunters and gatherers, there was no stimulus for developing more coercive and authoritarian social systems. The competition was simply no competition. By the time these colonies had reached the eastern slopes of the Andes and the southeastern foot of the escarpment leading up to the Mexican Plateau, all of the intervening areas of desirable riverine flood

plain had been settled, and for the first time these expanding flood-plain farmers were confronted with other societies dependent on other, at least potentially efficient, agricultural systems. Of necessity, such societies also would have very different ideological justifications.

Due mainly to the work of MacNeish, we now have considerable information concerning the systems of seed-crop agriculture that had been developing in the Mexican highlands for several thousand years prior to 1300 BC as a response to relatively arid conditions. The current research program of MacNeish (1969) in the Ayacucho Basin of the central Peruvian highlands should give us some information relevant to the development of an economy based on llama herding, guinea pig raising, and the cluster of crops (potatoes, quinoa, oca, *etc.*) adapted to the high and relatively arid Central Andes. Was it the potential or actuality of competition between the Tropical Forest agricultural system and the other, now expanding, agricultural systems that pushed Olmec and Chavín societies to a higher level of sociopolitical integration?

I think we now may have come closer to answering the question that Willey (1962:10) put forward in his presidential address, but admittedly failed to answer. Why do these stigmata of civilization appear at about the same time in the moist tropical lowlands at the foot of the Mexican Plateau, and along the eastern edge of the Andes? Civilizations appeared where societies with effective agricultural systems, but with very different past histories and ideologies, collided as the result of outward colonial expansion in search of suitable agricultural land. We can describe this situation in scientific terms that are comfortably cool and aloof: the expensive and restrictive systems that we speak of as civilizations are most likely to appear at the interface between previously successful and now violently competing societies supported by differing and expanding economic systems. A successful, agriculturally based society, which is not seriously opposed or restricted in its outward colonial expansion, will not institute the complex, labor intensive, and frequently painful behavior patterns that are the underpinnings of civilization.

But then, as now, the phenomenon, though it can be described in cold scientific terminology, was also a matter of deep human concerns and passions. Perhaps we should try to place ourselves in the shoes, or more likely sandals, of the laborers who moved the great blocks of basalt and granite that were the *sine qua non* of Olmec and Chavín art; or in those of the stone workers who expended thousands of man-hours dressing the surfaces of these meticulously executed stone monuments. What may they have felt of this art? Might they not have said:

We have broken our backs moving thousands of tons of stone to glorify the temple of our God. We have spent the hours of our life in polishing the great stone idols of our God and his assistants, and the portraits of our rulers, who are the sons of the sons of our God. All of this labor has been painful, but it has been worth the effort, since in this way we have shown our superiority to those gooks out there who will not bow down to the Great Cayman. Since they can show us no equally expensive idols of their gods, if indeed they have gods, they are less than human. Since they are not men and are of a lower order of beings, no actions committed on their person can be considered crimes, as we civilize them and incidentally take away their lands!

We are correct in viewing the major pieces of Chavín and Olmec art as great achievements of the human intellect, and as such they must command our admiration. We are equally correct in viewing them as the first concrete indications of the rise of civilization, and as such they have been habitually viewed with admiration and approval. Perhaps 3000 years after the fact, we also have cause to view them with alarm.

Speculation as to the motivations that lead the rulers, artisans, and workers to leave behind the enduring monuments of Chavín and Olmec art must, I fear, remain no more than speculations. I think we can achieve certainty, however, if we view the appearance of Chavín and Olmec art as a symptom of a vast shift in the epistemology of the societies involved. We can even specify with some precision the nature of this shift.

Reichel-Dolmatoff (1971*a*) and his amazing Desana informant have given us a view of the universe, one of remarkable coherence and beauty, which shows how a particular society in the Upper Amazon is articulated *as a part of* the unique ecological network in which it exists. There is a clear realization of the fragility of the ecological setting and constant affirmation that the society can endure no longer than its setting. It is not a totally unwarranted assumption that such an epistemology was widespread or universal in the moist tropical lowlands of northern South America as of 3000 BC, but such an epistemology is totally alien to modern civilizations.

Bateson (1972:492) recently suggested that at least seven ideas present in the world view of modern industrial civilization are the necessary precondition of our current ecological crisis. With one exception, each of these premises is the precise opposite of an element of Desana world view. These seven postulates would also seem to be the real explanation of the remarkable expenditure of scarce resources embodied in Olmec and Chavín art. I quote only the three that seem most closely related to our problem:

- (a) It's us *against* the environment.
- (d) We *can* have unilateral control over the environment and must strive for that control.
- (g) Technology will do it for us."

To put the matter bluntly, multiton blocks of basalt have about as much business on the flood plains of coastal Tabasco as man has on the moon.

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The intellectual problems that motivated this paper are the questions raised by the presidential address given by Gordon R. Willey to the American Anthropological Association, November 1961 (Willey, 1962). I have brooded on these questions for long periods over the past 11 years, and this paper is one result. Whether it contains any answers to the questions is for others to decide. More recently, my thinking has been stimulated by my colleagues R. Tom Zuidema and David C. Grove, and by the students of a seminar that Grove and I taught jointly.

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PASHASH: THE ART OF A HIGHLAND REFUGE

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The Pacific Coast of South America from southern Ecuador to central Chile is one of the driest areas of the world. This desert, which comprises the entire length of the Peruvian coast and half of the coast of Chile, extends for almost 2000 miles. Two natural features account for the aridity of the region: the cold ocean current on the west, which produces an area of high pressure along the coast, and the high mountains of the Andes on the east, which prevent the Amazonian rains from reaching the west coast. Between the mountains and the sea is a narrow strip of land, generally less than 30 miles wide, in which human occupation has always been limited to the narrow valleys of streams flowing down from the Andes. Such valleys occur about every 50 miles along most of the Peruvian coast and at longer intervals in northern Chile. They constitute true oases, dependent on the carefully husbanded waters of their streams.

These coastal valleys are easily accessible and are well known, but there is another refuge zone that is less well known to both travelers and historians. Between the coastal desert and the snowfields and tundra of the high mountains lies a narrow band of temperate climate at an altitude of roughly 6000 to 12,000 feet. Unlike the coastal valleys, which are isolated from each other, this highland zone is a continuous strip and even its breaks are bridged by trails across the mountain ranges. Communication in the highlands was always easier than from one valley to another on the coast, if only for the reason that drinking water was always available on the highland routes. Despite these advantages, the highlands, particularly on the western slope, are an oasis zone in the same sense as the coastal valleys. The eastern slope of the highlands, which turns to jungle in the Amazonian rains that bathe its lower elevations, requires a different way of life of its inhabitants, one in which hunting and shifting agriculture form the economic base, and rivers the communication system. Between the extremes of the desert, the tundra, and the jungle, the highlands were a refuge for settled agricultural people.

These environmental conditions affected the arts of the highland people in two very general ways. The possibility of settling permanently in one place and the temperate climate encouraged the growth of monumental architecture and stone sculpture, neither of which were of interest to dwellers in the Amazonian forests. The continuity of the temperate strip and the relatively easy communication over the tundra areas encouraged contact within the highland zone, in contrast to the desert coast, where each valley tended to develop independently. It is noteworthy that the three so-called horizon styles, which spread over vast regions of both the highlands and the coast, all originated in the highlands. The great styles that originated on the coast remained coastal and relatively limited in their extension.

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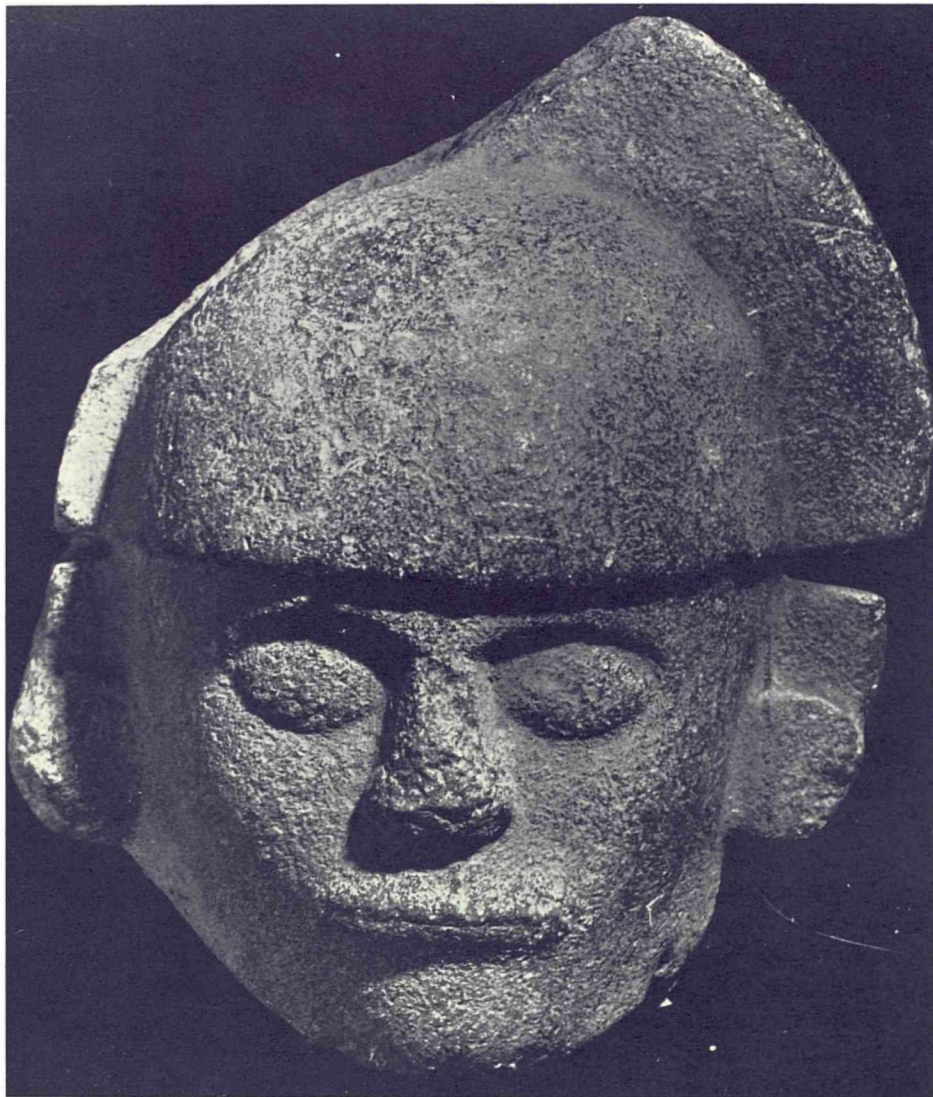


FIG. 1.—Stone tenoned head reported to be from Pashash, slightly over life size (21 centimeters high). Museo Nacional de Antropología y Arqueología, Lima, photographed by A. Guillen.

The hypothesis that led us to Pashash was that a stone tenoned head (Fig. 1) in a Lima museum, known to be from that unexplored site, reflected a transformed Chavín heritage and a date much earlier than the AD 1100 usually assigned to it. Since 1963, I have been involved in a study of Chavín art, which dates from about 1200 to 500 BC and is the earliest high style known in the Andean region. The tenoned head seems to have originated in Chavín sculpture. The decline of that great style and its replacement by others is entirely unexplained, and it was



FIG. 2.—El Caserón platform, Pashash, 30 meters wide, over 15 meters high.

in the hope of documenting this shift, especially in stone sculpture, that we began our work.

In 1969, accompanied by the Peruvian archaeologist Hermilio Rosas, I traveled by car, narrow-gauge railway, bus, and horseback to Cabana, which lies less than one mile from the ruins. During the first season, we mapped the ruins and dug six test pits, catalogued 32 stone sculptures, analyzed over 14,000 potsherds, and obtained architectural and ceramic sequences dated by five radiocarbon dates between AD 310 and 570. In 1971, I returned to Pashash with John W. Smith. We expanded the catalogue of sculptures, made four excavations, analyzed another 12,000 potsherds, and obtained 23 carbon samples, of which four are currently in the laboratory. Some of the more spectacular pieces discovered in 1971 were exhibited in the Archaeology Museum of the University of San Marcos in Lima. The work in 1969 was partially supported by a grant from the University of Texas at Austin, whereas that in 1971 was financed by grants from the Institute of Latin American Studies of the University.

Our map of the site shows it strung along a steep ridge for about 550 meters, ending at La Capilla hill, so named because of the ruined modern chapel on its top. The ancient entrance to the town was through a narrow gateway, called La Portada, in the massive walls at the east end of the site. The town was laid out on platforms and terraces, the most spectacular of those remaining being El Caserón and the South Wall (Fig. 2).

The hypothesis of Chavín derivation has led us to emphasize dated stratigraphic sequences more than the reconstruction of life patterns of any particular period. For this reason we have concentrated so far on test pits rather than clearing floors, and on gathering information to form sequences of architectural and ceramic styles, as both of these throw light on sculpture, as well as being themselves of interest. Thus far we have not found a stone tenoned head or a large relief slab in our excavations.

Pashash appears to have been occupied for the first time about the middle of the first millennium BC— a more precise date will be obtained from radiocarbon dating. During this phase there was a small village along the narrow crest of the ridge. This period is known only from the rims of neckless storage jars and one broken rim of a polished blackware bowl with postfired red paint. We have no evidence of sculpture or architecture for this period. Although the evidence is meager, it is possible to theorize about the lives of these early settlers. They could not have been totally isolated, as their pottery is similar to Chavín pottery found over vast regions of the highlands and coast. The spot they chose to settle suggests that they were not on friendly terms with all of their neighbors, inasmuch as it is the most easily defended location for miles around. It is an inconvenient location from which to farm or to manage water resources. Its only advantages are as a lookout and as a refuge from attack. The peaceful, religious, peasant villages once postulated for the Chavín horizon are difficult to reconcile with the location of Pashash. In the later periods it is not just the topography that suggests militarism, but even in this earliest period the Chavín-related pottery has not been found on the open hillsides, but thus far only on the least accessible crest and castlelike outcrop of the ridge. Thus, Pashash was a refuge not only from the desert and the tundra, but also from human enemies.

The second phase is defined by a style of pottery called White-on-Red from its typical color scheme. Like Chavín, it has widespread relatives. We have found evidence of this period in only one place, which suggests that the settlement was still small and confined to the crest of the ridge. White-on-Red pottery has usually been considered an inferior aesthetic product, but we have found a development in the style that resulted in pottery that was expertly made and handsomely decorated in stripes of white, and sometimes orange, on a polished dark red slip. This period must have lasted at Pashash into the early centuries of our era.

By about AD 200, a new style was emerging at Pashash, one which accompanied the expansion of the town and the construction of colossal fortification walls. In the absence of written documents, the history of Pashash must be reconstructed from its art. This art reveals several phases that must fall between AD 200 and 600, after which time the site seems to have been abandoned.

The first phase of this final period is marked by the appearance of a new pottery style in which the background slip on fine wares changed to cream. This was again a widespread style best known under the name Recuay, which is applied to the style as it appears in the Callejón de Huaylas, south of Pashash. During this phase the site began to expand on the slopes of the hill, and colossal stone walls, up to 50 feet high, were built. Immense amounts of labor were required to

quarry, haul, and cut the stone and build the walls. Such structures imply a great deal of social discipline and a leadership capable of exerting control over the details of construction. Great works always imply a certain optimism, but in this case the town was also expanding into areas that had previously appeared indefensible. One would guess that an increase in the population was a factor in these changes.

During this period, perhaps around AD 400, La Capilla hill at the end of the ridge was built up with tons of fill dirt and stone and a wall two meters thick was constructed to contain the fill. This formed a level platform on the top of the hill. As the fill was leveled off, a small temple 4 by 4.30 meters was laid out and an offering of stone bowls, ceramic vessels and copper bells was put down. Large stones were placed around and over the offering and an earth floor was laid. Stone walls in thin mud mortar were built and a doorway of carefully squared stones was put in facing north onto a small plaza.

Around the periphery of the plaza and on terrace levels east and west of the top of the hill were small stone-walled houses. We have excavated two of these houses, revealing small square fireplaces bounded by four squared stones set in the floor. In one of these houses were found the charred remains of roof beams. A radiocarbon test indicated that the roof was burned about AD 460 (1490 ± 70 radiocarbon years; Tx-941). Excavation outside the wall of the house uncovered the skeleton of an adult lying unburied, arms above the head. This suggests that Pashash may have been the victim of a raid about AD 460 in which houses were burned and people were killed. That it was a raid and not a permanent occupation is suggested by the presence of the same type of pottery on floors built later. The unburied victim must have been hidden by the collapsed stone walls, which were never cleared.

Building in the later phases was done more hastily and carelessly, as is especially evident in the walls of small stone houses set against the colossal walls. The crudest of the colossal walls, the lowest one on the hill, also appears to date from a late phase. The optimism which leads people to build well seems to have been missing. Perhaps enemy pressure was too great to allow time for anything but war and the simplest arts of survival. Finally the site was abandoned, never to be reoccupied.

We can at least guess where the people went when they abandoned Pashash. On the peak of a hill called Cerro Muashgongo, 3000 feet above Pashash, are the ruins of a citadel and an extensive town of fairly large stone-walled houses (averaging 10 by 12 meters). The altitude of 13,750 feet, about the same as the peaks of the Colorado Rockies, makes Muashgonga an unlikely place to live except as a refuge from attack. Winds, cold, fog and drizzle, and the extremely thin air are compounded by the limitation of agriculture in the immediate area to root crops such as potatoes. The great art tradition of Pashash is unknown at Muashgonga and the potsherds we picked up are all simple kitchenwares except for one piece of fine creamware of the type made at Pashash.

The most interesting of our recent excavations is that which we call Cut 10, which revealed the small temple chamber mentioned earlier. The offering that



FIG. 3.—Red stone bowl with turquoise inlays in eyes and crown of human figure and in the eyes and pelage markings of the jaguar, red paint in the incised lines, 11 centimeters in diameter and 7 in height.

served as a kind of cornerstone for the temple was laid in stages as the last of the fill was put in. Below a depth of 3.45 meters, no artifacts were found. At that level, three simple earthenware bowls were nested together, with a handful of red pigment put in them. About 30 centimeters of earth were thrown in; then 10 copper bells, evidently strung together, were put in. Above the bells we found the crushed bodies of several large jars, which continue into the unexcavated part of the chamber.

Next, set on irregular ground between 2.55 and 3 meters deep was the trace of a piece of cloth, now no more than a brown stain, which held the most valuable and impressive pieces in the offering. In the center were nine stone pedestal bowls of the finest craftsmanship, one of red stone (Fig. 3), five of green and three of black. Nested among these were four bowls of some soft material, apparently specially colored unfired clay. Two of these were saved by pouring plaster of paris over them as they lay in the ground and cleaning them later at leisure. All of these soft clay bowls were ornamented with relief figures of a man or anthropomorphic god and a rampant feline, with the eyes, costume elements, and pelage markings inlaid with turquoise. Two were of bright gold-colored clay, one of deep red, and another of chocolate brown.

Around these were 27 small pedestal bowls of porcelainlike cream clay, extremely thin and finely decorated, but of course unglazed and fired only to earthenware hardness. There were the remains of five blackware bowls of the same form and another blackware bowl that was complete except for a chipped rim.

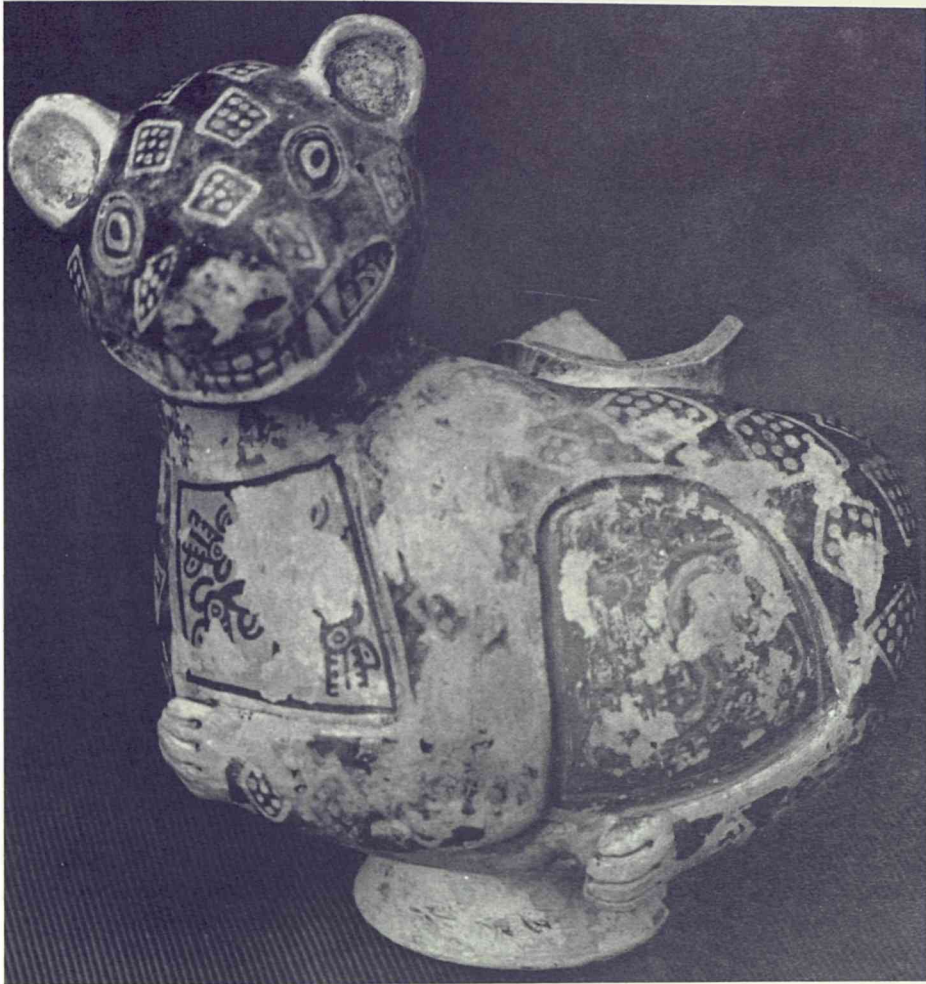


FIG. 4.—Ceramic effigy vessel (13 centimeters high and 13 long) from the offering below the floor of the temple on La Capilla hill, red and black resist on cream.

All of these pedestal bowls are impressive for their refinement. They are clearly the product of a subtle and experienced aesthetic sense.

More spectacular are the effigy vessels placed around the outside of the bowls. There were eight of these vessels. Two represent plain snakes, except that they have feline ears. Two represent plain felines, probably jaguars inasmuch as they have spots (Fig. 4). Three represent feline-headed snakes, and one may be a fox-headed snake (Fig. 5). One definitely, and probably two, of these creatures had a small human figure grasped in the front paws as if about to devour it.

Mixed among the effigies were a variety of unusual vessels: sets of bowls, a handled canteenlike vessel with a remarkable painting of a frontal face with serpentlike appendages, a large resist-painted jar, and other unusual bowl and jar forms. All of these pieces were elaborately painted.



FIG. 5.—Feline-headed snake effigy vessel (10.5 centimeters in height and 15 in diameter) from the offering below the floor of the La Capilla temple, red, orange, black resist on cream.

This offering is of interest for a variety of reasons. In the first place, each individual piece takes on added interest from its association with the others, so diverse in form and decoration, and its association with the building and with carbon, which will soon yield an approximate date. The offering also provides rare insights into the technical practices. For example, a careful study of the stone bowls suggests that they were made by drilling with exceptionally large hollow bits, a tool of which traces are also clearly evident in stone sculpture. The bowls appear to have been roughed out by drilling a core the diameter of the outer rim. The inside was hollowed by drilling with either a hollow or solid bit equaling the interior diameter. Probably much of the shaping of the foot and the inner and outer walls was done with graduated hollow bits and abrasives. The exterior of the red bowl (Fig. 3) with carved figures obviously had to be carved by hand. That this process seemed laborious to the machine-oriented artists is attested by their use of soft clay for four out of five bowls with relief ornament.

Pashash stone sculpture was studied about 20 years ago by Richard Schaedel (1952). He catalogued 37 relief slabs and 22 heads, a larger number than we



FIG. 6.—Stone tenoned head probably representing an owl, about 17 centimeters high. Eyes were drilled with hollow drill.

have been able to locate. This reflects in large measure the changed legal status of private collections of archaeological objects, which have been declared national property subject to confiscation since Schaedel made his study. Thus collectors are now often unwilling to admit ownership of important works of ancient art.

Schaedel defined five styles in the stone sculpture from Pashash or its immediate environs and proposed an historical sequence. Although we have not found a head or a full-size relief slab in our excavations, we have found evidence that helps to put these varied styles in their chronological order. For example, our ceramic sequence indicates that resist was the typical decorative technique used on later pottery, and the sculptural style that shares motifs with that phase of pottery was most likely its contemporary. The images found in stone sculpture are all found on pottery in the cream-slipped Recuay style, which makes it appear that all of the stone sculpture was produced during that style period. It remains to relate specific sculpture styles to the phases in Recuay pottery, but I believe that it may be possible by an analysis of the motifs dominant in each phase.

Besides the really superb artistic quality of the best pieces, Pashash sculpture is interesting for its unusual technical processes and its forceful imagery. Because the image is the product of the process, these two are inseparable, but the large hollow drill favored by Pashash artists affected the image more than most tools do, as is evident in the circular eye of a crested feline on a relief slab, and in the deeply drilled eyes of a pair of tenoned owl heads (Fig. 6).

Inasmuch as the imagery of the stone sculpture is shared with ceramics, it is convenient to consider them together. The symbolic vocabulary of the Recuay

style and its related sculpture at Pashash was a restricted one. Half a dozen abstract designs satisfied the creative drive of Pashash artists for several centuries. Stepped-frets, squares and circles, dots and crosses, stripes, and S-curves are the basic abstract designs used. There is a notable emphasis on two aspects: the dynamic and the geometric. S-curves are one of the principal shapes diagnostic of a high achievement need in Aronson's theory (as cited by McClelland, 1961: 124ff) of the psychology of graphic expression. By this standard, Pashash designs generally reveal their creators to have been strongly achievement oriented. What form achievement took we cannot state with certainty, but the representational designs provide some clues.

The geometric aspect is represented by the perfect circles and right angles that play so prominent a part in Pashash art. The right angle is a more difficult and obscure idea than it appears to us and is one that the ancient Maya, for example, did not know, for all their mathematical sophistication. Several other Andean sites contemporary with Pashash, notably Tiahuanaco and Pucara in the Titicaca Basin, show a similar fascination with the perfect right angle. The intellectual implications are important, but they remain to be worked out.

Assigning descriptive names and meanings to representational designs in the absence of literary documents is a treacherous business. Such terms as "motif A," while safer, are to no purpose here, and I will describe them as I see them, admitting cultural bias. Thus, I find among the representational designs: warriors in helmets, sometimes with transverse crests, often carrying a club; human heads, probably trophies; an owl; a bird with a large beak, which may be a bird of prey; and a feline, often spotted, which sometimes has a fantastic crest or other elaborations. Sometimes creatures with mixed attributes were invented, such as serpent-feline combinations and double felines. These subjects suggest that military prowess may have been an admired form of achievement.

After two seasons of work, our knowledge of Pashash and its region is still incomplete. Some of the gaps in the cultural history might be cleared up by more work on the top of La Capilla and by obtaining a more nearly complete sequence of building at El Caserón. The Province of Pallasca abounds in unexplored sites, the histories and relationships of which remain totally unknown. One, at least, is of major importance for its architecture.

The hypothesis of a closer relationship between Pashash and Chavín sculpture has been generally supported, although as yet we cannot trace the complete development from the Chavín style to the Recuay of Pashash. Nevertheless, I believe that the main importance of our work has been in the things that never could have been predicted. Archaeology is a technique of discovery as well as a way of testing predictive hypotheses. The range of human activity is the natural field of archaeology. The great interest of Pashash lies in its uniqueness and that of its products, which extend our knowledge of the range of human behavior. In the end, one returns to the particular creative statements of individual men to ask what they might mean. The answer is a new hypothesis leading toward fieldwork, and a constant widening of our horizon.

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