XII. COMMENTARY ON: EARLY ARCHITECTURE AND SCULPTURE IN MESOAMERICA

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Miss Proskouriakoff's paper is evenly divided in two halves, the first about architecture and the second about sculpture. The organizers did not call for remarks about painting, but in her pages on sculptural imagery, she treats painting and writing in some detail where relevant.

I shall therefore discuss her architectural observations first, then sculpture, and finish with the implications of her paper for the study of painting and writing.

Settlement plans and architectural technology

In the opening paragraph her remarks on economic needs suggest that early public architecture multiplies such economic needs, rather than merely responding to them. With this I would agree. Whatever the independent variables of cultural history may be, they are not alone the economic life of the people. They are also other ill-defined cultural factors of which economic behavior is only one among the results. Indeed it may be that artistic activity itself is closest to being an independent variable. Because of it, much change is likely to happen, as we note in early societies, where the production of ritual and its artifacts was a changing activity satisfying many needs, rather than being a grudging occasional service to a greedy pantheon and its priests. For example, can the plan of Teotihuacan be correlated with a faculty for planning and ordering the society as a whole? If so, which is the prior expression or independent variable? The town or the society? Or do town and society integrate conjointly, like a mollusk and its shell?

In the second paragraph she wonders about the priority of the village or the ceremonial center. This is the question raised also by Bernal, when he discusses his belief that Oaxacan architecture is older than Olmec. I believe the differences between Oaxacan and Olmec architecture may have to do with climate and ecology. Buildings were needed in temperate upland Oaxaca, but ceremonial spaces were favored in Olmec coastal rainforests. Of course, preservation may be the differential factor as to dwellings. The spatial order of Monte Alban seems more tentative, being achieved gropingly during many centuries and reflecting the "outside" monumentality of La Venta, which, as Bernal observes, lies closer to the beginnings of civilization.

Bernal's thesis, however, that Oaxacans invented architecture while the Olmecs perfected sculpture is not easy to accept. He declares that architecture "hardly...existed amongst the Olmecs", but he has selected materials, and structural solutions for his criteria, and he disregards architectural thought, which is to materials and structure as mathematical thought is to bookkeeping. At La Venta or San Lorenzo, the main themes of monumental Mesoamerican architecture all were already clearly stated and articulated long before 400 B.C. These I have tried to classify in four ways.

As monumental form, architecture commemorates valuable experiences by distinguishing one space from another in a durable way. The basic modes of monumentality are the precinct, the hut, the cairn, and the path. The precinct marks off a sacred area; the hut encloses it in part; the path signals a direction; and the cairn marks a point by elevation. From precinct to stadium forms one typological series; from hut to cathedral another; from path to arcade-lined boulevard another; and from cairn to pyramid still another. The combinations of path, precinct, hut, and cairn yield all the possibilities of monumental architectural form, not only in terms of solids, but also in terms of the spaces bathing those solids. All these occur at La Venta.

Miss Proskouriakoff's remarks about three-sided platform-and-building clusters in Mesoamerica lasting at Tikal for a thousand years from the very base of the North Acropolis on up, reassure us that whether at Tikal or Oztoyahualco or Kaminaljuyu, or Uxmal or Quimatzin, these three-sided clusters underline the traditions both of house and temple construction. She is reluctant to derive Peten architecture from the Guatemalan highlands, but I think she believes the tradition of clustered construction to be the fundamental one in Mesoamerica, rather than the closed-corner quadrangles appearing only at advanced dates in the Classic period, which correspond to new functional types, such as judicial courts, or guild-houses, or seasonal residences for an elite population. Looking again at the aerial photos of Monte Alban (see Acosta, 1965, 816) I am always astonished by the discrepancy between the published plans and the reality. Many axial systems seem to compete in the plan published by Marquina.

The "observatory" seems as if it had been gradually surrounded by changing systems of reoriented axes. Its original axis is uncertain: it may once have been aligned with the earliest facade of the Danzantes, to which nothing else is parallel. These two structures alone belong to Period II. The South platform later on aligns with mound M. The North platform connects better with System IV than with anything else. One is led to ask if there is not an early angular two-sided enclosure resembling Monte Negro in MA I, evident in the Southwest quadrant, and defined by the platforms of the central pyramid, Group M, Danzantes, and Group IV, which later was enlarged east and north by levelling. The observatory thus might reflect, in its complicated and atypical arrowhead plan, these changes in the field of axial

forces. But other reconstructions are possible on this most complex layout, for which Acosta (1965, HMAI, 3, 818) suggests that the levelling now visible is no earlier than Period II (400-100 B.C.) when the first murals appeared in tomb architecture, like the early glyphic inscriptions upon stelae. It is certain only that Mound J is eccentric to every axial force. Mound J is like an elder and peculiar grandparent living within an excessively ordered family, and differing from it in every perspective, but reflecting an earlier way of existence. The western courts are like temples for the residence of gods, but the newer eastern range is lined with residential platforms for a newer kind of dynastic dweller, and it has a ball court of East Court plan, perhaps even of post-Classic date in MA IV, like that of Quiotepec. Thus Monte Alban appears to have grown northward and eastward from the southwest corner. The north platform with its sunken court resembles the classic architecture of Teotihuacan and the Maya lowlands. The east range recalls classic Vera Cruz architecture, and the residential structures seem akin to late Classic Maya art of the centuries approaching 1000 A.D. As Acosta makes clear, the southwest nucleus began in Monte Alban I, but the leveling of the Central Plaza did not occur until Period II after 400 B.C., when an overall planning scheme was initiated along lines first evident at La Venta.

The situation at Izapa is especially suggestive in this respect. The platforms and plazas are oriented upon a north-south axis turned a little towards early-summer sunrises, as at Teotihuacan or Cholula, in a grid designated as the Mesoamerican "solstice plan". Miss Proskouriakoff in her Wenner Gren paper regards this plan as a Preclassic layout. Shook sees the axis as filled with four-sided courts. At Izapa are many sculptured monuments all aligned in relation to the platforms, usually paired as altar-and-stela combinations. These face south more often than north and east more often than west on this plan by Martinez in Susanna Ekholm's report on Mound 30a. The sculpture is pre-classic, but the setting and the alignment are like those of classic lowland Maya sites. May we not suppose that pre-classic sculpture was reset by late classic people? In this connection the Bilbao site is of this "solstice-plan" type and its sculpture, like that of Izapa, stressed narrative scenes in formal alignments. This is at some middle-classic date, to use Lee Parsons' welcome term.

Whatever their date at Izapa, these alignments bring us to the topic of proportional relationships, about which I regret to note that Miss Proskouriakoff has no room to give us her views, but perhaps I can draw her out here.

Proportional Studies

Among the great gaps in Mesoamerican studies is the study of architectural proportioning, which is still an untouched subject, although the topic in Egyptian, Mesopotamian, and Minoan architecture has proved extremely fruitful, especially with the work of Badawy in Egypt and Preziosi in the Aegean.

They have shown that the dimensioning of these pre-classic architectures conforms to geometrical figures constructed mathematically upon numerical relationships, such as arithmetic and geometric ratios and Fibonacci series, which are all implicit in number itself and without which it would be difficult to achieve the scaling, placing and conforming of large units of construction. Some ratios are apparent at La Venta: the geometric masks are square, but the diagonal of the square is the length of the panel including the four pendant ornaments in the ratio $1:\sqrt{2}$, which is Serlio's "diagonal proportion" in the architecture of the Renaissance in Europe. It reappears at Teotihuacan, in the still-unpublished court on the west side of the Street of the Dead immediately north of the axis of the sun and the macrocomplex reported by Wallram in 1966. I paced this off and its width is to its length as 2:3 at the foot of the platforms surrounding the court.

Frontiers and Style

Miss Proskouriakoff refers to "...classic meeting of Maya and Teotihuacan traditions on their frontiers in highland Guatemala."

This wording, which implies a tightly packed jigsaw puzzle map does not seem to me to fit the emerging notion of pre-classic Mesoamerican geography. Jigsaw maps appear where definite territorial interests mark out boundaries. That the shores of the lakes in the Valley of Mexico were thus demarcated, we know from a 16th-century Texococan document like Códice Xolotl. But the jigsaw idea still cannot be made to apply to what we know about pre-classic Mesoamerica. Important valleys were trading partners, like the valley of Oaxaca and the Olmec heartland, as Flannery pointed out in 1968 and as Parsons has reminded us here. These trade routes surely attracted settlements profiting from the movement of people and goods. The primary motive may have been trade doubling with religion in the form of cults attracting large numbers of pilgrims to the sanctuaries maintained by priestly corporations. Trade developing along these pilgrimage routes would have served the needs both of pilgrims and priesthoods, in a pattern of marketplace devotions which persists today in the great romerias to Esquipulas or Chalma or Guadalupe, or Chichicastenango. Thus if we were to imagine the mental geography of pre-classic travelers, it would resemble a network of paths rather than a jigsaw map, and it would display the nodes or crossroads more prominently than the network or the boundaries. Unpopulated deserts and mountains would be less important than towns and their alignment along rivers and road. Thus a pre-classic "map" would have looked like points, and lines connecting them, rather than a "map" of areas sharing boundaries.

The correlation between this geography of marketplace devotions, and the history of art is best documented in phenomena like the great pilgrimage roads of twelfth-century Europe, when peoples came together as pilgrims at the edges of the known world, in Santiago de Compostela, or at Le Puy, in a behavioral pattern documented by Chaucer's Canterbury Tales. The history of the

art of the European pilgrimage roads is well known, and it forms a distinct period of medieval art. A similar tracing out of pre-columbian pilgrimage roads in Mesoamerica is already possible, using such traits as architectural profiles on platform terraces, and iconographic motifs and themes.

Olmec Heads

TP does not touch upon the problem of the seriation of the big Olmec heads, perhaps because she did not wish to overcrowd her inventory paper with a question that requires a long history. But to art historians (and we all are art historians when our main evidence is the sculpture itself) the seriation raises an issue of period and workshop. When I proposed a seriation (written in 1959 and published in 1962 in the Pelican History of Art), it was based upon a number of 2-valued traits: conical heads or long heads; yoke brows or furrowed brows, blank eyeball or carved iris; closed lips or parted lips. The heads having conical shape, yoke brows, blank eyeballs and closed lips form one group (e.g. LVI) and the long heads with furrowed brows, carved irises, and parted lips are another (e.g. SL 4). Assuming that schematic conventions preceded more lifelike ones, I placed the first group earlier than the second. Charles Wicke's dissertation soon after made use of Gutmann scaling to attempt a seriation, which seemed to confirm mine as TZ/LV/SL in chronological order. Michael Coe's own seriation made before his 1966 excavations at San Lorenzo places TZ at the end instead of the beginning. His excavations then convinced him, later on, that SL preceeded LV, on the evidence of C14 dates for the ceramic stratigraphy in the pits where the San Lorenzo heads had been buried. But there still were heads at SL with LV traits, and vice cersa, so that Coe's seriation seemed to disregard the stylistic evidence, although he speculated at first "that there was a transfer of some monuments...and presumably leaders to La Venta..about 800 B.C." (mimeographed abstract by M. Coe.)

Later on in 1968 Coe suggested that all the heads had been carved in less than a century. The problem of seriation was not discussed at the Dumbarton Oaks Conference. But it is clear that one style centers at La Venta, and another at San Lorenzo. What is the meaning of these distinct styles? Do they reflect period or workshop? If all are nearly the same age, two workshop traditions must be present. If the two groups are of greatly different ages, such as 1200 B.C. and 400 B.C., there is room for slow development. By analogy however, with Greek Kouros figures, or early Gothic portal figures in France, a brief development not longer than two centuries seems likely, perhaps with migrant sculptors moving from site to site. But as TP remarks on page 2 concerning San Lorenzo "we have no data either on architectural assemblages or on the forms of buildings at that time".

To her words I want to add my own doubts about Coe's placing of the megaliths in the Olmec sequence. These large stones behave differently from sherds. Sherds are discards - but megaliths are too valuable to stay long

like sherds on the refuse heap. Megaliths are as restless as heirlooms and they rarely remain long in one place. They return to use again and again, being exhumed, transported, smashed, mended and reappearing where and when the need for big sculpture recurs. An ancient megalith incorporates tradition and it therefore invites removal while resisting destruction. Being mineral its own historic age cannot be known by radiocarbon: it looms like an uncharted island upon our imperfect maps, skewing our graphs, and drawing our theories to destruction. Dating megaliths by the surrounding strata is like dating a piece of sculpture by the architecture of the museum containing it today.

Why are the heads so big? For such work to exist there must have been an artistic tradition and a psychological demand, as well as a suitable setting. Artistic traditions comprise meanings, figures and techniques. The iconographic tradition was humanistic, in that important meanings were conveyed as personifications. The figurative tradition permitted portrait likenesses and natural appearances. The technical tradition allowed subtle effects of fleshy texture and animated gaze.

None of these is likely to spring suddenly from nowhere, and if Coe is right in assigning the great heads to the San Lorenzo phase (1200-900), the antecedent stages are totally unknown to us, and we find ourselves again in what I call Vaillant's dilemma by having to assign an early position to late productions which we know intuitively to have emerged from a long preparation.

Macrotechnics

Men's rational observations and experiments during stone age periods often required extremely large scale instruments and theaters of operation. Stonehenge and Avebury in England are gigantic observatories prefiguring small optical instruments of glass and metal. Like Stonehenge are those observation platforms in America composed of buildings at whose calculated intervals the sun was seen to rise on the solstices and equinoxes, as at Teotihuacan or Uaxactun. The star-sighting lines stretching many miles across the south Andean coastal deserts, which have been studied by Paul Kosok and Maria Reiche, are another instance of the effort to achieve accuracy by magni fying the size of the instrument or position taken by the observed.

It also seems justified to speak of a macrotechnic character in early instrumentation, a character which reappears in craft operations where primitive instruments are used to achieve work of great delicacy and precision. People using stone tools must also observe a direct and necessary relation between the size of the instrument and the scale of the work it can be made to produce. A stone hand-axe cannot be made to produce minute effects nor can the drills useful for working jewel stones like jadeite be made to produce large sculpture economically. Indeed the effort to shape stone with stone tools inevitably led to the realization that an enlargement of the work

to colossal proportions was the only way to achieve finely detailed control over sculpture. Stone hand tools have their characteristic weights and shapes: a stone blade-edge will cut finer detail when the size of the work itself is enlarged, but below large work-sizes, stone tools cannot shape lines or modelling finer than their own edges. It is like the problem of trying to draw a map with a pen coarser than the scale of representation: the line showing a river looks many times wider than the river should. Thus the Olmec sculptors, envisioning and wanting finely modelled anatomical detail, discovered that they could achieve it in stone only by working at the largest available scale.

The lessons thus learned must have been analogous to working today under great magnification: the mind can witness the effect of every stroke in a manner otherwise unknowable at ordinary scale. Colossal sculpture thus was a mode of discovering the correspondances between organic forms and their representation. The work permitted the invention of ways of representing life forms all while verifying their plausibility or fidelity to the model, by magnifying the work-size beyond the limitations of neolithic tool-size. In this perspective, colossal sculpture was analogous or equivalent to drawing in more recent time. Where we experiment by drawing our idea, the Olmec sculptors felt their way into the unknown or uncharted domains of exactly representative art by sculpture with stone celts and mauls and picks, which they wielded as sensitively as a draughtsman handles his pencils and brushes. Among early civilizations elsewhere, the emergence of painting is likely, as in the Mediterranean civilizations, to follow after sculpture, and to depend upon conventions of representation established in sculpture. This was perhaps because of the same proclivity among early figural artists to prefer full-round work to illusion in two dimensions. Illusionism was technically more difficult, depending for its appearance upon a prior mastery of full-round replication before the devices of illusionism could be approached, first in low relief sculpture, and later in paintings and drawing. This simplistic version of the earliest history of art has an old history in art theory, but this version is suggested by the archaeological record for Mesoamerica, as Michael Coe and Ignacio Bernal have made clear in their writings, and as the colossal heads themselves lead us to believe. Bernal's phrase about classic Maya "painted stone" is a happy find.

Our most penetrating recent insights into the nature of all artistic process was given by Ernest Gombrich in Art and Illusion, when he showed how images arise from coded schematic conventions more than from direct observation. In providing a psychological model for this process, whereby works of art are generated out of other works of art rather than by the artist's returning to nature, Gombrich was extending the argument first presented by Henri Focillon in 1934 as the Life of Forms, which was later popularized by André Malraux in 1950 in The Psychology of Art.

This argument proposes that the making of images depends upon schematic conventions. These are codes for stating relations which will make images look like nature. Such schemas are: placing forms, coloring them, marking their texture, and devising clues to expression. The schemes do not simplify or abstract so much as classify and articulate. They are relational coding conventions, classifying experience in a game like that in which the players agree to describe everything in a two-term language with no other words than "ping" and "pong". It is Gombrich's contribution, based upon the psychology of form-perception, to have seen that finding such a code must precede the making of images. In a next stage, the making of images precedes their matching against nature. Finally, matching precedes correction. This model of operations explains why art has a history. Indeed all artistic discoveries are equivalences enabling us to see reality as an image and vice versa.

Gombrich goes on to establish that the form of an image is affected by its function. Greek images serve a narrative function; Renaissance forms convey a structure of space; Chinese landscape painting serves the aims of poetic invocation. Modern art in turn proceeds by finding, making, and matching equivalences for the inner psychic world in a coded relational convention like those of the other major historical configurations.

No part of American antiquity was considered by Gombrich in this context, but Mesoamerican visual traditions fit easily into the schematic conventions of his analysis. He regarded "nature" as the object of European mimesis or imitation, but in ancient America, there is no systematic effort in this direction, because the idea of "nature" was differently present, being conveyed more by a wide range of cult practices and animistic beliefs than by natural philosophy.

Because our knowledge of ancient American thought about the natural world is mainly restricted to artifacts which suggest ritual use for cult purposes, we may substitute "cult" for "nature" as the object of imitation.[1] The pre-Columbian artist's aim was to find coded conventions corresponding to the profusion of cults in which American myths were embodied and to make images that would be recognized as portraying cult practices. The relational code and the making of equivalent images, followed by matching and correction, thereupon yielded, as they did elsewhere in the world, a history of art.

Ever since Greco-Roman art, as in Pompeiian murals, the key inventions in the European relational code have been foreshortening, tonal modeling, texture by highlights and physiognomic clues to expression. But few of these inventions appeared in ancient American art.

1) In place of the perspective convention of foreshortening, however, we can substitute another sort of drawing. Here each delineation is spread out for the greatest ideational clarity, in forms often approaching the orthogonal projection of architectural drawing, as in Mexican manuscript and mural traditions.

2) Instead of tonal modeling, we can consider color symbolism in ancient America. These flat tones without shaped modeling describe ideas rather than appearances. They mark cardinal directions, and symbolize elements, such as earth, fire, air, and water, as well as portions of calendar and places and titles. As in heraldry, ancient American color is not descriptive but prescriptive: color changes as to meaning instead of changing as to appearance.

3) The suggestion of material texture by highlighted accents derives from tonal modeling and it is therefore absent from the American relational code. If the nature of materials cannot be described by conventions in line or color, ideas such as ripeness, richness, or glossiness can be suggested by other means. For instance, an ideograph signifying preciousness and representing jewelled ornament may be infixed or affixed as an explanation in a glyphic composition which approaches the pictorial forms of writing.

4) The European coding of expression by physiognomic clues has many ancient American parallels. Transcendent rapture can be suggested by prayerful posture as in the classic Maya wooden kneeling figure in the Museum of Primitive Art. Erotic excitement appears in some Jaina figurines, where theatrical posturing and menacing gestures were also possible. Maya wall painting at Bonampak resembles Egyptian New Empire mural art as to expressive variety, symbolic color, and linear indications of texture. Classic Maya ruler portraits in monumental sculpture distinguish young and old in several age groups, but the sculptor's resources for indicating emotions were underdeveloped, being channeled into allegorical forms and associated glyph-like attributes.

Early writing

Several points about early writing are in order here. Writing can properly be regarded as a method for miniaturizing or compacting of more bulky communications, such as a sculpture or painting. In this context writing seems to separate two functions. Where figural art both represented and communicated, performing two services simultaneously, phonetic writing does not imitate by images. It merely communicates, by non-representative signs.

But in Mesoamerica it is not yet clear whether writing was either phonetic or logographic or both. The advantage of logographic writing, as we know from European roadsigns for motorists, is that pictures are instantly legible in every language, whereas phonetic signs require translation. If Maya writing, as Thompson or Proskouriakoff suppose, was less phonetic than logographic, then Olmec written signs, which still are undeciphered, can be supposed to have been mainly logographic, for use by pilgrims and foreigners as well as by local adepts. This, I take it, is the sense of Prem's "compounded ideograms."

TP assumes the existence of manuscript painting as early as Olmec time, unless I mistake her meaning on page 152 I think that she finds her support only in the similarity between early sculptural conventions and the manuscripts we know, none dating from earlier than 1000 A.D. at the earliest. It is well known that classical Mediterranean manuscript painting appeared only in late Imperial Roman books, recapitulating long prior sequences of sculpture and mural representation.[2] The case is mentioned, not to suggest a necessary law-or-necessity, but only to mark the generic "lateness" with which book illustration is usually associated among art historians.

On page 147 TP assigns a greater role among peoples to visual imagery than to writing and mathematics like Prem on page 112 I would agree, with the modification that visual imagery in Mesoamerica was adapted very early to serve as writing, and that what is called writing never was divested of all its attributes as visual imagery.

The case of classic Maya inscriptions is most revealing here. Thanks to TP, we have gained since 1960 an entirely new historical approach to the inscriptions, but it is now evident that about half the glyph blocks, or less, in most texts pertain to calendrical matters. The remaining blocks give names and titles. Some verbs - 8 or 10 "action glyphs" - have been identified, and another handful of place-names. The gist of these historical clauses seems always to pertain to local individual rulers or priests whose lineage, titles, offices, and services in war or peace are enumerated. But the calendrical armature of the Initial Series date, supplementary series, and distance numbers, as well as occasional cyclical counts like the 819-day augural count, actually take up most of the room. The interstices, which sometimes admit only one or two glyph blocks, are not big enough to contain vast amounts of information. As Thompson put it, "tenses and pronouns seem to be absent".[3]

Another inference to be drawn from the historical signs concerns the intended values of the graphemes. Like the calendrical portions, these historical sections convey little or no phonetic value. They are more logographic than we used to believe. Entire thoughts are conveyed by one glyph block, composed of many graphemes, as in modern advertising "logos" (shortened from logograms), in which one simple but pregnant schema conveys the nature and use of something being advertised. In the Maya glyphs phonetic and syllabic values[4] are not excluded, but their occurrences seem less systematic than one would hope for in an alphabetic writing like the one Knorozov has proposed.

It may be that Maya writing records few Maya sounds, and that its function was more to provide a visual language to be understood without reference to any single language or dialect. Thus the bar-dot numerals are intelligible across all barriers of speech, like the period glyphs and the lunar expressions, all of which get meaning from their positions in the long Inital Series clause. In this respect Maya inscriptions are less like writing as we know it than like a pictorial coding for historical information. Thus an emblem is usually terminal

in a clause opening after a secondary series date. Action glyphs can precede names, but names occur without such prefatory remarks. Another glyph-cluster states that the subject captured a prisoner; others have to do with sacrifices and bloodletting; with birth, inaugurals, anniversaries and death. Of this code, the rare full-figure glyphs convey historical material, as on monolith B at Quirigua. There, the appellative of "Two-legged sky" and the emblem of Quirigua are given in full figure variants at the end of the full-figure clause. This code may have originated with schematic pictorial expressions which were keyed into a sequence. If so, it is possible that the full-figure (Stela 1, B_z2) glyphs like those at Tikal or Yaxchilan of early classic date reflect more of the earliest preliminaries of Maya historical coding than previously believed.

Thompson (HMAI, 3:2, 1965, 636) was the first to compare Maya non-calendrical writing to historical coding in Oaxaca. Such records appear on the Zaachila slabs as well as in genealogical manuscripts. Their pictorial character is much more primary than in the Maya coding, but the relationship between the date and the event to which it pertains is like that in Maya inscriptions. In Oaxaca, the record is more concerned with events and less obsessed with dates, but the intended meaning emerges from the position of the pictures in the sequence, and the relationships of the figures are regularly coded to a limited number of types. Barthel has recently commented on these parallels between Mixtec genealogies and classic Maya stone reliefs.[5]

To conclude: "emergence" is like the actor coming on in the prologue to the play. But unless he can say something of value to the audience they may walk out on him. Here is the question once again, of the value systems in this, the grandest of games, about which G. Willey spoke in his Wenner-Gren Conference paper (this volume).

ENDNOTES

1. Arild Hvidtfeldt, Teotl and isiptalli, Copenhagen, 1958.

2. K.Weitzmann, Flinders Petrie was the first to propose such a sequence.

3. Thompson, 1956 HMAI, 657.

4. Thompson (HMAI, 3:2, 1965, 939, 645, 652-3) shows that "shifting of affixes argues against syllabic decipherment;" that particles were expressed as affixes (al, il, te); and that Yucatec rebus puns alone received pictorial treatment. On the other hand, he regards pictorial glyphs as insignificant (656). Thompson recently has developed the idea of "Metaphorgrams".

5. ZE, 1969.