Mexican Manuscripts Before the Conquest

A Study By

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On the eve of the Spanish conquest, complex societies that sought their legitimacy and identity in the past, and pursued the future through study of that past, dominated the area now known as Mexico. Written records were an important means of securing knowledge of the past and the surviving Mayan and Aztec manuscripts reveal their preoccupation with time and with their place in history. This paper, in seeking to demonstrate that the Mexican peoples were on the verge of developing a unified system of writing, and possibly some form of printing, will examine some of the salient features of those manuscripts and the societies that produced them.

History was seen as cyclical, and the Mexicans believed that what had gone before would come again, therefore, study of the past was considered a way to gain knowledge of the future. The Mayas, who had developed a calendar by the third or fourth century, had special hieroglyphs for figuring time. Their prophetic charts reveal what may seem a strange failure to distinguish between past and future.[1] The Aztecs reportedly maintained substantial archives filled with codices in which they recorded the present and tried to recapture the past. The royal Aztec historian consulted the older manuscripts, wrote new state histories from them, and then proceeded to burn the earlier documents which, presumably, had outlived their usefulness. When the aggressive Aztecs conquered a new town, they set the town's archives on fire, demonstrating symbolically that history was to begin anew under the sovereignity of the god Huitzilopochtli.[2]

Mexico-Tenochtitlán, now Mexico City, was the seat of temporal and spiritual power both before and after the Conquest. Within the Aztec empire, which was reaching the height of its power when the Spaniards arrived in 1519, it was also the cultural center, attracting talented people from all

over the central valley of Mexico who brought with them the arts and skills of a wide area. Nâhuatl, a rich literary language, was the lingua franca for the growing Aztec empire. At the same time, Maya civilization, farther to the south, was on the wane, having flourished some six to twelve hundred years previously. The remnants of this great civilization were gradually being absorbed by the hungry Aztecs. Absorption, however, did not mean the annihilation of Maya accomplishments. The Aztecs readily adopted many elements of the societies they overpowered. The rich Aztec pantheon, full of deities whose duites and functions overlapped, bore witness to their proclivity to assimilate virtually unchanged whatever they found useful in their daily struggle for existence.[3]

Religion pervaded all aspects of Mexican society, becoming increasingly elaborate through the years among both the Mayas and Aztecs. Religious ritual dominated the daily lives of the people, providing a way of bringing order into an unpredictable world. Symbolism and form were highly valued. The priests, who made up a large proportion of the upper class, were the supreme authorities who were responsible for maintaining and extending religious influence. They were set off from common humanity in dress, deportment and, most importantly, skills. It was the priests who were first "literate". Both Mayan and Aztec script was developed as a means of keeping priestly records and predictions; to record the passing of time, the names and influences of the various gods, and the accumulated knowledge of the priests/astronomers. As in early European society, all Mexican manuscripts were produced either by priests or by people working under the direction of the priests. Knowledge was passed on through the schools and convents where the young people received instruction in astronomy, history and

religious ritual. Those who showed promise as manuscript painters were taught the application of the characters appropriate to each branch of learning.[4]

The different scripts did not yet operate on a unified principle, as they were not originally intended as a means of general communication. Their use for other than religious purposes was a secondary development, founded in practicality. The writing generally functioned as a prompt to the memory, suggesting rather than stating explicity, and was really auxiliary to the oral tradition where historical accounts, hymns and poems were learned by heart. The glyphs, as they are generally called, provided a brief outline and the priests or chroniclers expanded them into long discourses or recitals. The priests frequently consulted the written records for purposes of divination. The Mayas, particularly, had reached a high level of astronomical calculations, having accurately charted the revolutions of the planet Venus, and had devised a system of mathematical notation with which they were able to count back millions of years. Each month and day was represented by specific hieroglyphs. The Aztecs also had developed a solar calendar and, in both societies, the priests regulated the festivals and seasons of sacrifice and made astrological calculations based on the written tables. By consulting special manuscripts, called tonalámatl (paper of the days) in Aztec, they customarily took the horoscope of newborn children to determine their destiny.[5]

"Writing" gradually expanded beyond the strictly religious/ritualistic realm. The secular nobility followed the priests in becoming at least marginally literate, and it was for and by them that native literature developed. Poetry and literature were important in both societies and both

Nâhuatl and Maya are considered to be rich, expressive languages. Within the Aztec empire, the Council of Music and the Sciences had as one of its functions the encouragement of poetry, which it accomplished through sponsoring formal recitations and competitions. There is some indication that the nobility also had glyphs painted on their bodies to identify their rank and position. Both the Mayan and Aztec rulers exacted great quantities of tribute from their subjects. Tribute and trade were the basis of the Aztec economy and they had need of accurate tribute lists. The tribute collectors therefore learned a limited written vocabulary in the performance of their duites. The great chronicler, Bernal Díaz, makes mention of an archive building where the Aztecs kept their tribute books and notes that Cortes made use of the native lists in order to learn which araes would provide the best plunder. Merchants also mastered certain glyphs for the conduct of their business, thus paralleling the spread of literacy in Europe and elsewhere. Hieroglyphic records of trial proceedings were also kept by clerks and handed over to the courts. These records were so accurate and informative that the Spaniards routinely admitted them as evidence in their later court proceedings.[6]

The painted symbols provided a means of disseminating information over long distances. We know from Cortes and his follower, Bernal Díaz, that Aztec emissaries took sketches and pictographs of the coming conquerors to their ruler Montezuma to keep him aware of what was happening. After Cortes had arrived at the capital, Díaz informs us that the bearer of a manuscript would explain the meaning to Montezuma by pointing out figures on the page as his explanation proceeded. It is clear that they were not practicing reading as we know it. The writing did not permit the exact notation of the spoken language, but was rather designed for summarizing events.

Montezuma was accustomed to receiving intelligence from far away by means of these hieroglyphic paintings that were transported by runners in relays. One to two hundred miles a day could be covered in this way. By means of this system, word of the approaching conquerors had reached Montezuma years before their arrival in Mexico-Tenochtitlân and had taken on a mythical, prophetic quality by the time Cortes actually arrived.[7]

Writing and books were clearly important to Mesoamerican culture. Their influence was felt in all areas of life and the practice of writing was spreading. The Nâhuatl language contains many words referring to books and writing, bearing witness to the significance of written communication in Aztec society. Even though written records pervaded Mexican society, only three complete pre-colonial Maya codices and no post-Conquest ones, and about fourteen Aztec codices which are believed to predate the Conquest, survive. The three extant Maya codices are predominantly calendric and ritualistic, with a strong emphasis on divination, but contemporary colonial sources inform us that a far wider range of subjects was treated in the manuscripts, such as medicine, law, history and genealogy. Indeed, sections of the manuscripts themselves deal with these varied subjects and point to a depth of knowledge which must have been recorded elsewhere. The surviving Aztec manuscripts cover a broader range of subjects and contemporary sources also bear witness to the wealth of written material in Aztec society, which the small number of extant codices belie.[8]

What happened to the massive archives of which Cortes, Díaz and others wrote and to which the surviving manuscripts occasionally allude? Part of the answer is that many were deliberatley destroyed. The Aztecs themselves destroyed many of their own and their neighbors' manuscripts. In addition,

some of Cortes' Indian allies, in their exuberance over their victories over the hated Aztec masters, are credited with having destroyed the archives at Tenochtitlán and elsewhere.[9] The intentional destruction that stirs up the most outrage today and is the most well-known, although perhaps one of the least offensive examples in numerical terms, is revealed in the following quotation from Fray Diego de Landa, one of the Catholic priests who set out to convert the natives:

> "We found a large number of books in these characters and as we found nothing in which there were not to be seen superstitions and lies of the devil, we burned them all, which they regretted to an amazing degree and which caused them much affliction." 10

Fray Juan de Zumárraga in 1529 had many hieroglyphic books collected and burned and others were said to have followed his example throughout Mexico. Many more of the books perished from neglect or were thrown away out of ignorance after having been kept for a time as novelties. Seventeenth-century sources allude to the existence of a far greater number of pre-colonial manuscripts, but none of these have been found.[11]

Mexican manuscripts varied in format and size. The extant Maya codices lack boards at either end, although Landa, in referring to Maya books, says, "They wrote their books on a large and many-folded sheet, the whole of which they shut up within two nicely prepared boards." [12] The pages of the Mayan codices are about twice as high as they are wide. In contrast, the Aztec codices are bound in highly decorated boards and the pages are generally square. In both types, pages are formed by folding a long sheet of bark paper into leaves about eleven centimeters wide so that the whole resembles a folded screen, much as was done with some early European books. There is some evidence from early post-Conquest sources that the Maya

wrote on rolled-up animal skins as well as the bark paper. Some of the Aztec manuscripts were also on paper rolls, although the majority of both Aztec and Mayan books seem to have been in the folded screen format, with glyphs and pictures appearing on both sides of the paper.[13]

There is considerable disagreement among scholars concerning the actual writing or painting. The shortage of manuscripts to examine, the lack of a tool such as the Rosetta stone, and the fact that some Spanish friars encouraged the Indians to produce post-Conquest manuscripts approximating the native style, all contribute to the difficulty of dating the codices and deciphering their meaning accurately. Another obstacle to understanding the writings is that context always determined the final meaning of a glyph and more than one symbol was occasionally used to represent the same thing. Complete accuracy in interpretation is, therefore, not possible and those who claim to have achieved it are generally those most ignorant of the societies that produced the codices.

Aztec writing was largely pictographic, with some use of ideograms, and was developing toward syllabic phonetics when the Spanish Conquest interrupted the process. The use of phonetics was generally restricted to the names of individuals or places and the phonetic elements often utilized homonyms and puns. Thus, the name of the village Otlatitlân, meaning near the reeds, is represented by the ideogram of a reed (otlatl) and by the phonogram for near (tlan) which was a drawing of teeth (also tlan). The town Cimatlitlân, meaning near a certain type of root, was a compound of a drawing of cimatl (the root) and the phonogram for tlan. A blazing temple was always the ideographic symbol for defeat. The chronological signs were also all ideograms. All of the glyphs were highly stylized, reflecting

established conventions. A tongue always denoted speech and a footprint indicated travel. Human figures often appear to us as grotesque caricatures because of the degree of stylization. In addition to the glyphs, color provided another means of conveying meaning. The word tecozauhtla was represented by a stone (tetl) upon a yellow background, the word for yellow being cozauic. While such writing did not allow the exact reproduction of the spoken word, it was, nevertheless, highly sophisticated and was much more than mere picture writing.[14]

Mayan writing followed principles similar to those of the Aztec system, but the glyphs were far more numerous and are considered to be more sophisticated. There is less of a reliance on the strictly pictographic element and considerable use of ideograms and phonetics. The Maya glyphs tended to be more stylized than even the Aztec (see following page for comparison) which is seen by many as an indication that their system was closer to an alphabetic system. The highly stylized ideograms assured greater "readability" throughout the Mayan territory, regardless of the particular language or dialect spoken in a certain region, much as the Chinese characters can be read by speakers of various languages. Homonyms and metaphors were also employed to convey meaning, as in the Aztec system. For instance, the same word meant both "fish" and "to count" and a drawing of a fish was sometimes used to instruct the reader to begin counting. A common metaphorgram combined the drawing of a vampire bat and the glyph for sacrifice, indicating a blood or human sacrifice. Some glyphic elements were used both ideographically and phonetically. Several discrete elements often combined to make a single glyph, there being a main sign and variable affixes for particles of speech, such as adjectives, prepositions and suffixes. One

Day glyphs of the Maya (left) and Aztecs (right) from Eric R. Wolf, Sons of the Shaking Earth, p. 91.

common glyphic sign has been noted as a main sign in combination with approximately eighty different arrangements of affixes. The positioning of the affixes, either to the left of or above the main element, seems to have been determined as much by spatial and artistic considerations as by anything linguistic. Some of the glyphs, especially the calendric ones, have two distinct forms which were used interchangeably. The Mayas apparently despised exact repetition, making their codices more aesthetically pleasing but even more difficult for the unihitiated to decipher.[15] Left to their normal process of assimilation, without outside interference, the Aztecs would probably have incorporated much of the Maya system of writing into their own, simply on the basis of praticality.

Both Maya and Aztec codices disclose the artist's concern with his composition, within certain prescribed guidelines. Expression of individuality was unknown in both of these highly stratified societies, yet the painters or scribes were able to create works both of great beauty and utility. The hieroglyphic figures in the manuscripts are crowded into a two-dimensional world. A god or person that is considered important will appear disproportionately larger than what's around it. "Actual" size is unimportant and it is only in post-Conquest manuscripts that perspective is employed. Geographic symbols exist to convey geographic information and not to provide landscape or decorative background. The glyphs are read from right to left, left to right, right to left in a complex meander pattern with opposite pages mirroring each other in terms of the meandering. Figures face the flow of signs and retain always the same relationship to the direction of reading, which sometimes produces left-profiled figures and sometimes right-profiled figures. The unbroken flow of symbols is

related to the native conception of time and history, with little distinction made between past, present and future.[16]

Following the Conquest, native forms and styles were inexorably supplanted by European styles. European influence was initially rather subtle, one reason that there is sometimes difficulty in identifying a manuscript as pre- or post-Conquest. The most apparent early influence was in the change from a screenfold to a separated-page format. The continuous flow of symbols had to be reduced to a series of separable parts. Perspective and landscape in the manuscripts are two further indications of the erosion of the native style. For a time, the Spaniards created a demand for the native manuscript art. Initially, they found it useful in attempting to convert the natives to have pictographic representations of sermons and stories from the Bible. They developed the Testerian alphabet, a system of rebus where native signs were drawn and chosen so that, when pronounced, they approximated the sound of the words in Latin. The examples of this alphabet were hastily done and reveal nothing of the true native manuscript art. They merit study only in a linguistic context. Some Spanish priests did attempt to undo the effects of the initial destruction of manuscripts by enlisting native artists to recreate Mexican histories in the native style. The Codex Florentino, organized by Fray Bernardino de Sahagún, is one example of such an effort. Yet, even though the effort to recapture something lost was sincere and carefully done over a period of years, the result is, at best, a useful historical document and reveals clearly the loss of a native tradition. The Náhuatl text of the codex is written in the roman alphabet and the native pictures are used more as illustration to the text than as an actual means of conveying information. The Codex Florentino

demonstrates the overall change in emphasis from a pictorial, symbolic content to written history supplemented by and based on pictorial representations.[17] There was no way to undo the effects of a more sophisticated culture being superimposed on a developing one. The Indians were above all else practical and had always assimilated what they found useful, so they readily adopted the utilitarian roman alphabet in place of their own developing system. One can only speculate about what might have developed had the Spaniards not arrived when they did.

Some doubt the importance of the native system of writing, believing that it was little used and of slight influence. The scarcity of extant manuscripts lead them to doubt the colonial reports of great storehouses of written documents. Yet, there is a form of indirect evidence which lends greater credence to these reports. That is the nature of the paper itself and its overwhelming use as an item of tribute.

Over the centuries, there has been some confusion regarding the composition of the native paper. Pedro Mártir de Anglería, the first European to examine native books critically and analyze the paper, noted that "the leaves of these books, upon which they write, are of the membrane of trees, from the substance that grows beneath the upper bark."[18] Mártir's analysis was later confirmed in the writings of Bernal Díaz and others who had witnessed the production of this paper. It was Dr. Francisco Hernández, a naturalist who visited Mexico in 1570, who first identified the tree from which this paper was made as a fig tree. He found that many species of fig trees existed in New Spain and all were used to produce the native paper. The issue would never have become confused had Fray Toribio Benavente, called Motolinía, not made the offhand and ill-informed remark that "a

good paper is made from metl." Metl was the Aztec word for maguey or agave. From this one remark, several generations of scholars adopted the misconception that native paper was made from the maguey plant. Modern analysis of the paper reveals that, in all extant examples, it was, as first stated, produced from the inner bark of several species of fig tree. It was also found to be coated with some form of calcium bicarbonate and is superior to papyrus in texture and durability. Paper continues to be made to this day by the Indians of Central America in the same way as in pre-Conquest days, by peeling the bark off in a single sheet, soaking it, drying it, and pounding it on a smooth surface with a striated stone beater. The irony is that, in modern times, the people, while retaining knowledge of the process of manufacturing paper, have forgotten one of its primary uses as a means of conveying and storing information and recognize it now only as a ceremonial device used in witchcraft.[19]

The Mayas referred to paper as "huun", the Aztecs as "amatl". That it was available in large quantities we know from a variety of sources. The stone bark beaters, essential to its making, are the single most common item found by archaeologists today in Central America. They are found widely dispersed throughout the area, with certain areas of heavier concentration. Such findings suggest that paper making was common and widespread. Botany provides further evidence. The fig trees, from which the paper is made, are also found throughout Central America and there is some indication that, in certain areas, they were once considerably more plentiful than they are today. It is clear from this that the raw material for the paper was readily available throughout Mexico and that it was exploited to such a degree in some areas that the supply was dangerously

depleted. In addition to this objective evidence, we have the words of the conquerors. Bernal Díaz, in recounting the Spaniards' initial exposure to the main plaza of Tlatelolco, indicates that they were amazed at the great number of people and variety of goods that there were and notes that "one would not be able to stop to relate all the varied things, except paper, that in this land they call amatl." In spite of being overwhelmed by the quantity and variety of goods he saw, Díaz takes time to make special mention of the paper in the marketplace. But the paper that reached the market, great in quantity though it might have been, was a very small portion of the total amount. Only the leftovers reached the market. The bulk of it was reserved for the priests, scribes and nobility.[20]

The tribute rolls provide the strongest evidence for the widespread production and use of paper. The Codex Mendoza, which preserves for posterity an Aztec tribute list, indicates that single villages were required to supply as much as 24,000 resmas, or 480,000 sheets, annually as tribute to Montezuma. In the Matrícula de tributos, a precolonial document, it is seen that sixteen villages were required to provide 8000 bundles or rolls of paper every six months and another twenty-six villages were required to provide 8000 rolls per year. Different qualities of paper were also demanded of different towns. By whatever reckoning, this was an enormous amount of paper for a supposedly primitive culture to require. The tribute system was, incidentally, rigidly enforced. Those who could not pay were taken as slaves or sacrificial victims. The gathering of tribute was a communal effort for every town. If a tribute collector were sent to collect 8000 rolls of paper, it is safe to assume that he collected it. Further evidence of the comprehensive use and production of paper can be

found in the Aztec place names. It was common to name a village for its chief product and many of the towns had names which indicated that paper was produced or utilized there. For instance, the town name Amacuilli was a combination of amatl (paper) and cuiloa (paint). The town Cuilco was the place where writing was done. Amoxtlatiluyan in Nåhuatl means the place where books are kept.[21]

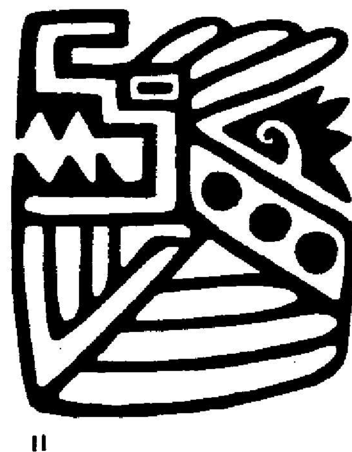
While paper was used in great quantities for recording and storing information, and it is in this capacity that we are primarily interested in it, it is worthwhile to mention that paper was important to the lowliest members of the native societies as well as to the literate upper classes. The paper sold in the market for common consumption consisted of mere sheets and fragments. These remnants were generally put to ritual uses. Paper images and scraps of paper were offered as sacrifices to placate the gods. Religious images were adorned with many different kinds of paper. Fray Bernardino de Sahagún studied the popular ceremonial use of paper and many Spanish priests found evidence of its continued use in this capacity long after the supposed conversion of the natives. The sacred uses of paper were not limited to the common people. It was used extensively in all religious rituals. Human sacrifices were often dressed in paper, sometimes to represent a particular god in the ceremony. Paper also had some secular uses among the lower classes of people as, for instance, when it was used for a passport, stamped with certain hieroglyphs to guarantee the bearer safe passage. But the greatest use of paper was for official writings and sacred ritual.[22]

Some say that the native Mexicans were on the verge of discovering printing with moveable type when the Spanish interrupted the process. It

is true that the Aztecs and Mayas made extensive use of stamps and molds. These were generally clay stamps, either flat or cylindrical. They vary in size depending upon the surface area to be decorated. The earliest clay stamps were molded by hand, but increased demand lead to a new technique for mass production, the mold-made stamp. The stamps were used principally for decorating cloth and pottery, for identifying tributes and for printing on skin. An inked stamp was used to print on skin, cloth and paper. The Indians had a wide variety of vegetable dyes, made from ground natural substances mixed with oil of chia or alum, at their disposal for the stamping. The printed patterns were of all shapes, often employing geometric or naturalistic designs. The naturalistic designs became so simplified and stylized that they eventually appeared as conventional symbols. Since painted images of gods on paper were used to ward off evil, it seems likely that many of these images were produced with stamps for the mass market. It is not known whether the natives had advanced to the stage of using some stamps in their books. Too few of the manuscripts remain to determine the issue definitively. Several early colonial sources give indirect evidence to support the practice of limited stamping in books. Whether or not they ever used the stamps in their books, they certainly used them to print on paper and it would be a small step for them to make the connection from scraps to folded sheets of paper.[23]

From this brief examination of Mexican manuscript art within its societal context, it is clear that the native peoples of this region had developed a sophisticated means of communication and of storing information. It was a pre-alphabetic system that was tending toward increased conventionality and standardization. Their society had progressed to the point

I


II

III

IV

Flat stamps. I shows a puma head (Mixtli) and is from Teotihuacan. II is a jaguar (Ocelotl) found in Puebla. III, showing a puma head (Mixtli), and IV, showing a jaguar, come from Hidalgo.

From Jorge Enciso, <u>Design Motifs of Ancient Mexico</u>, p. 112.

where writing was woven into the fabric of their daily lives. They depended increasingly upon the written documents for economic, social and personal reasons. While literacy had not yet reached the masses, it was spreading through the middle class, represented by the merchants. Paper existed in abundance, all manner of dyes had been developed, and the principle of reproducing an image by stamping was known. Had the Spaniards not arrived until 1619 or 1719, the art of writing among the native Mexicans would very likely have progressed almost to an alphabetic stage, would have spread to a wider group of people, and stamping, the precursor of printing, would have become widely accepted in the production of books. History has demonstrated elsewhere that availability of a product increases demand, which, in turn, improves availability. The dominant Aztec society was primitive, but as it grew it became more sophisticated. While a mere century or two wouldn't have made an appreciable difference in the long run, it seems reasonable to assume that, given enough time, the Mexicans could have developed a system of writing and perhaps printing to rival the roman and other alphabets in beauty and utility.

Footnotes

[1] J. Eric S. Thompson, A Commentary on the Dresden Codex : a Maya Hieroglyphic Book (Philadelphia : American Philosophical Society, 1972), pp. 6-7.
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[2] Hans Lenz, El Papel Indígena Mexicano (Mexico : Secretaría de Educación Pública, 1973), p. 13.
R. C. Padden, The Hummingbird and the Hawk : Conquest and Sovereignity in the Valley of Mexico, 1501-1541 (New York : Harper and Row, 1967), p. 55.

[3] Padden, p. 241.
Donald Robertson, Mexican Manuscript Painting of the Early Colonial Period : the Metropolitan Schools (New Haven : Yale University Press, 1959), p. 68.

[4] David Grant Adamson, The Ruins of Time (New York : Praeger, 1975), p. 216.
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[5] Adamson, p. 216.
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Thompson, Commentary, pp. 3, 7-8, 12.
Thompson, Rise, pp. 197, 200.

[6] Lenz, pp. 50-53.
Prescott, pp. 25, 109.
Robertson, p. 32.
Soustelle, pp. 236-237.
Thompson, Commentary, pp. 11, 13.
Von Hagen, pp. 12, 18, 75.

[7] Padden, p. 145.
Prescott, p. 31.
Robertson, p. 29.
Soustelle, p. 233.

[8]Prescott, p. 66.
Robertson, pp. 8, 29.
Thompson, Commentary, pp. 3, 8.
Von Hagen, pp. 6, 31.

[9]Lenz, p. 13.
Padden, p. 52.

[10]Adamson, p. 73.
Lenz, p. 41.
Soustelle, p. xviii.
Von Hagen, p. 31.

[11]Thompson, Commentary, p. 14.

[12]Von Hagen, pp. 32, 34.

[13]Lenz, pp. 40, 42.
Prescott, p. 67.
Thompson, Commentary, pp. 3, 5, 7, 15.
Thompson, Rise, p. 197.
Von Hagen, pp. 12, 69.

[14]Prescott, pp. 64-66.
Robertson, p. 10.
Soustelle, p. 233.
Von Hagen, p. 19.

[15]Adamson, p. 216.
Robertson, pp. 7, 14.
Thompson, Commentary, pp. 28-30.
Thompson, Rise, pp. 190-196, 201.

[16]Robertson, pp. 10, 15, 20-22, 65.
Thompson, Commentary, p. 19.

[17]Robertson, pp. 1-65.

[18]Von Hagen, p. 29.

[19]Lenz, pp. 43, 76-77, 122-135.
Thompson, Commentary, pp. 3-4.
Von Hagen, pp. 10, 27-28, 35-65, 69.

[20]Lenz, p. 50.
Thompson, Commentary, p. 15.
Von Hagen, pp. 9, 66-73, 78.

[21]Lenz, pp. 38, 53-55.
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[22]Lenz, pp. 11-35.
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[23]Jorge Enciso, Design Motifs of Ancient Mexico (New York : Dover Publications, 1953), pp. iv-vii.
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