

The Aztec Calendar Stone:
A Critical History

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CHAPTER I

INTRODUCTION

The 1980 edition of Traveler's Guide to Mexico states "World famous, the Museum of Anthropology is not to be missed. Here you'll find the famous Aztec Calendar, the unofficial symbol of the country..."(Luhnow 1980). Indeed the Aztec Calendar Stone (Figure 1), while never having been officially declared the national symbol of Mexico, has been generally recognized as the symbol of that country. It appears in national and international contexts, from travel posters to lottery tickets, and serves as the logo for, among others, banks and scholarly journals on prehispanic culture.¹

The Calendar Stone, an Aztec Post-Classic period low relief basalt cylinder, is still the subject of scholarly debate over its prehispanic function and significance. Its role as a national symbol has very definite connotations in this regard. What is the relationship between the stone's prehispanic and posthispanic identities? Is the identity of the stone in its prehispanic historical context the same as that which "has come to symbolize for the Mexican people the beauty and complexity of their

prehispanic heritage" (Klein 1976b:1)?

To answer these questions, it is necessary to consider that in the most recent literature on the stone two clearly defined and opposed positions are taken on the stone's original function and significance. The first claims that the stone functioned as a vertically-oriented astronomical clock, a work of scientific technology.² The second claims that it was a horizontally-oriented platform for use in ritual human sacrifice.³

This schism between the religious and scientific interpretations of the stone has its basis in the history of nineteenth century Mexico, and is directly intertwined with liberal ideology. Because these two basic interpretations have not been superseded in the twentieth century, this thesis will focus on an analysis of their nineteenth century origins. In particular, therefore, it will focus on the scholarly interpretations of the stone, first by Antonio León y Gama, who in 1792 first proposed that the stone was an astronomical clock, and, second, of Alfredo Chavero, who in 1875 first proposed that the stone was a sacrificial platform. The subsequent acceptance or rejection of these initial interpretations must be seen in relation to Mexican liberal ideology. The period of acceptance of León y Gama's interpretation corresponds to the first phase of liberal ideology; the acceptance of Chavero's corresponds to the second phase.

In the first phase, roughly between the end of the eighteenth and the first three quarters of the nineteenth century, liberal ideology was based on Enlightenment philosophy, particularly the notions of science, rationality and the rights of the individual. This was the ideology of emancipation from theology and the right of a Christian monarchy which, in practice, culminated in Mexico's war for independence from Spain between 1810 and 1821. It was the period when León y Gama wrote his interpretation, and when it was positively received. Around the third quarter of the nineteenth century, liberal ideology shifts to an emphasis on the welfare of the state, which superseded individual rights. It did not, however, shift away from the notion of science as emancipatory; rather, the basis of the state was scientifically justified. It was in this period that Chavero proposed that the Calendar Stone was a sacrificial platform, a work used in the service of Aztec religion.

The relationship between the original intended function and significance of the Calendar Stone, or any work of art, and the manner and content of its representation by later interpreters is crucial for art historical research. Insofar as a work of art is a social product, whose social function is ideological, the ideological character of a work of art must be critically exposed. This conforms to Karl Marx' and Frederick Engels' ~~ideas~~

formulation of the nature of ideology as first put forth in The German Ideology of 1845-1846, in which they define ideology as the beliefs, morals, laws, philosophy, "etc.". of the dominant class. These elements are particular to that class, yet generalized as those of society as a whole, so that they serve to mask the actual historical conditions of society and thereby obscure the necessarily antagonistic relations between classes or social groups.

The exposure of the ideological character of a work of art, must be conducted on two fronts. As Kurt Forster states, "The only means of gaining an adequate grasp of old artifacts lies in the dual critique of ideology which sustained their production and use, and of the current interests that have turned works of art into a highly privileged class of consumer and didactic goods" (1972:464). In order to critique the original ideology, it is necessary to critique the ideology of later interpretations. The task of the art historian in the case of the Calendar Stone is to conduct an ideology critique of the two main nineteenth century interpretations which have been essentially perpetuated to the present, thus sustaining different forms of liberal ideology. This persistence of liberal ideology in the interpretations of the Calendar Stone thus constitutes a deceptive scholarly tradition, which, to rephrase Walter Benjamin (1969:261), must be demolished in order to expose the ideological character of the

Calendar Stone in its original historical context.

Although this thesis deals with a subject which is commonly considered as non-western art, the theoretical basis for the formulation and attempted solution of the problem is derived from the works of scholars dealing with western art. The works of Berthold Hinz (1970) and Nicos Hadjinicolaou (1979) have served in different ways as models of the second phase of Forster's dual critique of ideology. Each author has dealt with a single work of art which has a stature of national significance comparable to that of the Aztec Calendar Stone. Hadjinicolaou deals with the criticism of Delacroix' "Liberty Leading the People"; the difference in critical reactions to the painting reflected the antagonistic ideological interests within French society and its conception of the social factions responsible for the 1830 revolution. Hinz exposed the interests of the German bourgeoisie in promoting the "Bamberger Reiter" as a German national symbol in the late nineteenth and twentieth centuries.

This thesis also owes equally as much to the recent contributions made to precolombian art history and archaeology, two by art historians, Cecelia F. Klein (1980) and Mark Graham (1980), and two by archaeologists, Kent Flannery (1976) and Gordon R. Willey and Jeremy Sabloff (1974). Linking all of these works, though to varying degrees is an attempt to reflect on the theory, method

and practice of the disciplines of precolumbian art history and archaeology. Most important, these works are a call for other scholars to participate in the future progress of precolumbian history (whether in art history or archaeology) by critically re-evaluating the progress made in the past.

CHAPTER II

THE CALENDAR STONE AS SOLAR CLOCK

Formal Analysis of the Stone

The Calendar Stone is a cylindrical basalt, low relief sculpture, approximately eight inches deep and thirteen feet in diameter. Surrounding the cylinder are remnants of the basalt matrix from which the stone was carved. Traces of pigment on the surface indicate that the relief was originally once polychromed.

The images on the stone are arranged in a series of concentric bands (Figure 2). In the center of the stone is a frontal face from whose mouth protrudes a bladelike form with a profile face. The eyes are almost entirely circumscribed by a band. The face is also decorated with a horizontal nosebar, pendant earrings, a forehead ornament and a beaded necklace. This face is inscribed in a symmetrical six-lobed form capped by a triangular projection. Within each of the square lobes are depicted four double circles and an image, two of which look like elaborate masks, one like the head of a jaguar, and the fourth, a completely organic form composed of various bars, lines and circles. In each of the two round lobes are images

which appear simultaneously as a fanged profile face and a claw clutching an object of some kind, plus three small double circles. In between these claw-face images and the central face are two small circles framing five small arches. Four large circles and four glyphs surround the lobed motif. Beginning with the upper right and continuing clockwise, the glyphs are composed of a blade bearing a fanged profile face accompanied by one circle, a profile head of a monkey-like creature accompanied by seven circles, an elaborate profile, a tusked image accompanied by one circle, and, finally, what appears to be a crown or head-dress with a flame-like accoutrement.

In the next band are twenty different signs, ranging from frontal and profile animal faces to plant-like forms to geometric forms. Ringing this band is another circle composed of eight triangular projections. The next two bands are composed of a series of small boxes, each inscribing five points, a series of rounded and pointed arches interspersed with double circles, and, last, eight forms combining the preceding motifs. These motifs also occur below the central face. The outermost band is composed of two serpents with elaborately decorated scales and flame-like appendages, four-banded ties on each tail, and a profile face emerging from the jaw of each serpent. Between the point of each tail is a cartouche inscribing thirteen circles and a plant in a container.

The side band of the cylinder is decorated with a horizontal band, a series of motifs composed of half-filled circles atop a flower-like form made of lobes, and more blades.

Antonio León y Gama's Interpretation

The first interpretation of the Calendar Stone was published in 1792, two years after the stone was discovered beneath the central plaza of Mexico City, in Antonio León y Gama's Descripción Histórica y Cronológica...⁴ León y Gama attempted to identify all images on the stone (1832:90-105). He identified the central image as the Aztec solar deity, Tonatiuh; the six-lobed form as the calendric name of the sun, Four Ollin (Four Earthquake or Four Movement); the four images in the square lobes as the calendric signs Four Ocelotl (Four Jaguar), Four Ehecatl (Four Wind), Four Quiahuitl (Four Rain) and Four Atl (Four Water). He termed the images in the round lobes "claws". The four small glyphs encircling the Ollin sign he identified as three calendric glyphs: One Tecpatl (One Flint), One Quiahuitl, Two Ozomatli (Two Monkey), and one non-calendric glyph as a sign related to fire. The twenty small images in the next band he identified as the twenty day signs of the Aztec two hundred and sixty day calendar, formed by a rotating cycle of twenty thirteen-day weeks. The series of small boxes inscribing five points he

identified as numerical units, each box representing five days of the Aztec calendar. Each of the small round arches he identified as numerical signs as well. The pointed arches he viewed as mountains, the large combination motifs as the sun's rays. The flame-like appendages were clouds. León y Gama identified the two serpents as representations of the Milky Way, and the profile faces emerging from the jaws of each serpent, as Yohualtecuhli, the Aztec Lord of the Night. The cartouche at the top of the stone he identified as the date Thirteen Acatl (Thirteen Reed), but he disposed of the images on the side of the cylinder by claiming that they served no purpose and were purely ornamental.

León y Gama (1832:94-95), moreover, associated the calendric signs in the center, Four Ollin, Four Ocelotl, Four Quiahuitl, Four Atl and Four Ehecatl, with the Aztec myth of the five cosmogonic or solar ages, as recorded by the sixteenth century chronicler Alva Ixtlilxóchitl and the eighteenth century chronicler Juan de Torquemada. According to this myth, the Aztecs believed that their universe, or sun, had been destroyed four times, each by a different natural disaster. These four past ages are represented in the rectangles of the Ollin sign. The fifth sun, Four Ollin, the Aztecs considered to be their current epoch, which was to be destroyed by an earthquake.⁵ León y Gama's association of the images of the five solar epochs

with this most fundamental of Aztec myths, which explained the Aztec's conception of time and the creation of the world, was a major contribution to the understanding of the iconography of the stone. Moreover, his work constituted the first synthesis of the calendrical and cosmological information contained in colonial period manuscripts dealing with the Aztecs.⁶

León y Gama's analysis of the Calendar Stone was based on the premise that the foundation of the Aztec system of reckoning time was the actual and relative movements of astronomical bodies. This notion is indisputable. It was also on this basis, however, that León y Gama proposed that the stone was a giant sun dial or solar clock (1832: 91-92). He said that the glyphs on the stone, those in the ring of twenty day signs, the three calendric glyphs in the central zone, and the five solar glyphs, signified the dates on which various ceremonies were to be performed by Aztec priests during the solar year to honor various deities (1832:102). The celebration of such ceremonies was keyed to various solar phenomena, whose occurrence León y Gama insisted "served the priests as a rule for their performance" (1832:92).

The graphic "symbol or hieroglyph for the movements of the sun", according to León y Gama, took the form of the glyphs for the five cosmogonic ages, the arrow which pierced the central image of the sun, and the two claws

to either side of it (1832:92). These images were to be read in order marked on his diagram of the stone: A,I,B,E, C,H,D,F,A (Figure 3). This order signified for him the passage of the sun during the year (1832:93). The term Four Ollin, meaning both Four Movement and Earthquake, thus gained significance for León y Gama as the "sun in its four movements".

León y Gama explained how these movements of the sun were indicated on the stone, and how they served to indicate to Aztec priests when ceremonies should have been performed in terms of the function of the stone as a solar clock. To begin with, he claimed that the stone had to have been positioned vertically, with an exact east-west orientation, facing to the south (1832:105). Second, the stone must originally have been a rectangular parallelepiped with a perfectly square base (1832:92). In the square base were, to León y Gama's mind, eight holes, distributed around the perimeter of the cylinder in four parallel pairs (1832:105). These four pairs of holes are indicated by the letters XZ, PP, QQ and SY on his diagram. Into each of these holes he reconstructed a gnomon or marker. Each pair held a thread suspended between its two members, which would cast a shadow across the face of the stone and thus across the calendric signs. The shadows cast were so exact that they would indicate the points of the zenith, solstices and equinoxes (1832:105) (Figure 4). León y Gama stated that the hours

of noon, 9 AM and 3 PM were also indicated by these cast shadows (1832:108-109). Each day sign represented on the stone thus corresponded to a particular point in the passage of the sun. Aztec priests could consult this giant solar clock to determine at precisely what time of day a ceremony should have been performed by reading the relationship between the shadows cast by the threads and the calendric signs represented on the face of the stone.

Thus, for León y Gama, the Calendar Stone functioned as a precise instrument of science. It demonstrated to him not only the degree to which the ancient Mexicans understood, and could monitor and record, the movements of the sun, but also their knowledge of geometry required for both the placement of the holes in the matrix and the concentric patterning of the images on the surface (1978:5).

It is well documented that the Aztecs indeed observed solar movements and that ceremonies were often performed in conjunction with them.⁷ On these points, León y Gama did not err. That the Calendar Stone functioned as a means of recording such phenomena in the manner he prescribed, however, is untenable. First, León y Gama's argument that the stone was a vertically positioned solar clock determined the orientation. Second, there are only three holes in the matrix and they are not regularly distributed as he claimed. Finally, León y Gama's proposal that the matrix was originally a perfect square was based, he said,

on calculations made from the remnants of the angles of the matrix (1832:96). However, he provided no such calculations, in fact, there are not sufficient remnants of the "angles" to measure.

The Calendar Stone and Early Liberal Ideology

By recognizing that the symbols of the five solar ages on the stone were associated with a myth, and that Aztec priests used the stone as a guide for performing ceremonies, León y Gama was, in essence, acknowledging the ritual and mythical associations of the stone. Yet, clearly, it was the stone's scientific characteristics, and the scientific function which he deduced from them, which were of pre-eminent importance for him. He stated that:

...one ought to consider this stone as an appreciable monument of Mexican antiquity, for the use of astronomy, chronology, and gnomonics, leaving aside the other uses to which the pagan priests put it for their judicial astrology (1832:92).⁸

Judging by this statement, the Calendar Stone was "an appreciable monument of Mexican antiquity" precisely because it had astronomical, chronological and gnomonic uses to which it could be put, that is, because it was a solar clock. These uses were emphasized at the expense of the other, judicial astrological uses. Leon y Gama did not explicitly define the term "judicial astrology", but it was most probably the Aztec practice of interpreting the

calendar as depicted in the tonalamatl to which he referred.⁹ An Aztec priest, for example, would interpret the significance of a child's birthdate and predict what would happen in the future.

In any case, León y Gama was establishing his preference as to what uses could qualify the Calendar Stone as an appreciable monument and which could not. The first uses were scientific in nature, their bases ultimately lying in the observation and recording of the movements of astronomical bodies, that is, in physical fact. The second uses were those based not in fact, but in speculative prediction.

That León y Gama was specifically interested in connecting the Calendar Stone with a scientific function and significance is demonstrated by his interpretation of another Aztec sculpture, the colossal stone statue of Coatlicue, a variant of the Aztec earth deity.¹⁰ Coatlicue is depicted as a creature wearing a skull buckle over a skirt of intertwined serpents (Figure 5). León y Gama described her as a "horrible simulacro". She was interpreted by him in relation to myths, deities and ceremonies primarily connected with war, death and sacrifice.¹¹

León y Gama stated that one could continue to find meanings in her attributes that corresponded to the "innumerable ideas and fictions" that the Mexicans connected with their gods, but that since they did not lead "in essence to the

history of their antiquities, but to their ridiculous and susperstitious rites, I havenot tried to investigate them" (1832:44).¹² Coatlicue seems to have represented for León y Gama the worst aspects of the Mexican past. He even went so far as to say that the Calendar Stone was the "greatest, the most particular and instructive" of the two stones (1832:10).¹³

What accounts for this apparent discrimination in Leon y Gama's treatment of the two monuments? In a letter to one Don Andrés Cavo, León y Gama wrote that one of the reasons he felt it important to discuss the Calendar Stone, and in general to illuminate the workings of the ancient Mexican calendrical system, was that the understanding of them would help refute the "accusations of barbarism made by the Europeans against the ancient Mexicans" (1832:viii).¹⁴ These accusations came from a number of eighteenth century writers who had published works dealing with the New World, in which they described New World culture as savage and barbaric, and inherently inferior to that of Europe. The most notable example of which is that of Cornelius de Pauw's Recherches Philosophiques sur les Americains of 1760-1769, which proclaimed the so-called degenerate character of all forms of natural and human life in the New World.¹⁵

Included in the first edition of León y Gama's work on the stone is a letter commending the work, written by Joseph Rafael Olmedo, who held a chair at the Real Y

Pontificia Universidad de Mexico. Olmedo spoke of the great effect that León y Gama's work would have in contesting publications such as De Pauw's, which he even mentioned by name.¹⁶ How would León y Gama's interpretation be able to counter the "calumny" of such writers as De Pauw? Apparently, it was by interpreting the Calendar Stone as an object for the use of astronomy, chronology and gnomonics. The accusations of barbarism and savagery hurled at the New World were based largely on the indisputable fact that the ancient Mexicans, that is, the Aztecs, practiced human sacrifice and cannibalism. Since the conquest of Mexico in the sixteenth century this fact was used to morally justify colonization and even in the eighteenth century still served as a rationale for Western European colonial expansion. The idea was that native populations needed the intervention of western civilization and religion to fulfill their human potential. By emphasizing the "great knowledge of our ancient Mexicans", León y Gama was attempting to prove the existence of the same forms of knowledge and pursuits that Europeans valued as hallmarks of civilization. The more bloody aspects of ancient Mexican culture could not serve this task.

León y Gama was still faced with the fact that ancient Mexican religion had its judicial astrological, that is, non-scientific, aspects, and that sacrifice played no

small part in it either. He dealt with these problems by suggesting that one had to distinguish between those ancient Mexican sculptures that referred only to the cult of the gods and those that referred strictly to "history" (1978:5). Thus, the Calendar Stone and Coatlicue were already distinguished according to this classification, the latter referred to the cult of the gods and the former to history.¹⁷ The judicial astrological significance of the Calendar Stone was by extension of incidental importance. So, moreover, was the fact that the symbols representing the "four movements of the sun", that is, the calendric names of the suns in the central zone, happened to refer to the most fundamental of ancient Mexican religious beliefs, the mythical destruction and recreation of the universe. Leon y Gama himself disparagingly referred to these beliefs as "fictions" (1832:95). He defended them, however, by comparing the myth of the five solar ages to the ages of man described in the books of one of European civilization's most esteemed writers, Ovid (1832:92). Other eighteenth century writers dealt similarly with the practice of human sacrifice, while defending ancient Mexican culture against accusations of European writers. In his Historia Antigua de Mexico, Francisco Clavigero, for example, confronted the charge of cannibalism and human sacrifice by noting that the same practices had occurred among the Scythians, the Carthaginians and

the ancient Greeks (Keen 1971:573).

✓ León y Gama's concern with the scientific aspect of ancient Mexican culture is due in part to the fact that he was himself a man of science, acclaimed internationally for his astronomical studies. The French astronomer Joseph Lalande praised him highly for his calculation of the eclipse of November 6, 1771 (Gortari 1980:255). León y Gama was also acclaimed for his part in establishing the latitude and longitude of Mexico City (Gortari 1980:255). European as well as Mexican scientific societies honored him with memberships, and his works were published in their journals (León y Gama 1832:v-vii). In addition, he taught mechanics, aereometry and pyrotechnics at the College of Mines in Mexico City (Gortari:1980:255). León y Gama's scientific bent in pursuing the Calendar Stone, therefore, could certainly be explained in part by his own academic pursuits.

In the eighteenth century, mainly in the latter half, there was a profound interest in the theoretical and practical application of science in Mexico. Scientific societies and periodicals were established to provide outlets for debates and for the publication of treatises and experiments; for example, the Gazeta de Literatura founded in 1788.¹⁸ It was also in the late eighteenth century that secular institutions were established, for example, the Real Seminario de Minería at which León y Gama taught,

which was founded in 1792 by royal decree. Such institutions were completely independent from the Real y Pontificia Universidad de Mexico and thus were not bound to the University's theological curricula.

The promotion of science in Mexico occurred during the reigns of the two Spanish Bourbon kings, Charles III (1759-1788) and Charles IV (1788-1808), favored by their policies of reform and Enlightenment. Charles III and Charles IV ordered a number of systematic exploratory expeditions in Mexico; some were directed to carry out reconnaissance in the archaeological zones of Mexico, Chiapas, Tabasco and Puebla, others to collect and catalogue data on Mexico's plant and mineral resources.

The promotion of scientific endeavors served to benefit the economy of both Spain and its colony. Gathering information on resources was a first step, exploiting them was a second.¹⁹ The development of science, especially in the fields of geography, mining and natural sciences, was an aid to the increased exploitation and management of resources.

It is true that the Bourbon kings and the peninsulares, or Spaniards born in Spain but living in Mexico, and the creoles, Spaniards born in Mexico, viewed the pursuit of scientific endeavors as a means to proving to the enlightened countries such as England and France that Mexico too was enlightened. In discussing the effect of

the Enlightenment on Mexico and its "men of letters" of the eighteenth century, Rafael Moreno says that these men,

...cultivated the wisdom which had given rise to progress in other countries, and they tried to establish scientific institutions like those of France and England with the hope that the Americans would cease being useless in the sciences and apt only for theological speculation. Philosophy became more and more the study of nature. They emphasized the capacity of the American in all types of knowledge, they scrutinized history for the scientific glories of the country, and they began to feel proud that they were Mexicans (1966: 163-164).

The key term here is "Mexican", for it was not the peninsulares who thought of themselves as Mexicans, but the creoles, of which León y Gama was one. Peninsulares held most of the top economic and administrative positions, many still crown granted, and controlled most of the wealth in Mexico. Peninsulares viewed themselves as superior by birth. This was the principal justification for the economic, political and social monopoly they held.²⁰ The creoles began to seek a way of breaking these monopolies. It is well documented that it was largely the creoles who strove for independence. As Philip Russell notes, it was:

...restricted access to top jobs, inefficient administration which hurt [them] economically, and the monopolistic commercial position of the Spaniard which probably did more to push [the creoles] toward independence than any other royal policy (1968:12).

By virtue of their birth, creoles could not claim a heritage either in Mexico or in Spain. It suited their purpose, nevertheless, to claim a heritage in the former, specifically in the ancient Mexican or Aztec past, which in creole literature of the period had become synonymous. As John Phelan Leddy points out:

By claiming the Aztec world as their own American heritage they were accomplishing two objectives. First, they were beginning to break some of the ties which bound them to Europe. Second, they were laying the foundation for a rationale justifying their own assumption of political control over the Hispanic-American world (1960:762).

The creole defense, as Benjamin Keen put it, of the culture of ancient Mexico may explain León y Gama's treatment of the Calendar Stone (1971). To ensure that the ancient Mexican heritage was a respectable one, comparable to that of European civilization, the aspects of ancient Mexican culture comparable to that of Europe, especially science, were emphasized.

The reform-minded Bourbon kings' and their colonial supporters' interest in the study and collection of materials from the ancient past was also evident from their direction of archaeological expeditions. Spanish colonial, that is, viceregal, interest was evident as well. The institution which is now the National Museum of Anthropology of Mexico was established during the reign of the Viceroy Bucareli (1771-1779) with his order that all

documents referring to ancient Mexico to be gathered at the University in Mexico City. Then, the Viceroy Revillagigedo (1789-1794) ordered all archaeological remains of ancient Mexico to be gathered at the University. Indeed, it was due to the Viceroy Revillagigedo, as well as the chief architect of the Cathedral of Mexico City, that shortly after its discovery, the Calendar Stone was embedded in the wall of the Cathedral, to be preserved for public view (Leon y Gama 1832:10-11).

Creoles, such as León y Gama, were defending the ancient past and trying to construct from it a laudable heritage as part of their rationale for assuming power in Mexico. But their interests in the ancient Mexican past were quite distinct from their interest in modern Indians. Both creoles and peninsulares feared that there would be a resurgence of ancient Mexican religious beliefs and practices. When the Calendar Stone was found, León y Gama was immediately interested in studying it, and just as quickly, fearing that "the stone might suffer from the curiosity and fanaticism of the people", hastened to have an exact copy made (Keen 1971:302-303).

Indeed, the selective appreciation of ancient Mexican artifacts bore this out. While the Calendar Stone was physically incorporated into the richest and most powerful institution in Mexico, the Church, Coatlicue was buried beneath one of the galleries of the University

shortly after her discovery (Bernal 1980:85) (Figure 6). A nineteenth century source records that she was buried for fear that she "might tempt Indians to their ancient worship" (Ober 1884:314), and she was not exhumed permanently until 1824 (Bernal 1980:85).

For the Bourbon regime, the peninsulares, and the administration in Mexico, the acceptance of the Enlightenment, which included the sciences and the interest in the prehispanic past (though not a claim to its heritage), was essentially superficial. The Viceroy Revillagigedo, for example, was hailed unanimously for his reforms, his interest in the preservation of antiquities, and his interest in empirical science (García Cubas 1889:371-373; Riva Palacio 1974:875-876). Yet, after the execution of Louis XVI, signifying the fall of the French monarchy, Revillagigedo ordered a number of restrictions with the goal of prohibiting the diffusion of any written materials discussing or supporting the French Revolution (Riva Palacio 1974:880). He even embarked on a campaign to solicit money to help the fallen dynasty (Riva Palacio 1974:881). The creoles interest in science and the prehispanic past, by contrast, was profound. The defense of the ancient Mexican past and the promotion of science were two key elements in the creoles justification for independence, in essence a revolt against the Spanish monarchy.

As Luis Villoro suggests, the antagonism between the

pro-monarch peninsulares and the pro-independence creoles was not simply based on a racial difference (1976:312-313). Rather, it was a power struggle between two social classes, each desiring control of Mexico.²¹ The interests in science and the prehispanic past differed, therefore, according to the ideology of each class. The ideology of the creoles, the precursors of the liberals of the nineteenth century, was one in which emancipation was the key to progress and prosperity in the future. They held that emancipation was to be achieved through a federal democracy in which the guarantee of individual rights above all prevailed, justifying individual economic liberties and paving the way for the ownership of private property. The goals of the creoles as early liberals were similar to those of the bourgeoisies of North America and France.²² The interests and rights of individuals were assumed to be in harmony with those of society and the nation as a whole.

The rationalist, anti-clerical position of the early Mexican liberals, among whom must be counted León y Gama, explains his position on the Calendar Stone. Because of his pro-science position and his presentation of the stone as an example of the valuable legacy of the ancient Mexicans decried by the peninsulares, the significance of the Calendar Stone became inextricably linked with liberal ideology.

León y Gama's work on the stone was republished in

1832, edited and annotated by Carlos María de Bustamante. Bustamante was a liberal and had been actively involved in the struggle for independence.²³ It is not known whether León y Gama participated in this struggle, moreover, he died in 1802, several years before the major insurrections of 1810.²⁴ His work, nevertheless, and hence, that on the Calendar Stone, was hailed by Bustamante and even in his own day, León y Gama's work was described by another well-known creole scientist, Antonio Alzate y Ramirez, as having been motivated by a patriotic spirit (1792: June 2). The German liberal, Alexander von Humboldt, praised León y Gama's interpretation, and helped give it international notoreity in his Vue des Cordillères of 1810.²⁵ Until 1875, only a few authors appear to have dealt with the Calendar Stone, and all support León y Gama's interpretation.²⁶ In fact, by 1874, his interpretation was included in a Mexican secondary school textbook on chronology, in which the stone was used to represent the total of ancient Mexican scientific knowledge (Mendóza and Romo 1874).

CHAPTER III

THE CALENDAR STONE AS SACRIFICIAL STONE

Alfredo Chavero's Interpretation

In 1875, Alfredo Chavero, lawyer and playwright, published his first of several essays on the Calendar Stone.²⁷ He was the first author to challenge León y Gama's interpretation of the stone. He began by noting that León y Gama had become the authority on the subject, accepted by Europeans and Americans alike. He then proceeded to take issue with León y Gama's assertion that the stone was a solar clock, or calendar.²⁸ Chavero proposed that the stone was a platform upon which sacrifices were to have been performed, requiring it to be positioned horizontally, rather than vertically as León y Gama had claimed. Chavero believed that the stone was carved in A.D. 1479 during the reign of the Aztec ruler Axayacatl. As evidence, he cited the works of the sixteenth century chroniclers Diego Durán and Alvarado Tezozómoc.²⁹ Both chroniclers spoke of a number of largem round, carved platforms carved for the sacrifice of prisoners of war taken by the Aztecs on their conquests.

Chavero seized as particular evidence the following

passage from Durán's chronicles, which he had found a copy of only in 1867:³⁰

Axaycatl was also occupied in the making of the great and finely worked stone upon which were represented the months, years, days and weeks, all splendidly carved; it was something to see, and with great curiosity, we saw and came upon it many times in the great plaza, next to the canal. It was the stone...that Senor Don Fray Alonso de Montufar, esteemed archbishop of Mexico...ordered to be buried due to the great crimes of death committed upon it (Durán 1964:147-148).

This passage confirmed for Chavero that the stone to which Durán referred, and the Calendar Stone, were one and the same. First, the Calendar Stone was dug up in the central plaza in 1790 where Durán said Axayácatl's stone had been located and then buried in the sixteenth century. Second, the rationale given by the Archbishop for burying Axayácatl's stone--because of crimes of death committed on it--corresponded to the Calendar Stone's assumed function as an Aztec sacrificial platform. Third, that Axayácatl's stone was, according to Durán, carved in the year 1479, two years before the death of the ruler, corresponded to the Aztec year Thirteen Reed, or 1479, indicated at the top of the Calendar Stone. Chavero also noted that it was customary for the Aztecs to mark the date of construction on important monuments. Finally, Durán's description of Axayácatl's stone as one carved with the months years, days and weeks convinced Chavero of its identification as

the Calendar Stone.

Chavero's proposal that the Calendar Stone was a horizontally positioned sacrificial platform, carved for the ceremonial dispatching of Aztec prisoners of war was in all aspects a function diametrically opposed to León y Gama's interpretation. Indeed, Chavero emphasized in his essay of 1875, as well as in the second edition published in 1876, and again in his lengthy articles published in 1877, 1882, 1886 and 1903, that it was precisely over the issue of function that he wanted to establish his differences with León y Gama. The latter's characterization of the Calendar Stone as a monument of astronomical science and as an appreciable monument of Mexican antiquity, was evidently based on the assumption that the stone was a vertically positioned solar clock. Its function and significance here seemed to be inseparable. In addition, it was León y Gama who had purposefully dispensed with any "pagan", hence ritual, or religious uses to which the stone might have been put, although he knew Torquemada's work of 1723, which discussed sacrificial stones.³¹

Chavero's vehement claim that León y Gama was wrong is difficult to reconcile with the fact that in his own way Chavero also viewed the stone as a testimony to the scientific achievements of the ancient Mexicans. "In no monument of antiquity," he said, "does one find so much science and so much marvelous" (1876:15).³² In order to

prove this point, he actually restated a number of the same points that León y Gama had made earlier to prove his own case. Chavero agreed with León y Gama's identification of the five solar ages, for example, and of the twenty day signs. For Chavero, as for León y Gama, the Four Ollin sign represented the four movements of the sun, the serpents represented constellations, the claws represented Oxomoco and Cipactonal, and the rings of combined arches represented the rays of the sun.³³ Chavero, unlike León y Gama, even asserted that all temporal cycles of the Aztecs were represented on the stone. For example, he assigned the value of one to each dot in the scale of the serpents, totalling 360 days. Each pendant represented five days totalling forty, and each of the profile heads in the serpents jaws counted as one fifty-two year cycle.

Thus, in several respects, Chavero actually supported and reinforced León y Gama's interpretation. However, for him, the stone's scientific value appeared to have no relation to the stone's sacrificial function. He says "This stone, at the same time that it was a monument to the sun, under its multiple manifestations" (referring to the actual movements of the sun)..."was a cuauhxicalli for sacrifices" (1886b:747).³⁴ Apparently he was convinced that the Calendar Stone could have functioned as a sacrificial platform and still symbolize the scientific

achievements of the ancient Mexicans. In fact, on balance, in his interpretations the scientific aspects outweigh the sacrificial ones, supporting his assertion that "the stone (was) principally a manifestation of the movements of the sun" (1886b:747).³⁵

Late Liberal Ideology and the Calendar Stone

León y Gama's argument that both the function and significance of the Calendar Stone were scientific was consistent, since its function as a solar clock required a vertical position which was the basis for its scientific significance. Chavero's argument that the stone was a horizontally positioned sacrificial stone and yet also enclosed scientific knowledge lacks this consistency. Evidently, Chavero was attempting to reconcile the stone's function with its significance. León y Gama's interpretation of the stone was consistent with liberal ideology, an ideology which may have prevented him from asserting anything but the stone's scientific function. Chavero too was unquestionably a liberal, as is attested by his political activities during the administrations of the liberal presidents Benito Juárez (1855-1864, 1867-1872) and Porfirio Díaz (1876-1880, 1884-1911).³⁶

It would be easy to say that Chavero was able to conclude that the Calendar Stone was a sacrificial stone because, he, unlike León y Gama, had access to the copy of Durán's manuscript which gave very good evidence for such a

conclusion. Chavero found Duran's information irrefutable. Yet, Leon y Gama was also confronted with the fact that the stone had other than scientific uses and chose not to assert them. Human sacrifice was a cultural phenomenon which, for Chavero, fell under the rubric of religion. Religion was, he claimed, a sociological element which had to be taken into account in the development of a people (1886b:752). Ultimately, knowledge of religion enabled Chavero to measure social or cultural progress, such progress being measured in stages.

Chavero, like many nineteenth century liberals, was heavily influenced by the works of the evolutionists, in his case, certainly by Darwin and probably by Spencer (Keen 1971:427). For them, human universal history had evolved through stages, the completion of each stage marking progress toward the ultimate goal: liberty.³⁷ Chavero's evolutionist tendency can begin to explain the apparent contradiction between what he saw as the Calendar Stone's function and significance. In the first place, Chavero's interpretation of the stone reveals a dichotomy between religious function and scientific significance. In the second place it reveals a juxtaposition of historical phases. One phase is represented by the scientific significance, the other by the sacrificial function. On the one hand, Chavero specifically stated that the stone "enclosed the greatest mysteries of nahua science"

(1876:47),³⁸ not of ancient Mexican or Aztec science; the nahua were one of the ancestral central Mexican groups which were to make up the post-classic period Aztecs. On the other hand, he dated the stone to the Aztec period. The historical, evolutionary relationship between the nahua and the Aztecs is detailed by Chavero in his Historia Antigua of 1886 (1886b).

The nahua, Chavero said, were a simple, agricultural people, whose life was one of communal living and work, and from which was born fraternity and virtue (1886b:158). Their social progress was measured by the development of art, science and the calendar (1886b:158). The nahua had arrived at "the two expressions of human greatness: power through force and riches, and happiness through work and virtue"(1886b:158).³⁹ The Aztecs, by contrast, were a different story. They were a people whose social development had led to distinct class divisions, their subsistence came from agriculture and tribute. Their evolution had led them far away from "the liberty and equality of the tribe" (1886b:612); Aztec social organization "constituted a true despotism" (1886b:612). Thus, the nahua, representing the tribal origins of the Aztecs, constituted a democratic society, the Aztecs, represented an autocratic society.

Intertwined with the evolution of social organization was the evolution of religion, thus forcing Chavero to

confront it in relation to the Calendar Stone. Just as the social organization of the nahua and Aztec were radically different for Chavero, so too was their religion. The nahua professed a religion based solely on the worship of planets which directly influenced their lives, particularly the sun (1886b:117); it was a religion in harmony with their subsistence. Moreover, there was no evidence, he asserted, for the practice of human sacrifice (1886b:117). The nahua's was a contemplative religion based on the universal need of all men to adore a superior being. The Aztecs, on the other hand, had an institutionalized religion which lacked such pacific qualities. Gods took the place of planets: "for a people essentially fanatical, sacrifice and blind obedience to divine will" was unquestionable (1886b:540).⁴⁰ Divine will was that of the Aztec ruler's, who now, turned monarch, was also the image of a god (1886b:561). Under the Aztec, moreover, a sacred war was instituted whereby ritual combat between the Aztecs and enemy territories was the mechanism for providing victims, that is, prisoners of war, who were ceremonially dispatched with the rationale that they were providing sustenance for the gods. The nahua, Chavero said, practiced war only in defense of their fields (1886b:117).

Consistently Chavero underscored the increase in the "superstitious and cruel fanaticism" of the Aztecs, and

the increase of despotic rule. Clearly there was a link between the rise in one and the rise in the other. This phenomenon began, he said, with the emperor Motecuhzoma I, and increased under Axayácatl, during whose reign Chavero thought the Calendar Stone to have been carved. The result of despotism and religious fanaticism was an alienation of the people from the ruler; the emperor became hateful to his people who lived by sacrificing men of other rulers in the costumes of their gods (1886b:563). This, Chavero said, was the "blackest blindfold which covers the light of reason" (1886b:563).⁴¹

Chavero has thus interpreted the Calendar Stone in such a manner that a) the scientific significance, which was of primary importance for him, was associated with the essentially democratic nahua, and, b) the sacrificial function was associated with the later Aztec phase characterized by a despotic monarchy, and in which religion had become fanaticism and sanctioned human sacrifice in the name of the gods. We are left with the impression that Chavero's attempt to reconcile the function and significance of the stone remains ambiguous, or even a refusal to take a definitive position. His evolutionist interpretation of the stone only reveals this ambiguity, it does not resolve it.

From the time independence from Spain was achieved in 1821, until 1858, there was a constant struggle between

conservative and liberal factions. The conservatives favored a monarchical political structure, an internal market system based on the maintenance of large estates and tightly controlled national trade networks, backed by the military and the church. The liberals favored a republican form of government, participation in an international market structure, the rupture of land and trade monopolies, the destruction of Church power, both politically and economically, and the creation of a middle class of small property owners and merchants.⁴² This struggle culminated in the Three Years War, of the War of the Reform of 1858-1862 from which the liberal party emerged victorious. By 1864, the conservatives had put the Austrian Archduke Maximilian in power. Three years later, liberal opposition forced him to surrender the throne and the same year he was put to death by firing squad. Juárez, who had been in exile since 1855, regained the presidency in 1867--the liberal party, the party of the Reform, had come to power. Various factions of it governed Mexico until the outbreak of the revolution in 1910-1911.

One of the most volatile, if not the most volatile, issue of the liberal-conservative clash was that of anti-clericalism. The issue was not religion per se rather the institution of the Catholic Church, which, along with the viceregal administration had controlled Mexico

economically, politically and ideologically since the colonial period. The Church had become the major obstacle to liberal control since its power rested specifically on its control of vast areas of land which the liberals wanted broken up and made available for private ownership. The political and economic power of the Church was linked to the viceregal administration, and ultimately to the Spanish monarchy. Interests of the individuals were subordinated to those of God and King.

A parallel between the liberal position on the Church and the monarchy in contemporary Mexico and Chavero's own position on the existence of similar institutions in Aztec culture can be made: the progress of Aztec culture was stunted by the evolution of a religion sanctifying human sacrifice and by the despotic usurpation of power of Aztec rulers, both the result of imperfect social organization. Moreover, like the despotic nature of Aztec culture and its religion of sacrifice, the institution of the Church and the monarchy, and their conservative backers would necessarily be overcome according to the law of social evolution: the conquering race legitimized its conquest by its social superiority (Chavero 1882:42). Applied to the Aztecs, this historically explained the Spanish conquest because Aztec religion and despotism had failed to maintain a democracy.

Chavero interpreted the Calendar Stone in terms of two historical phases, represented by the nahua and the Aztecs, which he judged according to his own evolutionist position. His judgement of the two phases is clearly based on the positive aspects of the nahua phase, and the negative aspects of the Aztec phase. In favor of the nahua Chavero counted democracy, fraternity, non-institutionalized religion and the development of science (chronology, calendrics and mathematics). In contrast, he counted against the Aztecs a monarchic, desotic government, institutionalized religion and fanaticism requiring human sacrifice. There seems to be a parallel between the opposition of the nahua and Aztecs and that of the liberals and conservatives. The goals of the early liberals were democracy and the secularization of society, that is, putting faith in science instead of the church. The conservatives on the other hand, supported a monarchy and the institution of the church. In addition, while liberal goals had not been realized, conservative goals had.

The relationship expressed between first, the nahua and the significance of the Calendar Stone, and, second, the Aztecs and the function of the stone, thus made a statement about the contemporary relationship between liberals and conservatives. Liberal ideology was evidently paralleled with nahua practice, hence the primary importance of the scientific significance of the stone, and

conservative ideology and practice to the Aztecs, hence, the adamant claim of the stone's sacrificial function. It appears that Chavero had constructed the historical basis for the liberal's ascent to power through his interpretation of the Calendar Stone.

In the late nineteenth century, liberal justification for the formation of a secular state, the key to emancipation, had its basis in the philosophy of positivism, in which the notion of historical progress was viewed in terms of three stages: the theological, the metaphysical and the positive.⁴³ In Mexico, just as in France, positivism was adopted by a middle class, who similarly regarded Mexico's history as having gone through a theological phase, "the era when the clergy and the military held social and political power", and a metaphysical phase, the combatative phase, during which the theological order had been destroyed and the liberals fought the conservatives to put the Reform party into power, and the positive, or present phase. The liberals, who saw themselves as the Mexican middle class, identified their interests with those of the entire Mexican nation (Zea 1974:33).

The doctrine of positivism was outlined in a speech delivered by Gábino Barreda, Secretary of Instruction under Juárez, who had lived and studied in France. In 1867, at the moment of restoration, Barreda delivered his "Oración

"Cívica" in Guanajuato, proclaiming the value of this philosophy for the progress of Mexico, which was entering this new, positive phase of its history. He asserted the need to develop a group of leaders who would originate in the middle class and who would guide Mexico through this positive phase.⁴⁴ They would be trained in the practical application of positivism. Juárez appointed a committee to restructure the educational system in primary and secondary schools under the supervision of Barrera, whose curriculum was adopted by the Mexican congress in 1867 (Meyer and Sherman 1979:407). Heavy emphasis was placed on the disciplines whose practical application would most benefit the material base of Mexico--that is, the physical, natural and mechanical sciences. During the regime of Porfirio Díaz, which saw the greatest fulfillment of the positivist desires of the liberals, a scientific education was just as important. Justo Sierra, official historian and Secretary of Instruction under Díaz, spoke of the necessity of scientific training for all careers, "for the constant exercise of this positivist method (and) for the systematic observation of contemporary society"(1881:105).

Positivism, however, was not a philosophy whose central focus was the individual, rather, it was society as a whole. Liberal ideology of the late eighteenth century and the early nineteenth century had as its focus the emancipation of the individual. Late liberal ideology,

from 1867 on, claimed the scientifically, positivistically based state apparatus as the mechanism of emancipation and progress.⁴⁵ The priorities of the late nineteenth century liberals were the progress and order of the nation, to be achieved by the state. Economically, progress was to be achieved through a reordering of the economic structure in order to conform to the international market structure and thus link up with the international capitalist system.

The achievement of these goals required, however, a strong centralized government which would run the state, not a federal government which the early liberals had called for. While the early liberals demanded sovereignty, the late liberals demanded sovereignty and unity. Late nineteenth century liberalism, demanding control of the nation by the state, and hence, denying the terms of emancipation of early liberalism, was, as Charles Hale put it, to "replace the anarchical and utopian character of the earlier liberalism" (1965:225). The late liberal ideological justification for this shift from the individual to the state was that the state represented the nation, the welfare of which superseded that of the individual.

Given this shift in liberal ideology from the individual to the state and the nation, Chavero's apparently liberal interpretation of the Calendar Stone appears

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problematic, since it spoke, if implicitly, certainly favorably of early liberal ideology. In his analysis of the nahua and the Aztecs, he referred specifically to the concept of the nation. The nahua, he said, lacked national cohesion, there existed "no interest in the patria or nationality" (1886b:117).⁴⁶ This is a major criticism from the stand point of a late nineteenth century liberal such as Chavero, but explicable, according to him, by the fact that they had reached "the highest level of progress compatible with the social milieu in which they lived" (1886b:158).⁴⁷ The Aztecs, he confessed, had distanced themselves greatly from their tribal nahua origins, but, unlike the nahua, had evolved into an "organized nation"; the center of this nation was the imperial capital of Tenochtitlán, which was for the Aztecs "la patria" (1886b:661). The failure of the Aztecs on this score was that they could not unite the people they had conquered, "they did not understand that uniting the interests of all of them into one single interest would have formed a very powerful empire" (1886b:661).⁴⁸

These remarks do not demonstrate an inconsistency with late liberal ideology on Chavero's part, on the contrary, they only prove a consistency. While the Aztecs conceived of a patria, of a nation, they could not unify their conquered territories into one because of the authoritarian and fanatically religious nature of Aztec rule.

The nahua, though more progressive, due to their more democratic social organization, were limited to their stage of progress because of their agricultural subsistence base. They were not conquerors like the Aztecs, nor were they out to accumulate power like the Aztecs. Chavero did not object to the accumulation of power or territory on the part of the Aztecs. He objected to the fact that the rationale for conquest was their fanatic religion justifying human sacrifice, for which the earthly ruler, in the end, was responsible. This Chavero stated, was the "great political error" of the Aztecs (1886b:563). As pointed out earlier, superstition and blind faith, proved the Aztecs down fall. Had they used reason, an immensely powerful empire might have been theirs.

Chavero's criticism of the Aztecs on the subject of the nation only reinforced his negative assessment of them, and by extension of conservative ideology and practice. His criticism of the lack of the concept of the nation in nahua culture did nothing to lessen the positive aspects of it, nor, by extension of liberal ideology of the early nineteenth century. The implication is that just as the nahua represented one stage of evolution, even if progressive, they would, according to the "inflexible law of history", be superseded by another (1886b:158). In contemporary terms, the early liberal phase would rightfully be superseded by a better, more progressive

phase, that is, by the liberals of the late nineteenth century.

The early liberals did not in fact acquire power, as the constant struggle between liberals and conservatives in the first half of the nineteenth century demonstrated. The shortcoming of the individualistic and democratic nature of both nahua and early liberal phases was their failure to achieve more power through national unity, a shortcoming which would be compensated for by the state of the late nineteenth century liberals. It was national power that was at stake, to be acquired by a shift from the individual to the state and from a federal to a centralized government. Speaking of the inevitable process of centralization and social differentiation which would follow the non-centralized and egalitarian phase of the nahua, Chavero said "if liberties diminish, power increases" (1886b:158).

In view of the character of late nineteenth century liberal ideology, an ideology which determined Chavero's interpretation of the Calendar Stone, what at first appeared as a contradiction between scientific significance and sacrificial function finds its resolve. The Calendar Stone proved itself an ideal vehicle for the expression of the justification of this ideology. In his interpretation, Chavero posed a series of oppositions: nahua and Aztec, science and religion, democracy and despotism, [redacted]

demonstrating the progressive nature of the first element of each of these pairs. In contemporary terms the oppositions expressed that between liberals and conservatives, the latter being implicitly linked with the second element of each pair, and the former with the first element. The final opposition was expressed in relation to the existence, or lack of, a unified, centrally organized nation. The nahua had not reached the stage where its existence was possible, they were too individualistic and their social structure too loosely organized to achieve it. The Aztec had reached such a stage, but could not maintain it. They ruled through blind faith and superstition instead of reason. In contemporary terms, this opposition provided the ultimate justification for the ideological claims of the late nineteenth century liberals, who claimed a rational, scientific basis for their ascent to power and who saw that such power had to be achieved through a secular state run in the name of the nation, by a centralized government.

Chavero's claim of the primary importance of the Calendar Stone's scientific significance, and his unequivocal assertion of the stone's sacrificial function thus appears quite consistent within the context of late liberal ideology. As an ideologically determined, and supportive, interpretation, it is no wonder that Chavero declared the Calendar Stone to be the most important

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monument of American antiquity (1886b:747).⁴⁹

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CHAPTER IV

THE CALENDAR STONE AS NATIONAL SYMBOL: CONCLUSIONS

Chavero declared that the Calendar Stone was the most important monument of American antiquity not only because "it enclosed the greatest mysteries of the nahua race", but also because

of its admirable work in relief, in its execution as well as its geometrical division, and in its bizarre, harmonious and aesthetic design (1886b:747). 50

It has remained the most important monument of Mexican antiquity for these same reasons up to the present. In fact, by the end of the nineteenth century, the Calendar Stone had become the single artifact capable of representing all of prehispanic culture to an international audience. In his trilingual Monumentos del Arte Antiguo of 1890, Antonio Peñafiel said,

it cannot be asserted that our National Archaeology lacks grand monuments, because as a representative of a great historic era, we need only look at the Calendar Stone, which is a compendium of the astronomical knowledge of the Aztecs, who were further advanced in the division of time than the very

The national significance of the Calendar Stone was explicitly confirmed by Peñafiel. According to him, the stone could represent Mexico's national archaeology and glorious past. "To write about the Aztec Calendar Stone," he said, was "to describe the most important subject of national archaeology" (1890:102). It "must be the point of union of all those who take an interest in American history and archaeology" (1890:102). It was, moreover, "the key of the social and religious life of the Nahuatl nations" (1890:100). Even more telling of the national import of the stone is that the rationale for study was not just a contribution to the understanding of Mexico's prehispanic past, but was specifically a "duty", as Peñafiel stated, "to describe the best monument of ancient Mexico, and perhaps, in its kind, the grandest in all the American continent" (1890:89). The Aztec Calendar Stone had been elevated from just "an appreciable monument of Mexican antiquity", as León y Gama described it, to the monument of Mexico.

There is no question that the Calendar Stone had become of great national significance by the end of the nineteenth century, as Peñafiel's work demonstrates. The stone's role as national symbol today rests precisely on the same basis as it did for the liberals. This is perhaps best demonstrated by its context in the National

Museum of Anthropology in Mexico City.

The stone stands upright against a wall in the Mexica Hall, aligned dead center on the museum's longitudinal axis. This is to demonstrate that it is the most important object in the museum; in addition, it is the only object in the museum enclosed on two sides by walls, one bearing a black and white reconstruction drawing, the other bearing a color reconstruction and a plaque with a lengthy description of the stone. The concluding remarks sum up the stone's significance according to the museum:

This piece of sculpture reveals profound knowledge of geometry and composition, which together with its scientific importance and its masterful carving constitute it as an appreciable relic of Mexica culture.

These words bear an uncanny resemblance to those written by León y Gama and Chavero. The vertical orientation of the stone in the museum has its verbal parallel in León y Gama's work though, since for him, the stone was a vertically positioned solar clock.

What is particularly striking is that similar pieces lie near the Calendar Stone in the museum, which are acknowledged as having been horizontal platforms and used for sacrificial purposes. In addition, not far from the Calendar Stone is an artifact which by its form alone proclaims that the Aztecs practiced human sacrifice--the tzompantli, or skull rack--complete with stone images of

skulls and bones.

The context of the stone in the museum today implies a denial of its sacrificial function, and hence a refusal to take a critical stand against the ideological function of the stone. By extension, it constitutes a refusal to take a stand against ancient Mexican culture which the stone has apparently come to represent. This applies as well to the twentieth century authors who claim to produce objective scholarly research on the stone. It is most evident in interpretations whose authors believe that the Calendar Stone was basically an astronomical computer.⁵² These authors essentially sustain León y Gama's solar clock theory, although they argue with considerable sophistication, relying on modern astronomy and computer technology in some cases. By maintaining León y Gama's argument of the stone's scientific function, the basic questions as to who made the stone, why and how, are ignored in favor of the mystical language of numerical and astronomical questions which have no grounding in the social reality of Aztec culture.

The wealth of iconographic information contributed by such early twentieth century scholars as Eduard Seler and Hermann Beyer has been deemed insignificant by those following the work of León y Gama. Juan Enríque Palacios, for example, in his publication of 1922, accused both scholars of expounding a "decorative thesis", that is, of

attempting to analyze the iconography of the stone without attributing to it either mathematical or chronological significance. Palacios' position was that there were no "simply decorative elements in the relief" (1922:15). It was precisely through such attempts to understand the significance of the "decorative" elements on the stone, however, that progress in dating and the understanding of the religious implications of the stone were made by Beyer and Seler. In 1957, Raúl Noriega emphatically wrote (in capital letters) that there is no truth to this "decorative" theory (no date:11). Purely decorative elements would evidently undermine Noriega's theory that the stone was used for the computations of the cycles of the sun, moon, Mercury, Venus, Mars, Jupiter and Saturn!

It was the results of such early iconographic studies of Seler and Beyer, considered in relation to Chavero's assertion that the Calendar Stone was a horizontally positioned platform, that has led more recent scholars to attempts to understand the significance of the iconography and the social function of the stone, for example, Townsend (1979) and Umberger (1980). Only those interpreters making use of Chavero's assertion have confronted, to varying degrees, the more concrete circumstances of the Calendar Stone's production. By considering its sacrificial function and its necessarily horizontal position, the successors of Chavero have had to compare the stone

and its iconography to similar examples in manuscripts or carved in stone. Umberger (1980) has reached the most progressive conclusions. In brief, she convincingly argues that the Calendar Stone was carved specifically during the reign of Motecuhzoma II, and the most elaborate version of such platforms carved under his predecessors; these stones were used for the sacrifice of representatives of newly conquered territories as a means of terrorizing the heads of these territories into passivity and hence into Aztec control. Further, she identifies the name glyph of Motecuhzoma II on the stone, as well as dates which refer to both mythical and actual historical events; the references to these events, were, she argues, designed to impress upon the viewer the Aztecs and specifically Motecuhzoma's right to rule. Umberger has reached conclusions which Chavero could possibly have reached were it not for his ideological constraints.

While Chavero was critical of the function of the stone, and of the religious rationale given for this function, he did not critique its ideology; rather, his criticisms were themselves ideologically determined. In actuality, he only pitted the virtues of one ideology against another. Progress toward a new understanding of the historical function and significance of the Calendar Stone can only be achieved if progress is defined in terms of confronting the human, social forces responsible for

the stone's production. It also requires casting off the idealized image which the stone's nineteenth century interpreters created for it.

This task falls not only to those who have maintained León y Gama's interpretation, but those who have maintained Chavero's as well. Even those authors who recognize the stone's sacrificial function have sustained the notion, like Chavero, that the stone has positive aspects, expressed particularly in terms of its aesthetic qualities.⁵³ For example, the Calendar Stone is described as:

unquestionably one of the most successful examples of intricate patterning in the history of art. The most famous of all artistic productions of the American Indian constitutes a magnificently conceived basaltic hymn to the sun, whose thirst and appetite must needs be constantly slaked and satisfied with man's most precious offering, the blood of his veins and the very seat of his life (Nicholson 1971:132).

To admit of the stone's sacrificial function on the one hand and to praise its aesthetic qualities on the other is not to confront the stone on a critical level. On the contrary, it is a perpetuation of the stone's nineteenth century interpretations. Those interpretations have contributed to the transformation of an object used for human sacrifice into a national symbol expressive of a glorified ancient Mexican past. In order to proceed further with a more objective investigation of the Calendar Stone's

prehispanic function and significance, a more critical stance must be taken. The Calendar Stone must be disengaged from its contemporary symbolic functions, themselves derived from ideological needs.

ILLUSTRATIONS

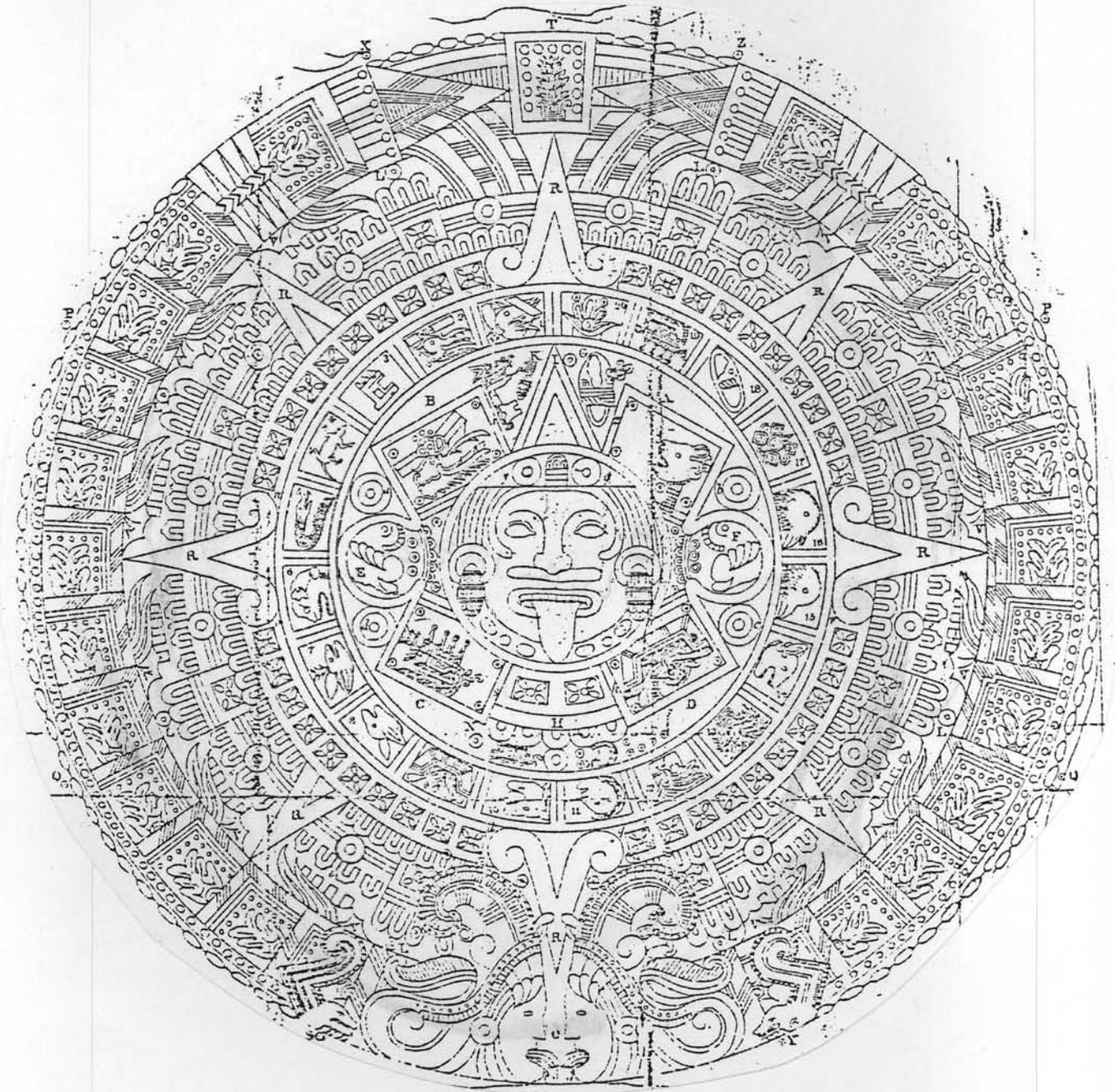
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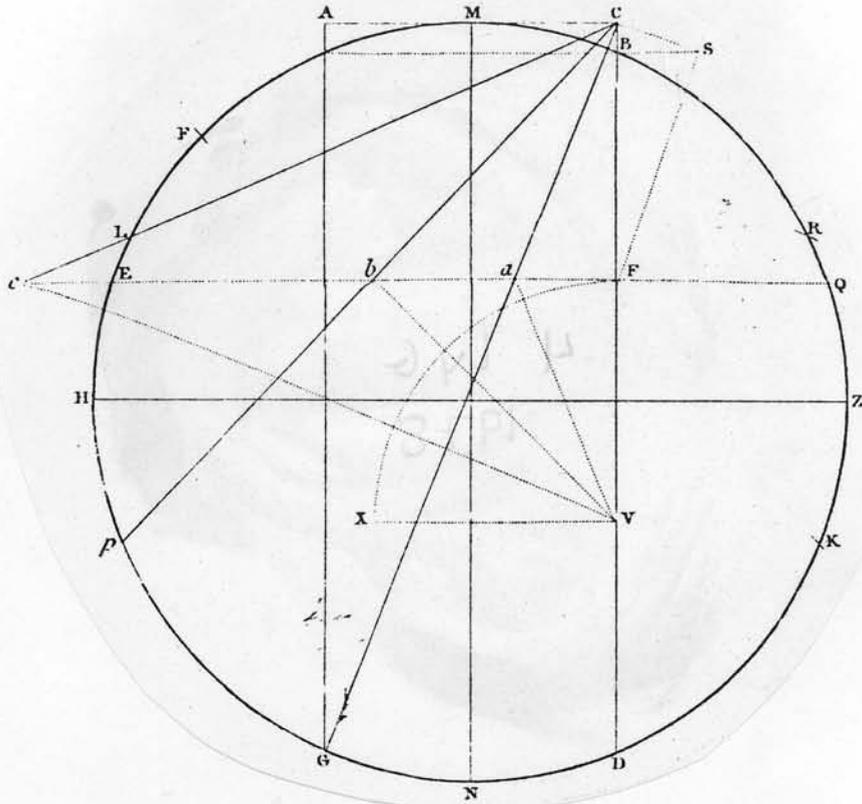
1. The Aztec Calendar Stone.



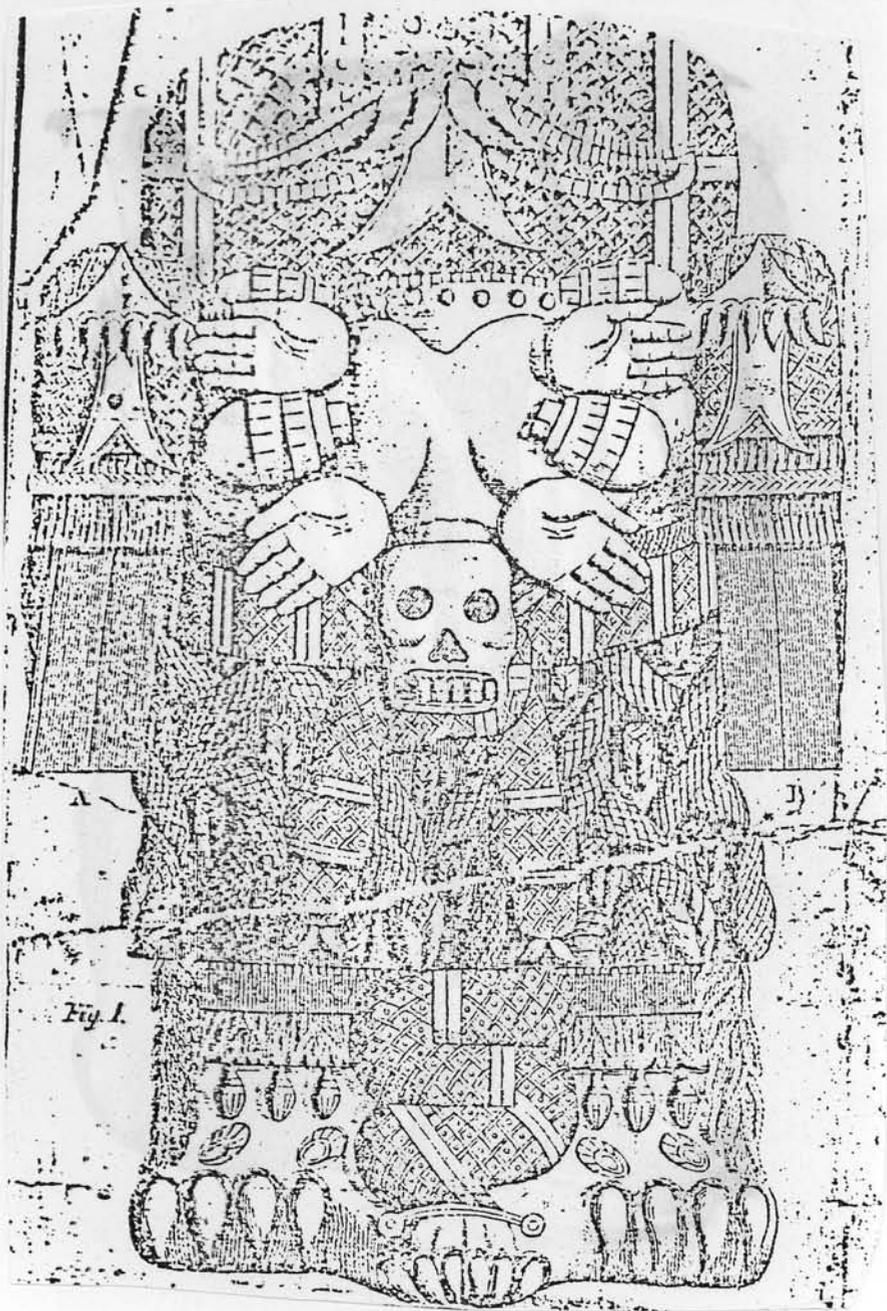
2. Drawing of the face of the Calendar Stone.
(After Noriega 1954).



3. León y Gama's lithograph of the Calendar Stone.
(León y Gama 1832).



4. León y Gama's diagram of the predicted pattern of the movements of the sun across the face of the stone. (León y Gama 1978).



5. León y Gama's lithograph of Coatlicue.



6. The Calendar Stone embedded in the wall of the Cathedral of Mexico City in the nineteenth century. (Bernal 1980).

FOOTNOTES

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¹Journals and publications which bear the Calendar Stone as logo include those of the Museo Nacional de Antropología de Mexico and the Instituto Nacional de Antropología e Historia; other commercial contexts in which the stone is used as a logo include various brands of food and the Banco Mexicano.

²Authors supporting this interpretation include: Aviles Solares 1939, 1957; Noriega 1954, no date; Palacios 1918, 1922; and Tomkins 1976. Nuttall 1886 presents a variation on the stone's calendrical function and argues that the stone was a regulator of the Aztec periodical market day.

³Authors supporting this interpretation include: Aguilera 1977; Beyer 1921; Caso 1928, 1953; Klein 1976a, 1976b; Navarrette and Heyden 1974; Townsend 1979; and, Umberger 1980.

⁴Three short articles in the 1792 Gazeta de Mexico noted the discovery of the Calendar Stone and the publication of León y Gama's work.

⁵The order of these solar epochs varies in different accounts; see Chavero 1877, 1882; Beyer 1921; and, Nicholson 1971a.

⁶See his Chapters 1 and 3. It should be noted that León y Gama did not have at his disposal the most important works of the early colonial period dealing with Aztec culture, those of Sahagún and Durán.

⁷See Sahagún 1957:Book II for descriptions of such ceremonies.

⁸"...prescindiendo de los demás usos que de el hacían los sacerdotes gentiles para su astrología judiciaria". (All translations mine).

⁹The tonalamatl was a bark cloth book in which was painted the series of Aztec weeks, each accompanied by specific attributes, including deities, birds and colors.

¹⁰Ignacio Bernal (1980:85) makes the same comparison.

¹¹ León y Gama devoted an entire chapter to the discussion of this deity (1832:31-44).

¹² "por no conducir a la sustancia de la historia de sus antigüedades, sino a sus ridículos y sus supersticiones ritos, no he pretendido indagar...".

¹³ "Esta segunda piedra, que es la mayor, la más particular e instructiva...".

¹⁴ León y Gama wrote to Cavo: "Cuántas noticias le comunicaría yo, por medio de las cuales, llegaría a hacer manifiestas y claras luces, y muchos conocimientos de nuestros antiguos mexicanos, y para desvanecer la calumnia de bárbaros, con que los han querido denigrar para con todas las naciones europeas!" (1832:vii).

¹⁵ See Keen 1971:268-273 and Brading 1980:32-41 for analyses of this work.

¹⁶ Olmedo referred to "las fieras y brutos mas estupidos el Abate Raynal, el Dr. Robertson, Mons. Buffon, Paw (sic) y otros...(1978:no page)".

¹⁷ León y Gama also noted that because the Spaniards could not recognize the difference between the two types of sculptures, they destroyed a number of monuments (1978:5).

¹⁸ It was in this journal that Alzáte y Ramírez criticized León y Gama. Alzáte y Ramírez took issue with the fact that León y Gama said that he had found the key to "American hieroglyphs" (Gaztea de Literatura July 13, 1792).

¹⁹ The Mexican economy had expanded and become more stable in the eighteenth century, largely due to trade in textiles, sugar, tobacco and silver, which were, aside from agriculture, the bases of the economy (Meyer and Sherman 1979:254-256).

²⁰ See Meyer and Sherman 1979:274-276 for a discussion of creole status in the late eighteenth century.

²¹ Othón de Mendizábal 1973 discusses the origins of the middle class in Mexico.

²² See Brading 1980 and Hale 1955 for a further analysis of early Mexican liberalism.

²³Bustamante's activities included, among others, participation in the Anahuac Congress of 1813, organized to declare a constitution; the Congress was modeled after the French Constitutional Assembly (Cosío Villegas 1974:74).

²⁴None of my sources mentioning León y Gama referred to his specific activities in the struggle for Independence. Had he actively participated, it would seem that later liberal sources would have mentioned it.

²⁵Humboldt supported León y Gama's interpretation, but as a diffusionist, he also tried to prove analogies and contacts between the Old and New Worlds, especially in terms of calendrical and cosmological systems.

²⁶The authors supporting León y Gama were: Mayer 1852; Gallatin 1845; Tylor 1861; Nebel 1964; and, Carbajal y Espinosa 1862.

²⁷A second edition of the first essay was issued in 1876 and a series of articles were published in the Anales del Museo Nacional de Mexico in 1877, 1882, 1886 and 1903. In addition, Chavero discussed the Calendar Stone in his Historia Antigua (1886b).

²⁸León y Gama never actually called the stone a calendar, but his interpretation prompted later writers to call it this.

²⁹Both the works of Durán and Tezozómoc stem from a single, now lost, manuscript called the Crónica X; see Barlow 1945 for an analysis of it.

³⁰Chavero came across the Ramírez copy of Durán in the basement of the Colegio de Minería.

³¹See Torquemada 1723:Book II.

³²"en ningun monumento de la antigüedad se encuentra tanta ciencia y tanta maravilla como en este".

³³Both León y Gama and Chavero believed Oxomoco and Cipactonal, the primordial couple, to have been the inventors of the calendar.

³⁴"Esta piedra, al mismo tiempo que era un monumento al sol bajo sus múltiples manifestaciones, era cuauxicalli para sacrificios", a cuauxicalli refers to a receptacle for sacrifices.

35 "pero siendo principalmente esta Piedra una manifestación de los movimientos del astro".

36 Chavero followed Juárez into exile prior to the installment of Maximilian as emperor, and was a member of the Chamber of Deputies in 1878, as well as having been a member of the Científicos, the staunchest supporters of Díaz.

37 Justo Sierra, Díaz' Secretary of Instruction, closed his chronicle The Political Evolution of the Mexican People with an affirmation of this goal: "Mexican social evolution will have been wholly abortive and futile unless it attains the final goal: liberty" (1969:368).

38 "piedra es esta que encierra los más grandes misterios de la ciencia nahua".

39 "Así llegaron los nahuas a las dos expresiones de la grandeza humana: el poder por la fuerza y la riqueza, y la felicidad por el trabajo y la virtud".

40 "para un pueblo esencialmente fanático, no era discutible el sacrificio y la obediencia ciega a esa voluntad divina".

41 "Tan cierto es que la superstición es la venda mas negra que cubre la luz de la razón".

42 Whether a middle class actually developed in the nineteenth century has been debated, but liberals refer to themselves as the middle class.

43 My primary source for the discussion of positivism, derived from Auguste Comte's philosophy, is Leopoldo Zea (1974) Positivism in Mexico.

44 The entire text of Barrera's speech is in Villegas 1972:41-75.

45 See Hale 1955 for an in depth analysis of the shift in nineteenth century liberalism in Mexico.

46 "lo repetimos, no existía el interés de patria o nacionalidad".

47 "pudo alcanzar el mayor grado de progreso compatible con el medio social en que vivía".

48 "no comprendieron que uniendo los intereses de todos ellos en un solo interés habrían formado un imperio

poderosísimo".

⁴⁹Larraínzar 1875-1878; Orózco y Berra 1880; Rivera Cambas 1880; and, Mendoza and Sánchez 1882 acknowledged the stone's sacrificial function. Batres 1884; Abadiano 1889; and, Peñafiel 1890 sided with Leon y Gama. The reasons for this apparent shift in support from Chavero to León y Gama at the end of the century requires a detailed historical analysis which cannot be done within the confines of this thesis. It may correspond to another shift in liberal ideology or to ideological differences between various liberal factions.

⁵⁰"Aquí damos por primera vez la descripción y explicación completas de tan prodigioso monumento, que creemos el mas importante de la antigüedades americana, y que encierra los mas grandes misterios de la raza nahua, y por su admirable trabajo de relieve, tanto en su ejecucion en su división geométrica y su dibujo bizarro, armonioso y estético".

⁵¹Peñafiel's book was published by agreement with Díaz' Secretary of Development, in conjunction with other preparations made by Mexico's delegation to the Columbian Exposition to be held in Madrid in 1892. These preparations included the construction of a Mexican pavillion, and the reproduction of numerous prehispanic artifacts. The Calendar Stone was sent as a reproduction in papier mâche, but as El Monitor Republicano reported, arrived as a wet mass because the crate in which the stone was packed leaked (1892).

⁵²See note 2.

⁵³See also Caso 1938 and Klein 1976b.

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