

5 • Mesoamerican Cartography

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INTRODUCTION

The Spanish conquistadores who first traveled into continental America between 1517 and 1521 were amazed at the large cities and complex societies this “New World” held. Many of the high civilizations of pre-Columbian America, the Mayas and Aztecs among them, were concentrated in the region that coincides with modern-day Mexico, Belize, and Guatemala (fig. 5.1). Recent scholars have coined the term “Mesoamerica” to describe this area of historic culture. They have singled out this particular region—assigning it the rough geographical limits of 14° north to 21° north—not only for its distinctive civilizations but also because the people who lived there shared certain cultural characteristics; particular to Mesoamerica were the practice of human sacrifice, a diet of beans and maize, the use of a 260-day ritual calendar, and a “century” of fifty-two years.¹

At the moment of first contact with Europeans, much of Mesoamerica was loosely under the control of the Culhua-Mexicas, a powerful ethnic group that led the Aztec empire. The Culhua-Mexica capital city, Tenochtitlan, now lies beneath modern Mexico City. Although this Aztec “empire” was roughly contiguous with the region of Mesoamerica, we still cannot speak of a Mesoamerican state or nation.² The Aztecs did introduce their language, Nahuatl, as the common tongue of Mesoamerica, but they did little else to integrate the multifold ethnic groups of the region into one nation or to instill a national culture in the areas they controlled. Thus the achievements of Mesoamericans are really the achievements of a host of ethnically diverse peoples: the Aztecs, the Mayas, the Mixtecs, and the Zapotecs, to name but a few.

Among their many accomplishments, these cultures of Mesoamerica took the production and use of maps to a level unparalleled elsewhere in the New World. Mesoamerican cartography was a wholly American feat, evolving independently of European, Asian, and African traditions. We can see its uniqueness and its sophistication through surviving artifacts (see appendix 5.1). These maps—those graphic images representing space that involved symbolic transformation—show us the singular

perceptions and presentations of space that Mesoamericans created and developed. At the time of the Spanish conquest, cartography was particularly vibrant in northern Mesoamerica above the Isthmus of Tehuantepec. Here peoples made records using “hieroglyphics, pictorial images and abstract signs.”³ With this writing, Mesoamericans expressed concepts and events without depending on an alphabetic or exclusively phonetic script, and instead of strictly ordered blocks of words, this “picture writing” could be arranged more loosely across the surface of the medium. Such writing, given its pictorial character, nimbly lent itself to mapmaking.

The most numerous examples of Mesoamerican cartography survive from the fifteenth and sixteenth centuries, from both before and after indigenous Americans came under European political and cultural domination.⁴ As early as the Olmecs (1200–300 B.C.), Mesoamericans

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1. Paul Kirchhoff, “Mesoamerica,” *Acta Americana* 1 (1943): 92–107.

2. R. H. Barlow, *The Extent of the Empire of the Culhua Mexica*, Ibero-Americana 28 (Berkeley: University of California Press, 1949). In most cases the spellings of place-names in this chapter reflect the sixteenth-century forms and are derived from the index to Peter Gerhard, *A Guide to the Historical Geography of New Spain*, rev. ed. (Norman: University of Oklahoma Press, 1993).

3. Elizabeth Hill Boone, “Introduction: Writing and Recording Knowledge,” in *Writing without Words: Alternative Literacies in Mesoamerica and the Andes*, ed. Elizabeth Hill Boone and Walter Mignolo (Durham: Duke University Press, 1994), 3–26, esp. 17.

4. “Mesoamerican” and “indigenous” are used to describe artifacts that are predominantly native in style, that is, that “display traits of pictorial content, style, composition, or formal symbolic conventions derived from indigenous traditions”; John B. Glass, “A Survey of Native Middle American Pictorial Manuscripts,” in *Handbook of Middle American Indians*, vol. 14, ed. Howard Francis Cline (Austin: University of Texas Press, 1975), 3–80, esp. 4. These artifacts may date to before or after the Spanish conquest. “Pre-Columbian” and “pre-Hispanic” refer strictly to those made before the conquest.

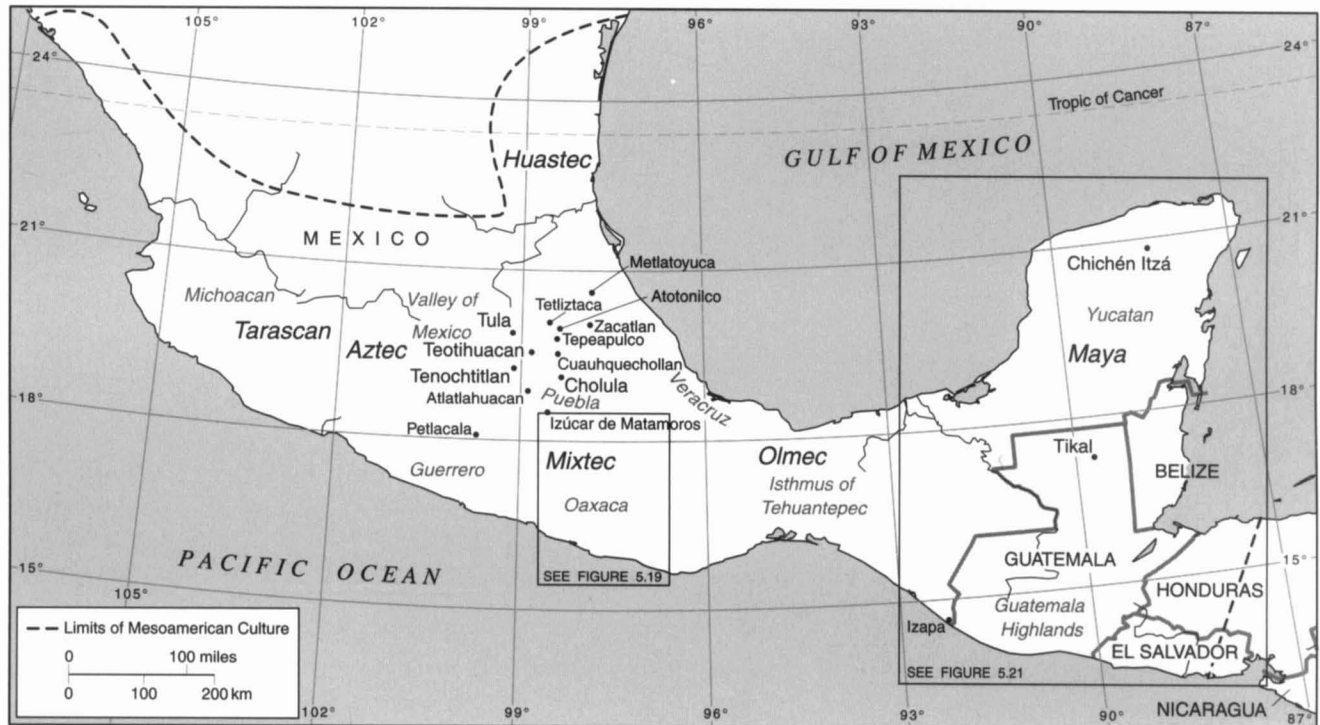


FIG. 5.1. REFERENCE MAP OF MESOAMERICA.

made schematic representations of their cosmos; by the beginning of the first millennium A.D., carved stone tablets called stelae show the cosmic layout, standard and widespread (fig. 5.2). A few extant murals painted between A.D. 200 and 1200 attest to a Mesoamerican tradition of landscape painting (see appendix 5.2). However, idealized sculpted cosmic models and landscapes are not the same as maps, and since examples of maps are usually of a late date, it is difficult to hypothesize about the influence, or relation, between the forms.⁵ Although its great florescence was over by 1600, Mesoamerican cartography survives today in the indigenous community maps called *lienzos*, which combine representations of territory with accounts of history and whose precursors date back to the pre-Hispanic period.

WHAT IS A MESOAMERICAN MAP?

Since the moment of first contact with Europeans, the maps made by Mesoamericans have been used and commented on by outside observers. The corpus of Mesoamerican cartographic works has been of interest to scholars for its diversity: an early article on the subject cast light on the variety of maps when it discussed the *Plano en papel de maguey* (fig. 5.3), the *Mapa de Metlatoyuca* (fig. 5.4), and the *Codex Kingsborough fol. 204r* (fig. 5.5). The *Plano* is a cadastral map of agricultural and house lots, probably drawn to scale, and the *Kingsborough* is a community map that has absorbed Eu-

ropean conventions of landscape. Most typical is the *Metlatoyuca*, which combines cartography with genealogy in a schematic depiction of space defined by hieroglyphic toponyms.⁶

5. George Kubler, *The Art and Architecture of Ancient America: The Mexican, Maya and Andean Peoples*, 3d ed. (New York: Penguin Books, 1984), 316, has pointed out how “the landscapes in the Temple of the Warriors bring to mind the strip-like arrangements and the cartographic designs of south Mexican [Mixtec] manuscripts.” And Thompson notes that mountains on a colonial map of Tabasco “are very like those on a fresco of the Temple of the Jaguars at Chichen Itza” (John Eric Sidney Thompson, *A Commentary on the Dresden Codex: A Maya Hieroglyphic Book* [Philadelphia: American Philosophical Society, 1972], 10). However, the aims of the artists of landscapes would have been quite separate from those of mapmakers: landscape painters would have been attempting to create a pictorial illusion of deep space using largely pictorial images, while mapmakers would not; on the flat, nonillusory surface of their medium, they would have been representing a given landscape, primarily with symbols and hieroglyphs.

6. The maps were discussed by Eulalia Guzmán, “The Art of Map-Making among the Ancient Mexicans,” *Imago Mundi* 3 (1939): 1–6. Guzmán accepted the *Metlatoyuca* map’s provenance, since it was reportedly found at that site in northern Puebla. Recently Berger, who also accepts the map as being from *Metlatoyuca*, has tried to match the hieroglyphic toponyms on the map to place-names in the *Metlatoyuca* (*Metlatoyuca*) area: Uta Berger, “The ‘Map of *Metlatoyuca*’—A Mexican Manuscript in the Collection of the British Museum,” *Cartographic Journal* 33 (1996): 39–49. But rather than fixing the map more securely in the *Metlatoyuca* region, her correlations, to my mind, cast doubt on such a provenance. The question of the map’s origin has been taken up by Harold B. Haley, Thoric N. Cederström, Eduardo Merlo J., and Nancy P. Troike, who argue, based on topographic likeness, style, and hieroglyphic correlations, that it belongs among the Coixtlahuaca

Since Mesoamerican cartography was born and matured without contact with cartographic traditions outside the New World, the problem of its relation to other traditions and to our own looms large. Did Mesoamericans make maps? Yes—they certainly created a host of artifacts that we can call maps, using the definition adopted in these volumes. But this answer overlooks the Mesoamerican viewpoint. We are bound to ask, Did Mesoamericans themselves explicitly think of maps as objects in their own right? Or did they recognize maps only implicitly through their use and functions?

Vocabulary sheds some light on the Mesoamerican view of maps. In many cases native speakers identified maps as a subset of writing—which, as I noted above, comprised hieroglyphs, pictures, and symbols. When Mesoamerican writers described maps in native-language documents, they most often would begin with a general term that could be used to describe anything painted or written, then hone its meaning through modifiers and context. For example, one sixteenth-century text in Nahuatl, the Aztec language, calls a map a *tlapallacuillopan* (colored painting or writing), telling us that “the ruler determined by means of a colored painting or writing how the city was placed.”⁷ A Yucatec Maya-language document of 1600 describes maps as *pepet dz’ibil* (circular paintings or writings).⁸ In using such malleable terms, sixteenth-century Mesoamericans could be more specific than coeval Spaniards, who regularly called maps *pinturas* or *descripciones*.

Perhaps the best indication that Mesoamericans identified maps as a distinct body of objects comes from the three sixteenth-century dictionaries that translated principal Mesoamerican languages.⁹ All three include native-language entries for *mappamundi*.¹⁰ In defining the term,

(Oaxaca) group (appendix 5.1). See Harold B. Haley et al., “Los lienzos de Metlatoyuca e Itzquitepec: Su procedencia e interrelaciones,” in *Códices y documentos sobre México: Primer simposio*, ed. Constanza Vega Sosa (Mexico City: Instituto Nacional de Antropología e Historia, 1994), 145–59.

7. “Oquinemili in tlatoani, tlapallacuillopan omotlali in altepetl” (my translation). Bernardino de Sahagún, *Florentine Codex: General History of the Things of New Spain*, 2d rev. ed., 13 vols., trans. Arthur J. O. Anderson and Charles E. Dibble (Santa Fe, N.Mex.: School of American Research, 1970–82), 9:51 (bk. 8, chap. 17). Aggregate words (like *tlapallacuillopan*) are typical of agglutinative languages such as Nahuatl.

8. Ralph Loveland Roys, *The Indian Background of Colonial Yucatan* (Washington, D.C.: Carnegie Institution, 1943), 184.

9. Alonso de Molina, *Vocabulario en lengua castellana y mexicana y mexicana y castellana*, 2d ed. (Mexico City: Editorial Porrúa, 1977), fol. 82r; Francisco de Alvarado, *Vocabulario en lengua mixteca*, facsimile of 1593 ed. (Mexico City: Instituto Nacional Indigenista and Instituto Nacional de Antropología e Historia, 1962), fol. 146r; and Juan de Córdoba, *Vocabulario castellano-zapoteco*, ed. Wigberto Jiménez Moreno, facsimile of 1578 ed. (Mexico City: Instituto Nacional de Antropología e Historia, 1942). A fourth native language dictionary exists: *Diccionario de motul*, a Maya-Spanish dictionary, believed to have been



FIG. 5.2. COSMOGRAPHIC STELA AT IZAPA. This stone stela was set up on a large open plaza in Izapa, in Mexico near the Guatemalan border ca. 300 B.C.–A.D. 1. Little is known about the Izapan civilization, but in this stela we find a very early version of the cosmographical schema that prevailed in Mesoamerica until the sixteenth century. At the stela’s center is the *axis mundi*, or world tree. Its eight branches give forth fruit and leaves, and its roots stream out from the base of the trunk. These roots are shown as they penetrate a horizontal panel that seems to be the surface of the earth, for on it sit several human figures. Below this platform are a series of triangles, their apexes supporting the earth layer; these may be a stylized rendition of an earth deity, perhaps the teeth or skin of the giant crocodile that many Mesoamerican peoples took to be the surface of the earth. The baseline is dominated by a pattern of waves, undoubtedly the primordial sea. The tree’s branches reach up to support a stylized sky band, which crowns the entire scene. This general understanding of the cosmos, mapped here on stela 5, remained constant for over a thousand years.

Size of the original: 2.55 × 1.60 m. From Gareth W. Lowe, “The Izapa Sculpture Horizon,” in *Izapa: An Introduction to the Ruins and Monuments*, by Gareth W. Lowe, Thomas A. Lee, and Eduardo Martínez Espinosa, Papers of the New World Archaeological Foundation 31 (Provo: New World Archaeological Foundation, 1976), 17–41, fig. 2.10 (stela 5). By permission of V. Garth Norman, American Fork, Utah.

written by Antonio de Ciudad Real in the late sixteenth or early seventeenth century. It has few entries that are explicitly cartographic like *mappamundi* (manuscript in the John Carter Brown Library, Providence, Rhode Island; photostat in the New York Public Library, 6 vols.).

10. The Spanish friars cited above began with Spanish word lists, probably drawn from Antonio de Nebrija’s *Vocabulario de romance en latín* of 1516 (Frances E. Karttunen, *An Analytical Dictionary of Nahuatl* [Austin: University of Texas Press, 1983], xxx). *Mappamundi* was the only explicitly cartographic vocabulary term these friars translated.



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FIG. 5.3. PLANO EN PAPEL DE MAGUEY. The Plano en papel de maguey (plan on maguey-fiber paper) is a very rare early sixteenth-century manuscript map of a part of the Valley of Mexico. Despite its name, it is painted on a large sheet of *amatl* paper, whose edges have frayed. This postconquest indigenous map is a mosaic of about three hundred square house lots, each containing a house and seven raised-bed plots separated by irrigation ditches. The name of the householder appears above each house, written both in the Latin alphabet and with native hieroglyphs. Separating each vertical row of house lots from the next are roads alternating with canals. These lots were likely created out of the shallow swampy lakes of the Valley of Mexico; a stone dike seen as a darker line runs along the entire left side of this cultivated zone to protect it during times of flood. See also p. 224 below.

Size of the original: 238 × 168 cm. Photograph courtesy of the Instituto Nacional de Antropología e Historia, Museo Nacional de Antropología, Mexico City (35-3).

Mesoamericans showed that they understood a certain class of cartographic artifacts—*mappaemundi*—to exist in their own sphere. In the Nahuatl dictionary of 1571 compiled by the Franciscan Alonso de Molina (d. ca. 1579), informants provided a richly inflected description of *mappamundi o bola de cosmografía*. It was *cemanauactli ymachiyo, tlalticpactli ycemittoca*, the first term meaning “the world, its model” and the second “that through which the surface of the earth is studied, gazed at, absorbed.”¹¹ The translation of *mappamundi* into Mixtec provided by another Spanish friar, Francisco de Alvarado (d. 1603), in the late sixteenth century was *taniño nee cutu ñuu ñuyevui*, a phrase meaning a “representation of the entire world,” derived from the Mixtec terms “example/model,” “all,” and “world.”¹² The Zapotec rendition of *mappamundi* was *tòanacàaxilohuàaquitolilayò*, derived from Zapotec words meaning “painting” and “all the earth.”¹³ It is always possible that native speakers, prodded by the insistent questions of Spanish friars, invented these terms on the spot. However, it seems more likely that they understood *mappaemundi* to be akin to their own cosmographical maps and had the words to name them.

Mesoamericans also implicitly identified maps by using painted documents for wayfinding and for property management—functions any modern user assigns to maps. European writers of the sixteenth century who witnessed Mesoamerican maps being used in indigenous contexts described their being put to these familiar uses. Both the sixteenth-century conqueror Hernán Cortés (1485–1547) and his cohort Bernal Díaz del Castillo (1492–1581) told of Mesoamerican itinerary maps used for wayfinding, complete with topographical detail. Cortés received a Culhua-Mexica map that he wrote of as “a cloth with all the coast painted on it” (*figurada en un paño toda la costa*), wherein he could see coastal rivers and ranges. Díaz del Castillo seconded Cortés’s descrip-

tion of wayfinding maps of cloth, writing of “a hennequen cloth . . . on which all the pueblos we should pass on the way were marked as far as Gueacalá.”¹⁴ Another astute observer, Alonso de Zorita (ca. 1512–85), described the Aztecs’ use of maps of large districts to keep track of property ownership.¹⁵

We can accept that sixteenth-century Mesoamericans identified maps explicitly (in verbal definitions) and implicitly (through use). However, we lack a full account of sets and subsets they would have used to create categories among their own cartographic products. Mindful of this deficit, scholars have found that the most satisfying way to classify maps is by subject matter. Mesoamerican maps fall into four general categories:

1. Terrestrial maps that include accounts of history; also called cartographic histories
2. Terrestrial maps without a historical narrative; these include property plans and city plans, and possibly itinerary maps
3. Cosmographical maps that show either the horizontal cosmos, divided into five quadrants (the cardinal directions and the center), or the vertical cosmos, divided into layers along an *axis mundi*, the world tree
4. Celestial maps of stars and constellations in the night sky.

The material evidence from which we derive these categories is heavily weighted with maps made after the con-

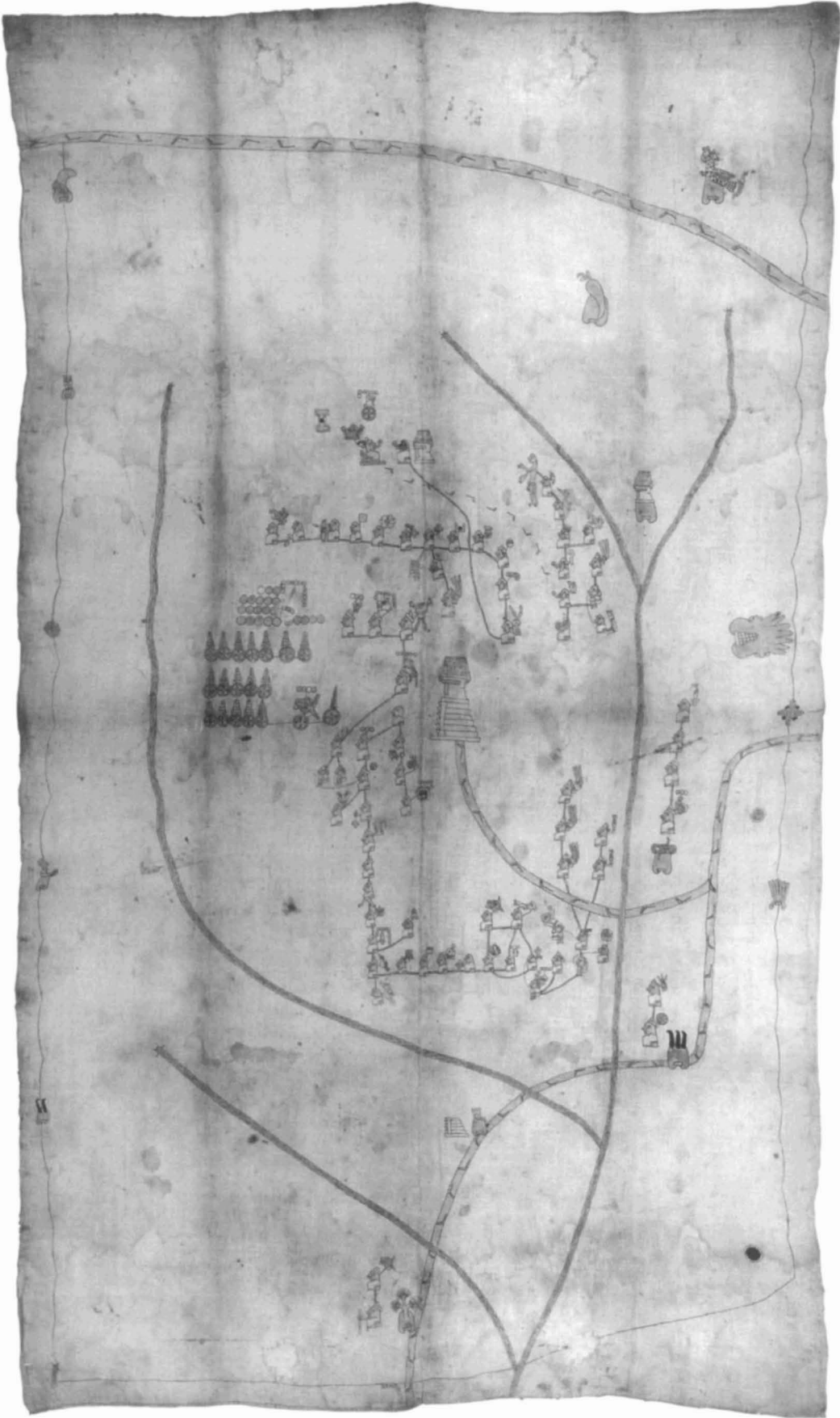
11. Molina, *Vocabulario*, fol. 82r (note 9). For more recent dictionaries by linguists based on Molina, see R. Joe Campbell, *A Morphological Dictionary of Classical Nahuatl* (Madison: Hispanic Seminary of Medieval Studies, 1985), and Karttunen, *Dictionary*. The word some scholars apply to map, *quaxochamatl*, literally “the paper of the boundaries,” is not attested in Molina.

12. Alvarado, *Vocabulario*, fol. 146. Mary Elizabeth Smith (personal communication, 1993) supplied the meaning of the phrase. From her reversal of Alvarado’s Spanish-Mixtec word list into Mixtec-Spanish, she has found *taniño* = *figura, señal, muestra, dechado, materia, molde, pisada*; *nee cutu* = *todo, de cosa continua*; *ñuu ñuyevui* = *mundo*. See also the complementary modern work by Evangelina Arana and Mauricio Swadesh, *Los elementos del mixteco antiguo* (Mexico City: Instituto Nacional Indigenista and Instituto Nacional de Antropología e Historia, 1965).

13. Juan de Córdoba, *Vocabulario*, fol. 258v (note 9). Component parts are *lohuà*, meaning *lo pintado*; *quitobi*, meaning *todo*; and *layò*, meaning *tierra*.

14. Hernán Cortés, *Letters from Mexico*, rev. ed., trans. and ed. Anthony Pagden (New Haven: Yale University Press, 1986), 94, 340, 344, 349 (quotation on 94), and Bernal Díaz del Castillo, *The True History of the Conquest of New Spain*, 5 vols., ed. Genaro García, trans. Alfred Percival Maudslay, Hakluyt Society Publications, ser. 2, nos. 23, 24, 25, 30, and 40 (London: Hakluyt Society, 1908–16), 5:12, 14, 24–25 (quotation on 12).

15. Alonso de Zorita, *Life and Labor in Ancient Mexico: The Brief and Summary Relation of the Lords of New Spain*, trans. Benjamin Keen (New Brunswick: Rutgers University Press, 1963), 110.





quest in the sixteenth century. However, it is by default our best view of Mesoamerican cartographic traditions. Spatial models of the cosmos abound in sculpture and architecture, some examples dating back to the Olmecs, who founded urban centers as early as 1200 B.C. We do not know if other kinds of maps were made so early, owing to the fragmentary nature of the evidence.¹⁶

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FIG. 5.4. MAPA DE METLATOYUCA. This large sixteenth-century map, painted on a cloth sheet, is a typical Mesoamerican nexus of history, genealogy, and territory. The territory shown on the map is the area around a town represented by a stepped pyramid temple at center; the dark branching lines on the sheet represent rivers. The roads that cross the top of the map and cut across the lower right quadrant are marked with footprints. A thin black line runs along the edge of the map, punctuated with hieroglyphic place-names that name regional boundaries. Other hieroglyphic place-names, representing the network of villages around the central town, lie along the roads. Clustered in the center of the map are human figures, many connected by a ropelike cord that indicates a family tie; these genealogies probably depict the ruling lineages of the region. This map was purportedly found in the nineteenth century in a stone box in the ruins of Metlatoyuca, in the modern state of Puebla, but its hieroglyphs have never been reliably decoded.

Size of the original: 175 × 102 cm. Copyright the British Museum, London (Add. MS. 30,088).

FIG. 5.5. MAP IN THE CODEX KINGSBOROUGH. This manuscript map of ca. 1555 in a bound book covers the region around the town of Tepetlaoztoc, “Hilly Place of the Cave,” situated in the eastern part of the Valley of Mexico. In the upper left side of the map is the hieroglyphic place-name of Tepetlaoztoc, a hill symbol (*tepetl*) marked with an annular shape that is the wide open mouth of the earth monster, symbolizing a cave (*oztoc*). Other toponymic hieroglyphs name settlements and geographical features. Whereas a more conservative Mesoamerican mapmaker would have used only these place-names on this map, this artist stretches the symbolic vocabulary of rocks and hills to create a landscape, probably following the example set by imported European prints. The artist links hill symbols to show hilly ridges, rippling like waves along the diagonal axis of the map. The upper right triangle of the map is filled with drawings of trees, their forms probably derived from European examples, to show us the verdant and forested valley floor, while the lower left triangle contains hill and rock symbols to characterize this craggy area. The roads that crisscross the Tepetlaoztoc region are marked with footprints, and the two rivers, one at the top edge and the other along the bottom right corner, are punctuated with swirling eddies.

Size of the original: 21.5 × 29.8 cm. Copyright the British Museum, London (Add. MS. 13,964, fol. 204r [previously 209r]).

16. There is an abundant literature on cosmological models in Mesoamerican architecture. See, for example, David Carrasco, *Quetzalcoatl and the Irony of Empire: Myths and Prophecies in the Aztec Tradition* (Chicago: University of Chicago Press, 1982); idem, *Religions*

HISTORIOGRAPHY

To the casual viewer, the most distinctive and definitive element of Mesoamerican maps is the hieroglyphs used for toponyms. To a more practiced eye, many Mesoamerican maps distinguish themselves by including history. So it is hardly surprising that these two elements—hieroglyphs and history—first attracted scholarly attention. By the end of the nineteenth century, maps were firmly in the embrace of historians, who looked at the history they contained, and epigraphers, who looked at writing systems. Both these paths of inquiry, while doing much to advance understanding of history and written language, did little to explore a third and crucial area: the distinctive spatial quality of Mesoamerican maps, including questions of how maps represent space, which spaces get represented, and why. This has proved a fecund subject in recent years.

The study of the historical component of maps has had a long and illustrious record, as chroniclers from the sixteenth century onward have used cartographic histories—along with other pictorial manuscripts—as the sources for their prose histories. Fernando de Alva Ixtlilxochitl (ca. 1578–1648) gives us one of the clearest examples of a dependence on cartographic history. This mestizo descendant of pre-Hispanic nobility based his two main works, the *Relaciones* and the *Historia chichimeca*, at least in part upon the Codex Xolotl, a cartographic history.¹⁷ Ixtlilxochitl's esteem for native pictorial sources was common to his predecessors and his contemporaries, such as Fray Diego Durán and Diego Muñoz Camargo. The value cartographic histories like the Codex Xolotl had to historians meant that they were avidly collected and have been carefully preserved since the sixteenth century.

Writing history based on cartographic histories continues to the present; perhaps this century's most breathtaking achievement in this arena was Alfonso Caso's 1949 article. Caso correlated the two genealogies that appear on the 1580 Mapa de Tezacoalco (fig. 5.23) with those found in a group of Mixtec screenfold manuscripts to prove that these manuscripts were also historical accounts, rather than mythical ones as had been presumed. Using the map, Caso began to reconstruct the histories of Mixtec ruling families reaching back to the tenth century. Caso's lifework culminated in the posthumous publication of *Reyes y reinos de la Mixteca* in 1977–79.¹⁸

Fixing his gaze on the genealogies sketched in the Tezacoalco map, Caso gave short shrift to the dozens of hieroglyphic place-names that also distinguished it. The study of epigraphy was a separate concern from the study of history, and the decoding of hieroglyphic toponyms in Nahuatl had received so much attention since the nineteenth century that it had come to dominate the study of

maps. The great tide of nationalism that swept Mexico after independence (1821) had buoyed up interest in the pre-Hispanic period in general, with epigraphy also receiving its due. In addition, the deluxe publication of the Codex Mendoza in 1831 delivered a Rosetta Stone into the hands of scholars.¹⁹ This book of about 1541 records Nahuatl hieroglyphic place-names along with alphabetic transliterations (fols. 17–55). In 1877 the Mexican scholar Manuel Orozco y Berra (1810–81) published the first of a series of articles on hieroglyphic place-names, particularly those of the Codex Mendoza; his earlier *Materiales para una cartografía mexicana* of 1871 amply demonstrates how the study of Mesoamerican cartography centered on the distinctive hieroglyphic place-names of indigenous maps.²⁰ By the 1880s, decoding rebuslike Nahuatl place-names was something of a popular sport for educated Mexicans, as is made clear by Antonio Peñafiel's 1885 *Nombres geográficos de México*, a color-

of Mesoamerica: Cosmovision and Ceremonial Centers (New York: Harper and Row, 1990); Mary Ellen Miller, "The Meaning and Function of the Main Acropolis, Copan," in *The Southeast Classic Maya Zone*, ed. Elizabeth Hill Boone and Gordon Randolph Willey (Washington, D.C.: Dumbarton Oaks, 1988), 149–94; Johanna Broda, "Templo Mayor as Ritual Space," in *The Great Temple of Tenochtitlan: Center and Periphery in the Aztec World*, by Johanna Broda, David Carrasco, and Eduardo Matos Moctezuma (Berkeley: University of California Press, 1987), 61–123; Eduardo Matos Moctezuma, "Symbolism of the Templo Mayor," and Johanna Broda, "The Provenience of the Offerings: Tribute and Cosmovisión," both in *The Aztec Templo Mayor*, ed. Elizabeth Hill Boone (Washington, D.C.: Dumbarton Oaks, 1987), 185–209, 211–56; María Elena Bernal-García, "Carving Mountains in a Blue/ Green Bowl: Mythological Urban Planning in Mesoamerica," 2 vols. (Ph.D. diss., University of Texas, 1993); Elizabeth P. Benson, ed., *Mesoamerican Sites and World-Views* (Washington, D.C.: Dumbarton Oaks, 1981); and Linda Schele, "The Olmec Mountain and Tree of Creation in Mesoamerican Cosmology," in *The Olmec World: Ritual and Rulership* (Princeton: Art Museum, Princeton University, 1995), 105–17.

17. Ixtlilxochitl may also have used the Mapa Quinantzín and the Mapa Tlotzín. See Charles Gibson, "A Survey of Middle American Prose Manuscripts in the Native Historical Tradition," in *Handbook of Middle American Indians*, vol. 15, ed. Howard Francis Cline (Austin: University of Texas Press, 1975), 311–21, and Charles Gibson and John B. Glass, "A Census of Middle American Prose Manuscripts in the Native Historical Tradition," in *Handbook of Middle American Indians*, vol. 15, ed. Howard Francis Cline (Austin: University of Texas Press, 1975), 322–400, esp. 337–38.

18. Alfonso Caso, "El Mapa de Tezacoalco," *Cuadernos Americanos* 47, no. 5 (año 8) (1949): 145–81; idem, *Reyes y reinos de la Mixteca*, 2 vols. (Mexico City: Fondo de Cultura Económica, 1977–79).

19. Edward King, Viscount Kingsborough, *Antiquities of Mexico, Comprising Fac-similes of Ancient Mexican Paintings and Hieroglyphics* (London: Robert Havell and Conaghi, 1831), vol. 1.

20. Manuel Orozco y Berra, "Código Mendocino: Ensayo de desciframiento geroglífico," *Anales del Museo Nacional de México*, época 1, vol. 1 (1877): 120–86, 242–70, 289–339; vol. 2 (1882): 47–82, 127–30, 205–32, and idem, *Materiales para una cartografía mexicana* (Mexico City: Imprenta del Gobierno, 1871).

fully illustrated edition based on place-names from the Codex Mendoza.²¹

This work of decoding—figuring out the hieroglyphic place-names on maps—was needed to understand what places were being represented, which in turn was a preamble to questions of how and why. Cartography of Nahuatl speakers came first, in part as a legacy of the Codex Mendoza “codebook.” The studies of Kirchhoff, Reyes García, Bittmann Simons, and Yoneda in particular have advanced our understanding of the cartography of Nahuatl speakers in the modern-day state of Puebla.²² Kirchhoff, Güema, Reyes García, Bittmann Simons, and Kubler have all shown the influence social structure had on pre-Hispanic and colonial spatial arrangements and demonstrated that this influence is reflected in maps.²³ Van Zantwijk has followed this trend with provocative work on the Valley of Mexico.²⁴

The corpus of Mixtec maps received scholarly attention later than its Nahuatl brethren, since it lacked a code-breaking equivalent of the Codex Mendoza and few scholars knew the Mixtec language. But Caso’s work on Mixtec archaeology and history brought more attention to the Mixtecs. One person he influenced was Mary Elizabeth Smith, who revealed the phonetic nature of Mixtec hieroglyphs and was able to decode a substantial corpus of hieroglyphic place-names. In *Picture Writing from Ancient Southern Mexico* (1973), she scrutinized a number of *lienzos*, and one result of her work was to show how these cartographic histories function as maps.²⁵ Later, Ross Parmenter would establish that a number of the *lienzos* from the region of Coixtlahuaca in Oaxaca were likewise cartographic.²⁶ More recently, Jansen, Pohl, and Byland have shown the subtle representations of space in a number of Mixtec codices; these and other scholars have enriched their understanding of both maps and spatial constructs by returning to the Mixtec communities that made these maps and manuscripts centuries ago and by drawing on the current knowledge of toponymy of Mixtec-speaking peoples.²⁷ Thus some Mesoamerican maps have moved full circle: from their creation in indigenous communities, they came into the hands of bibliophiles, historians, and collectors, but it is only with their return to their sources—indigenous communities—that they are fully understood as maps.

Because Mesoamerican maps depend on writing systems not generally accessible, and because their spatial dimensions were imperfectly understood, they have been denied their rightful place in studies of cartographic traditions. Two often-cited articles published in *Imago Mundi*, by Guzmán and Burland, attempted to introduce Mesoamerican cartography to a nonspecialist audience.²⁸ Since Mesoamerican cartography had no measurable influence on Western mapping, however, it has yet to transcend its peripheral status.

MESOAMERICAN MAPS AND THE SPATIALIZATION OF TIME

Among the categories of maps outlined above, we can identify some salient features of Mesoamerican maps and note how much their cadences differ from those of their Old World counterparts. The distinctiveness of Mesoamerican cartography can be identified in two arenas: what elements were included within the spatial framework of the map, and how these various elements were represented.

21. Antonio Peñafiel, *Nombres geográficos de México* (Mexico City: Oficina Tipográfica de la Secretaría de Fomento, 1885). See also idem, *Nomenclatura geográfica de México: Etimologías de los nombres de lugar* (Mexico City: Oficina Tipográfica de la Secretaría de Fomento, 1897).

22. Paul Kirchhoff, Lina Odena Güema, and Luis Reyes García, eds. and trans., *Historia tolteca-chichimeca* (Mexico City: Instituto Nacional de Antropología e Historia, 1976); Luis Reyes García, *Cuaubtinchan del siglo XII al XVI: Formación y desarrollo histórico de un señorío prehispánico* (Wiesbaden: Steiner, 1977); Luis Reyes García, ed., *Documentos sobre tierras y señorío en Cuaubtinchan* (Mexico City: Instituto Nacional de Antropología e Historia, 1978); Bente Bittmann Simons, “The Codex of Cholula: A Preliminary Study,” *Tlalocan* 5 (1965–68): 267–339; idem, *Los mapas de Cuaubtinchan y la Historia tolteca-chichimeca* (Mexico City: Instituto Nacional de Antropología e Historia, 1968); and Keiko Yoneda, *Los mapas de Cuaubtinchan y la historia cartográfica prehispánica*, 2d ed. (Mexico City: Centro de Investigaciones y Estudios Superiores en Antropología, 1991).

23. See especially Kirchhoff, Odena Güema, and Reyes García, *Historia tolteca-chichimeca*, and George Kubler, “The Colonial Plan of Cholula,” in *Studies in Ancient American and European Art: The Collected Essays of George Kubler*, ed. Thomas Ford Reese (New Haven: Yale University Press, 1985), 92–101.

24. R. A. M. van Zantwijk, *The Aztec Arrangement: The Social History of Pre-Spanish Mexico* (Norman: University of Oklahoma Press, 1985).

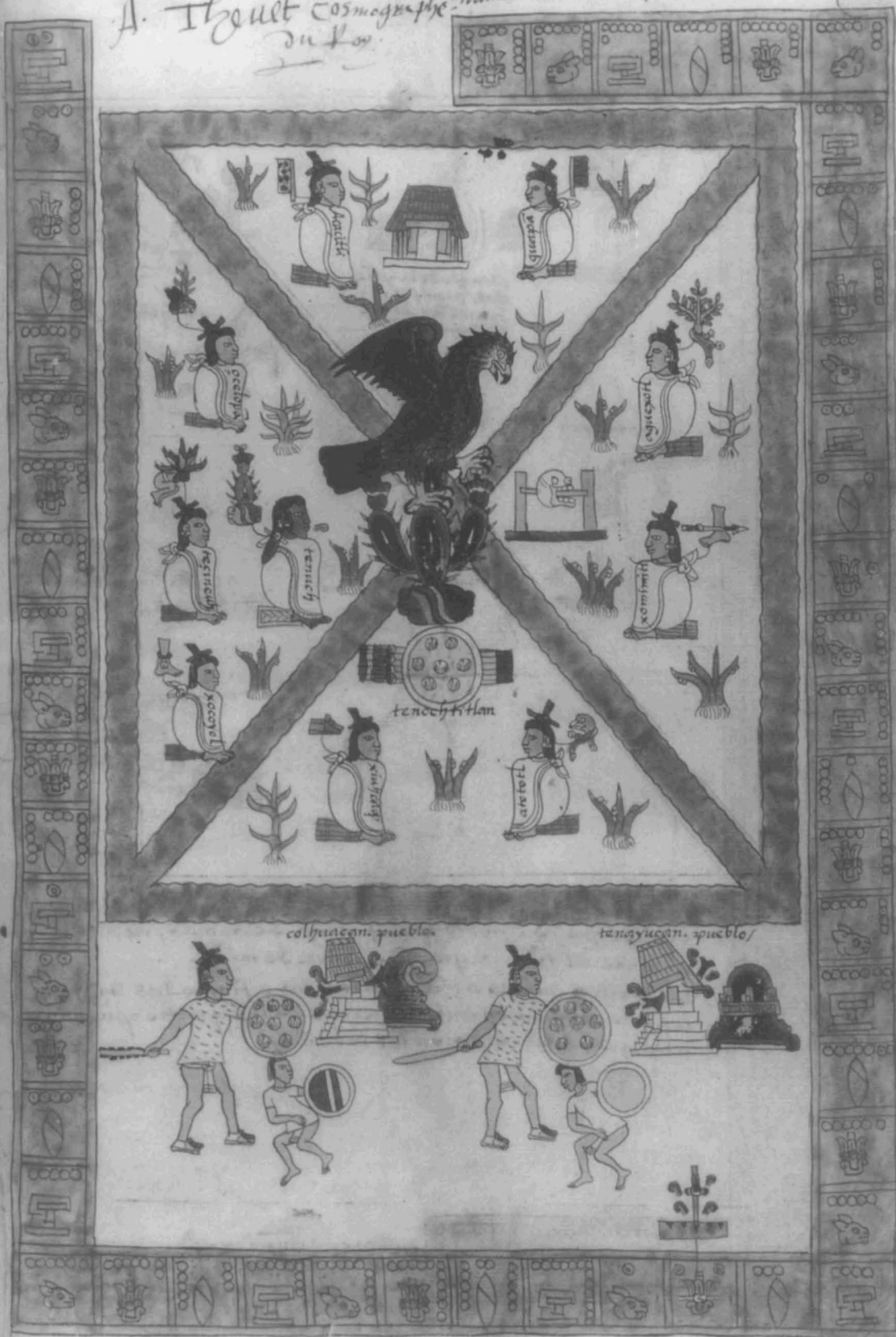
25. Mary Elizabeth Smith, *Picture Writing from Ancient Southern Mexico: Mixtec Place Signs and Maps* (Norman: University of Oklahoma Press, 1973).

26. Ross Parmenter, *Four Lienzcos of the Coixtlahuaca Valley*, *Studies in Pre-Columbian Art and Archaeology* 26 (Washington, D.C.: Dumbarton Oaks, 1982).

27. John M. D. Pohl and Bruce E. Byland, “Mixtec Landscape Perception and Archaeological Settlement Patterns,” *Ancient Mesoamerica* 1 (1990): 113–31; Bruce E. Byland and John M. D. Pohl, *In the Realm of 8 Deer: The Archaeology of the Mixtec Codices* (Norman: University of Oklahoma Press, 1994); Maarten E. R. G. N. Jansen, *Huisi Tacu: Estudio interpretativo de un libro mixteco antiguo. Codex Vindobonensis Mexicanus 1*, 2 vols. (Amsterdam: Centrum voor Studie en Documentatie van Latijns Amerika, 1982); idem, “Mixtec Pictography: Conventions and Contents,” in *Supplement to the Handbook of Middle American Indians*, vol. 5, ed. Victoria Reifler Bricker (Austin: University of Texas Press, 1992), 20–33; and idem, “Apoala y su importancia para la interpretación de los códices Vindobonensis y Nuttall,” in *Actes du XLII^e Congrès International des Américanistes* (1976), 10 vols. (Paris: Société des Américanistes, 1977–79), 7:161–72.

28. Guzmán, “Map-Making among the Ancient Mexicans” (note 6), and C. A. Burland, “The Map as a Vehicle of Mexican History,” *Imago Mundi* 15 (1960): 11–18.

A. Thevet cosmographie numero de dms. 1-1.
du Roy.



(Facing page)

FIG. 5.6. TENOCHTITLAN IN THE CODEX MENDOZA. This indigenous colored manuscript map, painted ca. 1541, shows Tenochtitlan at its founding by the Culhua-Mexicas, 216 years earlier, in the year 2 Calli (2 House). The symbol for this date, a house in profile (compare fig. 5.10 below) crowned by two dots, is shown in the first blue square in the upper left corner. The count of the years proceeds counterclockwise, ending with the year 13 Acatl (13 Reed). Within this year count, the map of Tenochtitlan is dominated by a blue X, marking the four canals that divided the city both geographically and socially. Around the four quadrants sit the ten original founders of the city. Their leader, Tenoch, is seen immediately left of center; to the left of his head, his name is formed by its hieroglyphic components: a stone (*tetl* in Nahuatl) out of which grows a prickly pear cactus (*nochtli*). Tenoch's name mirrors the name of the city he founded: Tenochtitlan. Its hieroglyphic place-name lies in the middle of this page, at the juncture of the canals, and at its base is a stone with a cactus growing out of it. On top of the cactus sits an eagle, the sign the deity Huitzilopochtli had sent to the Culhua-Mexicas, to show them they should found Tenochtitlan. Below the stone is a circular shield in front of a line of arrows, these being both a symbol of Huitzilopochtli and the means of the bellicose Culhua-Mexicas' subsequent rise to power.

Size of the original: ca. 31.5 × 22 cm. Photograph courtesy of the Bodleian Library, Oxford (MS. Arch. Selden. A. 1, fol. 2r).

A key element was time. Before contact with Spaniards, Mesoamericans would not normally have separated depictions of space from renderings of time; León-Portilla identifies this as the “spatialization of time.”²⁹ That is, Mesoamericans might map community boundaries, but they would also include a depiction or account of the historical conquest that brought the boundaries into being. And they might show the layout of the world, but only within a calendar of the days. In turn, they might create a circular calendar and assign each quadrant to a cardinal direction. If the way societies map mirrors their understanding of space, then many Mesoamerican societies *did* see the world differently than did contemporary Europeans. They saw space as so deeply connected to time, be it historical or calendrical, that the two could not be rent apart. Thus, in the secular sphere the line between “map” and “history” is a blurry one, as is the line between “map” and “almanac-calendar” in the sacred sphere. In practical terms, this spatialization of time meant that Mesoamericans would include kinds of information—on a regional map, for example—that went beyond the geographic and settlement information that dominated the European topographical map.³⁰

Second, Mesoamericans encoded a map's information into hieroglyphs, pictorial images, and abstract signs, a system parallel to the use of words, pictures, and symbols on European topographical maps. Although the pictures might be seen as “universal,” able to be read by anyone in any culture, the hieroglyphs were often language specific and the signs culture specific. This complex inter-

play of hieroglyphs, pictures, and signs escaped the map historian P. D. A. Harvey, who has described Aztec (and other Mesoamerican) maps as simple picture maps, wherein features of the landscape are shown as “universally recognized representations.”³¹ If we examine one Aztec map of the capital city of Tenochtitlan, however, we will see clearly that most of the information was conveyed not by pictures, but by symbols and hieroglyphs. Second, we will see the “spatialization of time” described above.

Tenochtitlan was mapped in a traditional manner by a Culhua-Mexica artist in the Codex Mendoza, a manuscript book of about 1541 (fig. 5.6).³² The map was meant to show Tenochtitlan in the first “century” of its founding (an Aztec century lasted fifty-two years), beginning in 1325. The city is identified with a hieroglyph, a cactus growing out of rock, representing its name at center. The geographic space of Tenochtitlan is shown by a blue band, forming the inner border of the page, that denotes the city's encircling lakes. The main canals that transected this island city are represented by the blue X.³³ This representation of lakes and canals was not a geometric projection of the island capital, as a glance at figure 5.17 (below) will reveal. But the quadripartite divisions are a faithful representation of the social layout of the city, whose residents saw it divided into four equivalent quadrants.

The map is concerned with the passage of time as well

29. Miguel León-Portilla, *Aztec Thought and Culture: A Study of the Ancient Nahuatl Mind*, trans. Jack E. Davis (Norman: University of Oklahoma Press, 1963), 54–57. In a brief but perceptive article, Burland identified this key feature of Mesoamerican maps, writing that “Mexicans conceived a pathway through time as being closely akin to a pathway through space,” Burland, “Map as a Vehicle,” 11 (note 28). Although early medieval Europeans often included a temporal aspect in *mappaemundi*, this inclusion of space would not continue to shape Western cartography in the modern period.

30. Donald Robertson, *Mexican Manuscript Painting of the Early Colonial Period: The Metropolitan Schools* (New Haven: Yale University Press, 1959), 179–89 (chap. 10, “Cartography and Landscape”).

31. P. D. A. Harvey, *The History of Topographical Maps: Symbols, Pictures and Surveys* (London: Thames and Hudson, 1980), 14 and 116.

32. The Codex Mendoza is assumed to have been painted at the behest of the Spanish viceroy Antonio de Mendoza (r. 1535–50). See Frances Berdan and Patricia Rieff Anawalt, eds., *The Codex Mendoza*, 4 vols. (Berkeley: University of California Press, 1992).

33. Whether these blue bands represented actual canals in the city is open to question. See Elizabeth Hill Boone, “The Aztec Pictorial History of the *Codex Mendoza*,” in *The Codex Mendoza*, 4 vols., ed. Frances Berdan and Patricia Rieff Anawalt (Berkeley: University of California Press, 1992), 1:35–54, as well as idem, “Glorious Imperium: Understanding Land and Community in Moctezuma's Mexico,” in *Moctezuma's Mexico: Visions of the Aztec World*, by David Carrasco and Eduardo Matos Moctezuma (Niwtot: University Press of Colorado, 1992), 159–73. Van Zantwijk provides a provocative analysis of the map, interpreting it as a diagram of the social structure of the early Culhua-Mexica city, and some of his interpretations inform my discussion; see van Zantwijk, *Aztec Arrangement*, 57–93 (note 24).

as with topographic and social space. The outermost frame of the page is composed of turquoise-colored blocks. The first, in the upper left corner, shows the hieroglyph for the year 2 House, or 1325 in the Gregorian calendar, when Tenochtitlan was founded. Each successive block marks another year, this count running through 13 Reed, or the year 1375. This fifty-one-year period coincided with the reign of Tenoch, a founder of the city, whose figure can be seen within the left quadrant of Tenochtitlan, labeled *tenuch*.³⁴

The map uses pictorial and symbolic shorthand to convey the events of Tenochtitlan's first "century." First, in the middle of the page, an eagle alights on the cactus (*tenochtli* in Nahuatl) that forms the hieroglyph of Tenochtitlan's name. This was a defining moment in Tenochtitlan's history: the eagle was sent by Huitzilopochtli, a tribal deity, to show ten Culhua-Mexica clan leaders where they could settle and end their long peregrination. At the eagle's appearance, the clan leaders, Tenoch among them, founded Tenochtitlan. The map shows these ten sitting within the quadrants of the newly established city. Their order and placement here are important, since the groups they led, and here represent, were to settle in the quadrants where their leaders are shown. Many of their descendants still lived in the same quadrants when the map was painted in the sixteenth century. After Tenochtitlan was founded, its army headed out to conquer neighboring cities, so as to enrich its coffers and extend its domain. The first two of these ongoing campaigns of conquest are shown in the symbols lying below the blue square that represents the lake. In each a warrior, representing Tenochtitlan's army, triumphs over another warrior, representing the vanquished army of a lakeside city. To the right of each of these battling groups is a picture of a burning temple, another symbol of conquest, and the hieroglyphic name of the defeated city.

If we compare this Aztec map of Tenochtitlan with a European map of the same city, we can clearly see the differences. The earliest known European map of Tenochtitlan was printed in Nuremberg in 1524 to accompany an edition of Cortés's second letter to the Spanish king Charles V (r. 1517–56).³⁵ Its author is unknown, but it was presumably a local Nuremberg artist, working from the description and perhaps a native map provided by Cortés. This map shows the same city as the Codex Mendoza page, but the surrounding landscape is represented from a panoramic view (fig. 5.7). Within the lake, the city stretches out house after house, palace after palace; its form is much as a person directly above the center might view it, and set within are buildings shown in elevation. Written language is used for toponyms, just as hieroglyphs were used on the Codex Mendoza. Compared with the Culhua-Mexica map, this European map has

fewer symbols. It is also unconcerned with time: the map shows Tenochtitlan at one instant of its history, as if captured in a photograph. Unlike the highly symbolic human figures included in the Culhua-Mexica map, most of the nameless humans in this map are engaged in mundane activities, as they paddle boats around the lake.

In contrast, the Culhua-Mexica map includes a temporal dimension, showing the passage of time and the events that occurred. It also depends on culturally specific hieroglyphs and symbols to convey much of its information. Underlying this is the issue of authority: these conventional elements gave the Mesoamerican map its authority with its native audience, as did its socially accurate portrayal of quadripartite Tenochtitlan.

If we turn to the Cortés map, a map reproduced widely in Europe, being perhaps the most famous contemporary image of the New World, we find that its authority accrued from looking as if the mapmaker had "been there" and brought this captured view back to Europe as a token of his visual conquest. He further appealed to his audience by working in a style familiar to them. The mapmaker does not aim to impress with a systematic geometrical transformation of the landscape; the European's Tenochtitlan—a circle within a circle—is as geometrically abstract and unsystematic as the cross within a square of its indigenous counterpart (compare fig. 5.17 below). Instead, it is the veracity of the mapmaker's gaze, which "sees" the houses, temples, and boatmen in the city, that is underscored here. Whereas the artist of the Cortés map sought to represent the visible attributes of space, Mesoamerican mapmakers strove for a representation of space that embraced its social and historical dimensions.

MEDIA AND FORMATS

Maps were made on a variety of media, among them paper, cloth, animal hides (probably deerskin), parchment, and walls. Similar maps from the same region were often on similar media; general correlations are summarized in tables 5.1 and 5.2.³⁶ Large sheets of cloth, woven of cot-

34. The Codex Mendoza shows fifty-one years, one short of the Aztec "century" of fifty-two years. But as Boone points out, this page does not record Tenoch's first year of rule, since he did not reign for the entire year. Nonetheless, the temporal span covered by the page was a full fifty-two-year cycle (Boone, "Aztec Pictorial History," 37).

35. See Barbara E. Mundy, "Mapping the Aztec Capital: The 1524 Nuremberg Map of Tenochtitlan, Its Sources and Meanings," *Imago Mundi* 50 (1998): 1–22.

36. For an overview of native manuscripts, see Glass, "Survey" (note 4), and John B. Glass with Donald Robertson, "A Census of Native Middle American Pictorial Manuscripts," in *Handbook of Middle American Indians*, vol. 14, ed. Howard Francis Cline (Austin: University of Texas Press, 1975), 81–252. The full bibliography for Glass and Robertson, "Census," is found in John B. Glass, "Annotated References," in *Handbook of Middle American Indians*, vol. 15, ed. Howard Francis Cline (Austin: University of Texas Press, 1975), 537–724. The

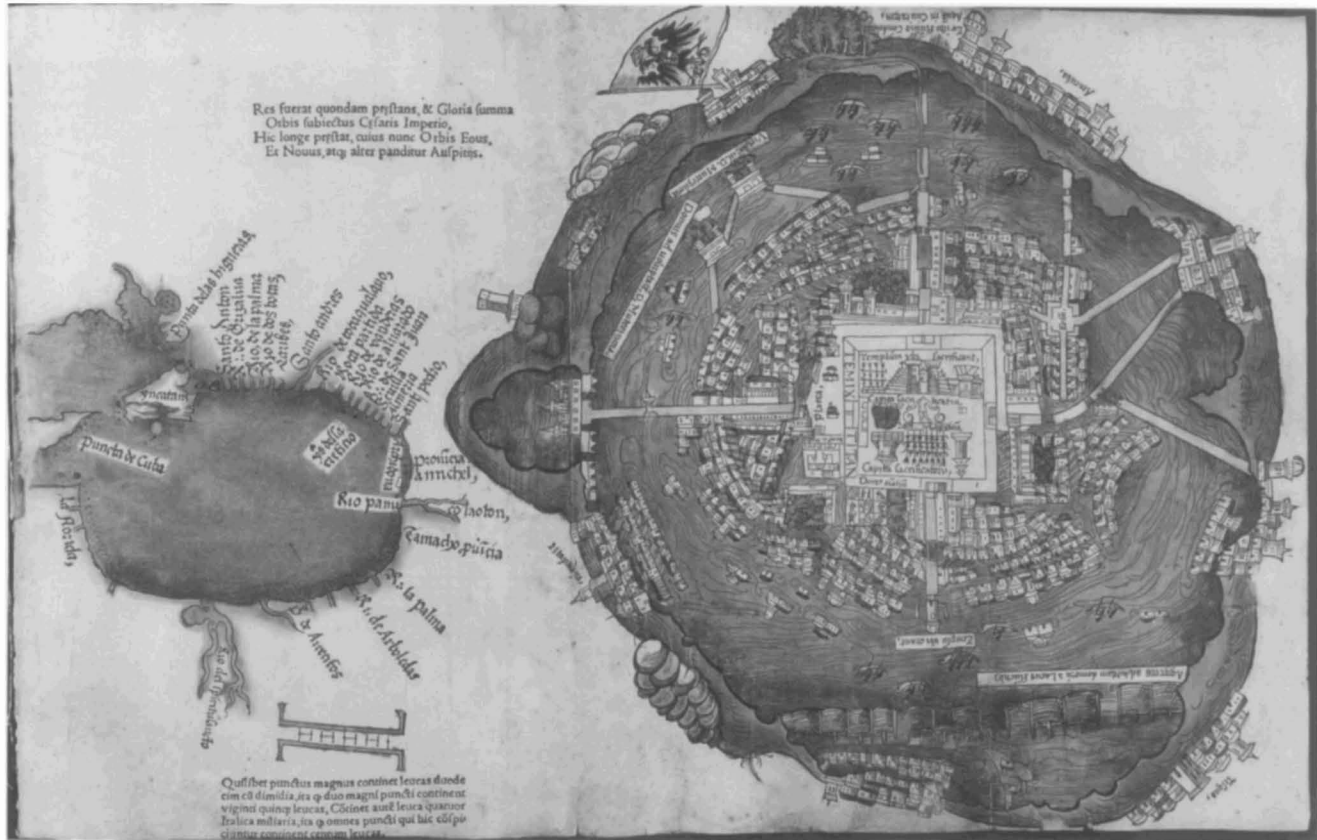


FIG. 5.7. THE CORTÉS MAP OF TENOCHTITLAN, 1524. When the second letter of the conquistador Hernán Cortés to Charles V of Spain was printed in 1524, an anonymous European draftsman created this woodblock print map of Tenochtitlan, along with a sketch of the Gulf Coast at left, to accompany Cortés's vibrant description of the Aztec capital city. The island capital is shown at the center of the circular map, its walled temple precinct greatly enlarged in the center of its urban population. Causeways connect it to the surrounding lakeshore, where neighboring cities lie. Since this was the first European map of the Aztec city, its sources are of interest. Some of it is drawn from Cortés's written account. For example, Cortés describes splendid aviaries, and the draftsman shows the caged birds below the temple precinct.

ton or maguey fiber, were favored for the large cartographic histories, which usually included the boundaries and history of a single community. Such cloth was frequently used by the speakers of Nahuatl, Mixtec, and Zapotec who lived in and around the modern state of Puebla and Oaxaca, as well as by other ethnic groups in these regions.³⁷ Communities probably used cloth because it was readily available, and cloth panels could be sewn together into the large sheets they favored for community histories. Spanish conquistadores also noticed that the itinerary maps Mesoamericans supplied to them were painted on cloth sheets. Unfortunately, cloth is ravaged by the Mesoamerican climate, and thus the only extant community maps date from after the conquest, and no itiner-

ary maps like those the Spanish described survive at all (table 5.3).
Some of the map derives from European traditions of city mapping; its maker undoubtedly called to mind images of Venice when drawing this lacustrine city, showing its residents in high-prowed boats like gondolas. Yet other elements of the map reveal an insider's knowledge of Tenochtitlan, suggesting that this European map may have been derived from an indigenous map of the city. A tiny face emerges between the twin temples at the center of the map; it may be the sun, which rose at that point on the summer solstice. By the time this map appeared in Europe, the city it portrayed was gone, reduced to rubble and ashes in the destructive wars of conquest. Size of the original: 30 × 47.5 cm. Photograph courtesy of the Newberry Library, Chicago (Ayer *655.51 C8 1524d).

ary maps like those the Spanish described survive at all (table 5.3).

Maps were also made on animal skin that was carefully treated and sized with gesso. This highly valued material

"Census" should be consulted for all manuscript maps cited herein. See also Robertson, *Mexican Manuscript Painting* (note 30); Esther Pasztor, *Aztec Art* (New York: Harry N. Abrams, 1983), 179–208; and Smith, *Picture Writing* (note 25).

37. Glass counts about fifty surviving *lienzos*—manuscripts on single panels of cloth—noting their rarity in the State of Mexico and the Federal District (the Aztec heartland) as well as their absence in southeastern Mexico, the Yucatan, and Guatemala (the Maya region) and the Mexican state of Hidalgo ("Survey," 9). By association, the term *lienzo* is used to name any manuscript painted on a panel of cloth. Although *lienzos* can have any content, they are often cartographic histories.

TABLE 5.1 General Correlations between Map Types, Media, and Origin

Type	Media	Place of Origin	Examples
Cartographic history	Native paper, unsized sheets	Valley of Mexico (Nahua)	Codex Xolotl, p. 1
Cartographic history	Hide	Puebla (Nahua)	Mapa circular de Cuauhquechollan
Cartographic history	Cloth sheets	Puebla and Oaxaca (Nahua, Mixtec, and others)	Lienzo of Coixtlahuaca 1; Lienzo of Cuauhquechollan ^a
Cosmographical map	Native paper, sized sheets in screenfold manuscript	Maya region (Yucatan, Guatemala)	Codex Madrid, fols. 76–77
Cosmographical map	Sized hide	Mexico, north of Isthmus of Tehuantepec	Codex Fejérváry-Mayer, p. 2; Codex Borgia, pp. 29–46; Codex Aubin, no. 20

^aJohn B. Glass with Donald Robertson, “A Census of Native Middle American Pictorial Manuscripts,” in *Handbook of Middle American Indians*, vol. 14, ed. Howard Francis Cline (Austin: University of Texas Press, 1975), 116–17 (no. 89).

TABLE 5.2 Formats of Mesoamerican Maps

Format	Frequency	Examples
Rectangular	Common, frequently used for cartographic histories	Lienzo of Zacatepec 1, Historia tolteca-chichimeca maps
Circular	Relatively rare, about six examples known	Relaciones geográficas maps from Amoltepec and Tezacoalco, Mapa circular de Cuauhquechollan, Map of Maní, Plano de San Andres Sinaxtla, map of the province of Sotuta
Square	Rare	Codex Fejérváry-Mayer, p. 2
Irregular shapes	Often used for property plans, to conform to planimetry	Oztoticpac lands map; Plano en papel de maguey

TABLE 5.3 Relative Frequency or Survival Rates of Map Types

Cartographic/itinerary histories	
Central Mexican	Frequent (over eighty examples known)
Maya	Known by report only
Other terrestrial maps	
Property plans: cadastral maps	Rare
Property plans: maps of individual property	Fairly common
Urban maps	Rare
Trading and war maps ^a	Known by report only
Cosmographical maps	
Manuscript	Rare
Sculptural models	Frequent
Architectural models	Frequent
Celestial maps	Rare

^aThis category includes the itinerary maps that the Spanish conquistadores used for travel and exploration; lacking any extant examples, I assume they were an offshoot of maps used by the long-distance merchants.

was also extremely durable; of the fifteen surviving pre-conquest manuscripts, all but the four from the Maya region were painted on sized hide. In most cases the hides were neatly trimmed and glued together into a long strip (*tira*), then folded accordion fashion. The result was a rectangular screenfold (called a codex) that looked somewhat like a book.³⁸ Three of the pre-Hispanic screenfolds contain cosmographical maps; another postconquest example is found in a bound book that was probably copied from a preconquest screenfold (appendix 5.1).

Paper, too, was often used for maps. Indigenous paper (*amatl*; sometimes *amate*) was created from the inner bark of a native fig tree or made out of maguey fiber.³⁹ Paper seems to have been the favored medium for the com-

38. Nomenclature for Mesoamerican manuscripts is not standardized and can be somewhat misleading. All screenfolds, manuscripts created by folding a long strip of paper or hide accordion fashion into a compact square or rectangle, are called codices, but so are manuscripts that are painted on large sheets (like the Codex Xolotl, discussed below) or those postconquest books that are bound on one side, like the Codex Mendoza or the Codex Ríos (also discussed below).

39. Hans Lenz, “Las fibras y las plantas del papel indígena mexicano,” *Cuadernos Americanos* 45, no. 3 (año 8) (1949): 157–69.

munity histories made in the Valley of Mexico. As a valued tribute item, paper flowed into the Valley of Mexico, where mapmakers likely had greater access to it than elsewhere. Paper had important ritual uses and was probably prized above plain cloth. In the Maya region long sheets of paper, not hide, were sized and folded to be used for precious screenfold manuscripts. Like cloth, paper is highly perishable in the Mesoamerican climate, and with one exception (in the Maya Codex Madrid) all extant maps on indigenous paper were painted after the conquest.

Whether painted on cloth, paper, or hide, Mesoamerican maps were drawn with a resin-based ink, deep black and durable. Artists would apply this ink with a reed pen, and they aimed to create a line of consistent width. Every form was outlined in black, and often the outlined forms were filled in with colored pigment.⁴⁰ Ceramic vessels were also painted, and potters across Mesoamerica decorated their unfired vessels with various clays, dissolved in water to make slips, resulting in a subtle range of postfire colors. To increase the chromatic range of pottery, some cultures favored postfire decorations of painted stucco. The painting on ceramic vessels ranged from domestic scenes to geometric abstraction; sometimes vessels bore a cosmogram, a schematic version of the vertical arrangement of the cosmos—heavens above, earth in the middle, Underworld below.

Murals were another important forum for paintings; they often covered important buildings and dwellings, both inside and out. The handful of surviving landscape paintings that may have been related to maps are all murals (appendix 5.2). At least one, found in a royal tomb in the Maya city of Río Azul, shows a schematic cosmogram.

Murals had a more permanent counterpart in the bas-relief and three-dimensional sculpture made of carved stone or molded stucco that adorned exteriors and interiors of many buildings. Sculpture was the medium that Mesoamericans often used to represent parts of the cosmic layers. Scholars are now beginning to recognize that entire architectural complexes brought together representations of the component parts of the cosmos. These architectural and sculptural counterparts to graphic maps will be discussed below with cosmographical maps.

After the conquest in the sixteenth century, many mapmakers preferred imported European paper over cloth or native paper. Its merits were both practical and symbolic. Imported paper had a smoother finish, making it easier to apply ink in the even lines that artists favored. It was also rare and expensive, and it elevated the status of whatever writing it carried. Native maps on European paper were generally made under Spanish patronage: because of their context, as well as their stronger medium, they have proved more durable than those made on native paper.⁴¹

As the Spanish colonists introduced new media and devalued some traditional ones, the correlations between medium and types summarized in table 5.1 blurred and grew indistinct through time.

MODES OF PRODUCTION

Many Mesoamerican societies boasted professional sculptors, painters, and scribes. Artists and scribes seem to have been elites, members of the ruling castes. Among the various duties of these men, and occasionally women, was the production of maps. In large, highly specialized societies, artists might have worked in only one or two media, but in smaller communities it is likely they were called on to paint everything from maps to pots.

Creating the screenfold manuscripts that housed cosmographical maps was the most rarefied of endeavors. Artists would probably copy most, if not all, of their new manuscripts from existing ones in special workshops.⁴² But they were not mere scribes. Artists were highly trained, and they had to be well versed in cosmology, divination, or history to faithfully replicate the mass of complex detail each manuscript page contained. This way of producing manuscripts was by nature conservative, well fitted to representing a cosmos whose nature remained remarkably consistent over centuries.

Making terrestrial maps was probably a less weighty enterprise than making cosmographical maps, and also a much more inventive and collaborative one. Two rare early colonial documents preserve records of territorial demarcation in indigenous communities, one of them Maya (fig. 5.22 below, the map of Maní), the other Nahua. Maps seem to have been made as a result of the demarcation in both cases, and these postconquest documents are probably a good indication of pre-Hispanic practice.⁴³ They describe community leaders identifying and naming an area during a ritual of circumambulation. It was probably after leaders carried out these acts that their fellow elites, the painter-scribes, created graphic re-

40. Robertson, *Mexican Manuscript Painting*, 16 (note 30).

41. Robertson, *Mexican Manuscript Painting*, 112.

42. For a description of how manuscripts were created in early colonial times, see Ellen T. Baird, *The Drawings of Sahagún's "Primeros Memoriales": Structure and Style* (Norman: University of Oklahoma Press, 1993), 155–57.

43. However, only a copy of one of the maps survives in the map of Maní of 1596. The documents associated with this Maya example are transcribed and published in Roys, *Indian Background*, 175–94 (note 8). The Nahua example is found in Reyes García, *Documentos sobre tierras* (note 22). A record of the pre-Hispanic feud between Cuauhtinchan and Tepeyacac that prompted the demarcation comes from court testimony taken when the same feud broke out again in 1546–47. On the related topic of foundation ritual, see Angel J. García Zambrano, “El poblamiento de México en la época del contacto, 1520–1540,” *Mesoamérica* 24 (1992): 239–96.

presentations of the space traveled. Most likely the painter-scribes made rough measurements by pacing during circumambulation and gauged orientation from visible landmarks like outlying hills or from the path of the sun. Postconquest documentation also indicates that when the tract of land was a small individual holding, a scribe would have estimated dimensions or measured it directly using ropes or paces, then would have drawn up a small map on paper, whose veracity would be attested by witnesses.⁴⁴ With all maps, whether of the cosmos or of a tract of land, it was the collective nature of their production, as pages were copied within workshops, territories were circumambulated by elites, and possessions were certified by witnesses, that was the wellspring of their authority.

CARTOGRAPHIC CONVENTIONS

Mesoamerican maps relied heavily on hieroglyphs, pictures, and abstract signs to carry meaning, and this lent them a close kinship to all other Mesoamerican written works. Central Mexican writing has been called picture writing, and it is heavily pictorial, conveying general ideas and facts with combinations of hieroglyphs, images, and signs; it is not as prescriptive as written English, which spells out phrases word for word.⁴⁵ Writing and map-making therefore rested on the same graphic substrate, employing the same pictorial conventions. Of all Mesoamerican writing systems, only that of the Mayas was used to create more systematic texts; Maya stelae contain registers of hieroglyphs, each hieroglyph standing for a whole word or its component syllables. Very few examples of indigenous terrestrial maps come from the Maya region,⁴⁶ perhaps because textual writing crowded out graphic representation.

Since most non-Maya Mesoamerican maps used the same system of hieroglyphs, pictures, and symbols as did histories or almanacs, these works shared many of the same conventions. The costume, pose, and gesture of a figure would convey gender, status, and intent.⁴⁷ Hieroglyphs were used for personal names, place-names, and dates. For instance, the man named Atototl or “Water Bird” in the Codex Mendoza was identified by the hieroglyph of his name—comprising a bird and a conventional stream of water connected to his head (fig. 5.8). His gender is made clear by his costume, a man’s cloak knotted at his shoulder. Travel and direction or movement were shown with lines of footprints (see figs. 5.4 and 5.5). Expressed with pictorial images and conventional signs, much of the content of maps could be understood across the linguistic boundaries dividing Mesoamerica.

PICTURES AND WRITING

Because terrestrial maps above all represented a framework of space, they relied heavily on a limited repertory

of pictures and symbols—standardized abstracted images—to denote topographic features.⁴⁸ The most common of these are shown in figure 5.9, and architectural depictions are shown in figure 5.10. Often these topographic pictures and symbols were not images but parts of hieroglyphs, or picture writing; that is, they stood not for the visible appearance of things but for words or word parts, and usually the words they denoted were toponyms. For instance, it is highly uncommon in a preconquest-style map to find a symbol or pictograph for a hill representing a hill in the landscape. Instead, the hill pictograph would be part of a toponym, standing for the name, rather than being an image of the geographic feature. This distinction between image and hieroglyph is subtle but important: it means that Mesoamerican maps show us spaces that are made visible through names, rather than through contour lines or apparent features.

Mesoamerican writing, by convention, is called hieroglyphic (synonymous with logographic), and hieroglyphic toponyms are usually simple to decode, because many are simple word pictures, or rebuses, in which pictures (which we call pictographs when they denote language) indicate the word or its component parts.⁴⁹ For example,

44. See James Lockhart, *Nahuas and Spaniards: Postconquest Central Mexican History and Philology* (Stanford: Stanford University Press, 1991), 97–101, for example.

45. Boone, “Writing and Recording Knowledge” (note 3), and Joyce Marcus, *Mesoamerican Writing Systems: Propaganda, Myth, and History in Four Ancient Civilizations* (Princeton: Princeton University Press, 1992).

46. A brief survey of the material evidence of Maya maps is found in Thompson, *Dresden Codex*, 9–10 (note 5).

47. On the use of gesture in the Mixtec codices, see Nancy P. Troike, “The Interpretation of Postures and Gestures in the Mixtec Codices,” in *The Art and Iconography of Late Post-classic Central Mexico*, ed. Elizabeth Hill Boone (Washington, D.C.: Dumbarton Oaks, 1982), 175–206. For a description of pictorial conventions, see Smith, *Picture Writing*, 20–35 (note 25). On costume, see Patricia Rieff Anawalt, *Indian Clothing before Cortés: Mesoamerican Costumes from the Codices* (Norman: University of Oklahoma Press, 1981).

48. Here I use “symbol” as a subset of the more general “sign,” with symbols being abstracted images standing for objects or ideas; pictographs have a direct pictorial relation to the things they represent.

49. On writing systems in general, see Michael D. Coe, *Breaking the Maya Code* (New York: Thames and Hudson, 1992), esp. 13–45. Two early studies of Nahuatl place-names are Peñafiel, *Nombres geográficos*, and idem, *Nomenclatura geográfica* (both in note 21). For a sampling of more recent discussion of both place-names and writing, see Joaquín Galarza, *Estudios de escritura indígena tradicional (azteca-náhuatl)* (Mexico City: Archivo General de la Nación, 1979); Charles E. Dibble, “Writing in Central Mexico,” in *Handbook of Middle American Indians*, vol. 10, ed. Gordon F. Ekholm and Ignacio Bernal (Austin: University of Texas Press, 1971), 322–32; and also Hanns J. Prem, “Aztec Writing,” in *Handbook of Middle American Indians*, suppl. vol. 5, ed. Victoria Reifler Bricker (Austin: University of Texas Press, 1992), 53–69. A study that centers on the Codex Mendoza is Karl Anton Nowotny, “Die Hieroglyphen des Codex Mendoza: Der Bau einer mittelamerikanischen Wortschrift,” *Mitteilungen aus dem Museum für Völkerkunde in Hamburg* 25 (1959): 97–113, and more recently,

the town of Xilotepec, or “Hill of Green Ears of Maize,” would be written in Nahuatl with a simple pictograph combining ears of maize, *xilotl*, on top of a bell-shaped hill pictograph, *tepetl* (fig. 5.11). In central Mexico pictography prevailed, but the writing systems also employed some elements phonetically to indicate the sounds of words; this mix of pictures and phonics is called hieroglyphic writing, and with it Nahuatl speakers represented dates, personal names, and toponyms.⁵⁰ Mixtec and Zapotec maps used hieroglyphic writing to construct personal and place-names, but the names, as their phonetic component reveals, refer to words in the Mixtec or Zapotec language, not in Nahuatl.⁵¹

Hieroglyphs referring to certain cities and sites appear in the texts that Mayas carved in stone during the classic period (A.D. 250–900). These hieroglyphs, like Maya writing in general, could spell out the toponyms syllabically, and this heavier use of phonics puts Maya hieroglyphic writing on the opposite end of the spectrum from the more predominately pictographic writing used in the rest of Mesoamerica. Maya epigraphers have linked about a dozen hieroglyphs to known sites.⁵² If we hypothesize that the classic Mayas made maps, then they may have identified places with toponymic hieroglyphs, but the only surviving use of these is within written texts and on historical monuments. No Maya maps using place-name hieroglyphs are known to have survived the conquest.

In central Mexico, by contrast, hieroglyphic place-names were widely used in all kinds of written works, most particularly maps, throughout the sixteenth century—well after the conquest and the introduction of the Latin alphabet. To the eye of the contemporary reader, including the Spanish friars who scrutinized native manuscripts, hieroglyphic place-names were simply toponyms. But a closer look at the iconography of these hieroglyphs shows that they reflect native understandings of the nature of the world.

Consider the pictograph for “hill,” read *tepetl* in Nahuatl or *yucu* in Mixtec (see fig. 5.9a–c). This pictograph is used in hundreds of hieroglyphs, for two reasons.

Frances Berdan, “Glyphic Conventions of the *Codex Mendoza*,” in *The Codex Mendoza*, 4 vols., ed. Frances Berdan and Patricia Rieff Anawalt (Berkeley: University of California Press, 1992), 1:93–102. A helpful overview of the subject is provided in James Lockhart, *The Nahuas after the Conquest: A Social and Cultural History of the Indians of Central Mexico, Sixteenth through Eighteenth Centuries* (Stanford: Stanford University Press, 1992), 326–73, and in Marcus, *Mesoamerican Writing*, 153–89 (note 45).

50. For discussions of the phoneticism in these place-names, see H. B. Nicholson, “Phoneticism in the Late Pre-Hispanic Central Mexican Writing System,” in *Mesoamerican Writing Systems*, ed. Elizabeth P. Benson (Washington, D.C.: Dumbarton Oaks, 1973), 1–46; Charles E. Dibble, “The Syllabic-Alphabetic Trend in Mexican Codices,” in *Atti del XL Congresso Internazionale degli Americanisti* (1972), 4 vols.

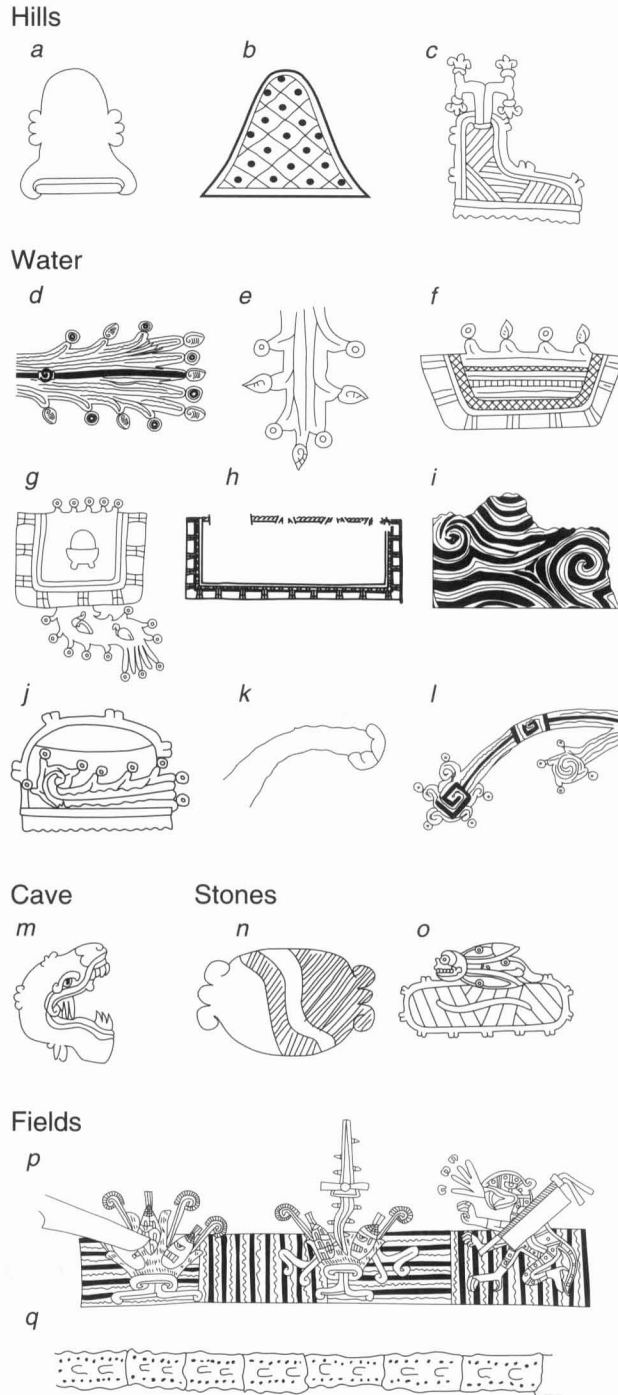


FIG. 5.8. DETAIL OF ATOTOTL FROM THE CODEX MENDOZA. Atototl, one of the founders of Tenochtitlan, is identified by the hieroglyph of his name. The head of a bird (*tototl* in Nahuatl) rises out of a stream of water (*atl*). After this page was painted, another hand added the glosses, spelling out Atototl's name in the Latin alphabet (see also fig. 5.6). Size of the detail: ca. 3.3 × 2.6 cm. Photograph courtesy of the Bodleian Library, Oxford (MS. Arch. Selden. A. 1, fol. 2r).

(Genoa: Tilgher, 1973–76), 1:373–78; and Hanns J. Prem, “Aztec Hieroglyphic Writing System—Possibilities and Limits,” in *Verhandlungen des XXXVIII. Internationalen Amerikanistenkongresses* (1968), 4 vols. (Munich: Klaus Renner, 1969–72), 2:159–65; as well as Nowotny, “Die Hieroglyphen,” Berdan, “Glyphic Conventions,” Dibble, “Writing in Central Mexico,” and Galarza, *Estudios* (all in note 49).

51. On the construction of Mixtec place-names, see Smith, *Picture Writing*, 36–54 (note 25), and Caso, *Reyes y reinos*, 1:34–36, 165–67, and pls. 16–20 (note 18). On Zapotec writing, see Joyce Marcus, “Zapotec Writing,” *Scientific American* 242, no. 2 (1980): 50–64, and Javier Urcid Serrano, “Zapotec Hieroglyphic Writing,” 2 vols. (Ph.D. diss., Yale University, 1992).

52. David Stuart and Stephen D. Houston, *Classic Maya Place Names*, Studies in Pre-Columbian Art and Archaeology 33 (Washington, D.C.: Dumbarton Oaks, 1993); Joyce Marcus, *Emblem and State in the Classic Maya Lowlands: An Epigraphic Approach to Territorial Organization* (Washington, D.C.: Dumbarton Oaks, 1976); and Heinrich Berlin, “El glifo ‘emblema’ en las inscripciones mayas,” *Journal de la Société des Américanistes*, n.s. 47 (1958): 111–19.



Tepe is a widespread component of Nahuatl place-names, and *yucu* is also common in Mixtec, much as “town” or “burg” appears in American place-names. Additionally, in Aztec pictorial manuscripts the hill pictograph was often used as part of a place-name even when *tepe* was not a component of the name. In these cases it simply stood for a named place. One scholar calls it a “determinative,” a marker of the category the word belongs to, opposing this to a hieroglyph, a picture or symbol of the word itself.⁵³ Whether as a hieroglyph (standing for a word or

FIG. 5.9. COMMON GEOGRAPHIC PICTOGRAPHS IN MESOAMERICAN MANUSCRIPTS. Geographical and topographical pictographs from various manuscripts show regional and ethnic differences.

Hills: (a) Aztec (Culhua-Mexica) hill pictograph showing curved volutes on side (after Codex Mendoza, fol. 31r); (b) Aztec (Acolhua) hill pictograph (after Codex Xolotl, p. 6); (c) Mixtec hill pictograph (after Codex Selden 10-ii).

Water: (d) running water (after Codex Borbonicus, p. 5); (e) running water (after Codex Mendoza, fol. 28r); (f) water symbol frequently used in Nahuatl place-names (after Codex Mendoza, fol. 16v); (g) Mixtec pictograph for river or body of water (after Codex Nuttall, p. 51); (h) lake with turbulent waters (after Codex Nuttall, p. 75); (i) lake from the Valley of Mexico (after Relación geográfica map of Ixtapalapa); (j) Mixtec place sign showing flowing water (after Codex Selden 5-III); (k) crescent symbol used to show spring or water source (after Codex Xolotl, p. 6); (l) springs (after Relación geográfica map of Oaxtepec).

Cave: (m) (after Codex Mendoza, fol. 18r).

Stones: (n) pictograph for stone (after Codex Mendoza, fol. 18r); (o) Mixtec large stone, with insect on top (after Codex Vienna, p. 49).

Fields: (p) fields growing with corn plants, center and left (after Codex Borgia, p. 20); (q) tilled field (after Humboldt Fragment 2).

word part) or a determinative (standing for a category), the hill pictograph was often decorated with a pattern of diamonds and dots. This motif had a long history in the northern part of Mesoamerica, standing for the rough skin of a crocodile. According to northern Mesoamerican belief, this monstrous crocodilian creature was the earth itself (fig. 5.12).⁵⁴ Thus, even in secular contexts the pictographs used in maps carried the imprint of the earth's sacred design.

SCALE AND DIRECTIONALITY

Whereas scale and conventional orientation were of increasing concern to Western mapmakers in the sixteenth century, Mesoamerican painters placed little emphasis on consistent scale to structure terrestrial maps. Instead, the most important place in the map was drawn largest and usually placed at its center. As one moved out toward the periphery, the territory was represented at an increasingly

53. Prem, “Aztec Writing,” 66 (note 49). Mary Elizabeth Smith (personal communication, 1993) points out that the Mixtec word *n̄nu*, represented by a panel with a stepped pattern inside, is a closer equivalent to the determinative use of the Nahuatl *tepetl*.

54. Edouard de Jonghe, “Histoire du Mechique: Manuscrit français inédit du XVI^e siècle,” *Journal de la Société des Américanistes de Paris*, n.s. 2 (1905): 1–41, esp. 25, and *Codex Borgia: Biblioteca Apostolica Vaticana (Messicano Riserva 28)* (Graz: Akademische Druck- u. Verlagsanstalt, 1976), 3, 22, 39, 71. Maya representations of the earth's surface are marked with spirals with drooping tails, whereas the diamond-and-dot pattern is reserved for water-lily pads, symbols of bodies of water. See Linda Schele and Mary Ellen Miller, *The Blood of Kings: Dynasty and Ritual in Maya Art* (New York: George Braziller, 1986), 46–47.

Architecture

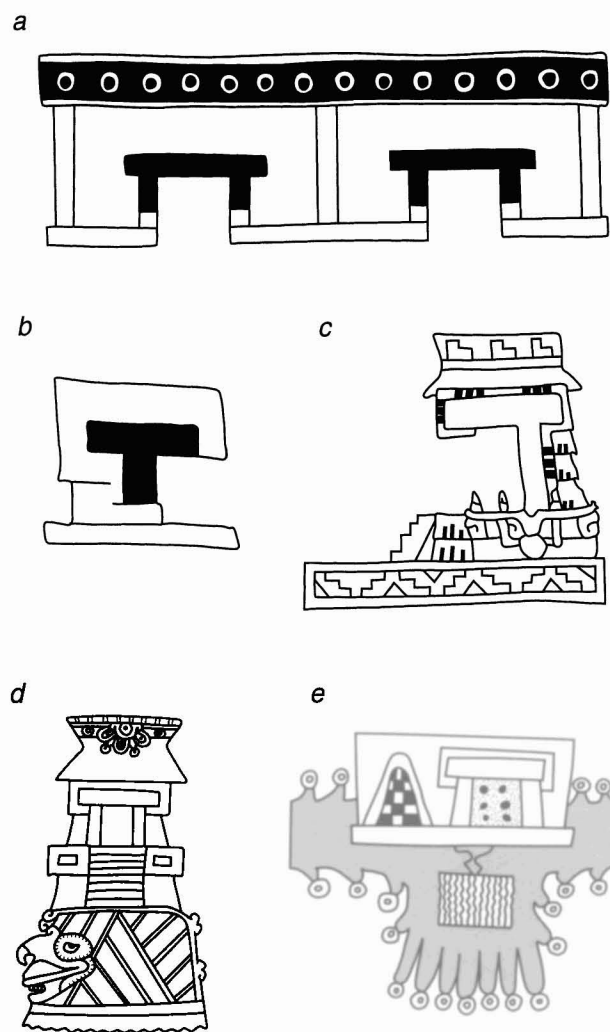


FIG. 5.10. COMMON REPRESENTATIONS OF ARCHITECTURE IN MESOAMERICAN MANUSCRIPTS. (a) Nahuatl house shown frontally, with two large door lintels (after *Relación geográfica* map of Ixtapalapa); (b) Nahuatl structure shown in profile (after *Relación geográfica* map of Coatepec Chalco); (c) Mixtec temple shown in profile (after Codex Selden 9-III); (d) Mixtec place-name of Tututepec, shown by a hill pictograph topped with an elaborate temple and presented frontally (after Codex Nuttall, p. 50); and (e) sweat bath within two merging rivers (after Codex Vienna, p. 46d).

smaller scale. Thus the distances to faraway places were collapsed so they could be represented on the map. On the Lienzo of Zacatepec 1, for instance, the places represented on the edges of the map lie anywhere from thirteen to forty-seven kilometers away from the town of Zacatepec, shown in the map's upper center (fig. 5.13). The Mesoamerican viewer understood that peripheral placement usually conveyed great distance from the center.

Mesoamericans saw the world as organized along three

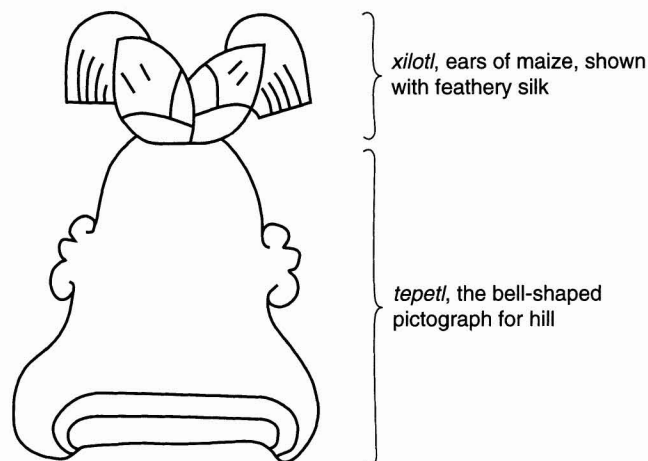


FIG. 5.11. HIEROGLYPHIC PLACE-NAME OF XILOTEPEC. A pictograph for “ears of maize” sits atop the hill pictograph. Pictographs like these are images that have been slightly abstracted into a conventional form, and they often denote words or word parts.

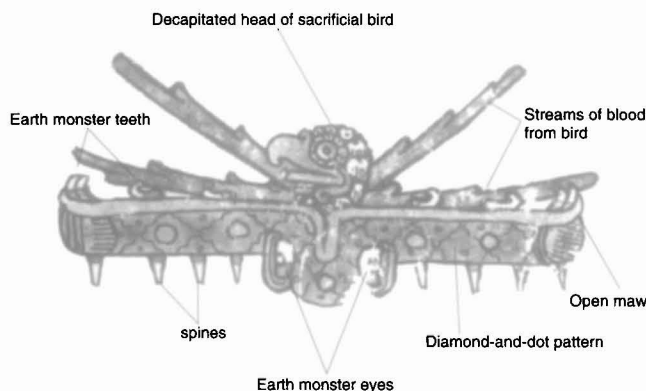


FIG. 5.12. CROCODILIAN EARTH MONSTER. In this representation from a preconquest ritual almanac (Codex Borgia, p. 71), the earth receives an offering of the blood of a decapitated bird. Here, as in other places, the earth is symbolized by the gaping maw of the crocodilian earth monster. Its jaws stretch so far apart that they form a flat surface, studded with hook-shaped teeth. The monster's eyes lie below, heavy lidded yet unblinking. The skin of this reptile is shown with a pattern of diamonds and dots, which serves as a shorthand for the earthly surface and is found on hill pictographs as well (compare fig. 5.9b).

axes. The east-west axis, the path of the sun, was the principal horizontal axis and was likely calculated by solar observation.⁵⁵ Lying perpendicular was the north-south

55. Early Mesoamericans probably knew of compasses and used them to orient ceremonial sites, but there is little evidence that they were used in mapmaking. See Robert H. Fuson, “The Orientation of Mayan Ceremonial Centers,” *Annals of the Association of American Geographers* 59 (1969): 494–511, and John B. Carlson, “Lodestone Compass: Chinese or Olmec Primacy?” *Science* 189 (1975): 753–60.

(Facing page)

FIG. 5.13. THE LIENZO OF ZACATEPEC 1. This postconquest Mixtec *lienzo* shows a record of the history and the boundaries of the Mixtec town of Zacatepec. This large cloth sheet was painted ca. 1540–60 in Zacatepec and held in community hands until the end of the nineteenth century. Much of the *lienzo*'s content concerns the genealogy of Zacatepec's rulers. The top register of the *lienzo* is not cartographic; it shows a sequence of five platforms that represent different community kingdoms. Each platform bears a hieroglyphic place-name and a ruler or ruling couple. A path, marked by conventional footprints, loops between them, looking like a scalloped fringe. This is the path of a man named 11 Tiger, who would be the first ruler of Zacatepec, as he journeys from place to place, perhaps in a ritual of accession or confirmation. The son of 11 Tiger, 8 Crocodile, and his wife 13 Wind, are the first of the dynasty to be shown seated at Zacatepec. The hieroglyphic place-name of the town is shown at the top center of the *lienzo*, marked by a tall hill symbol topped with a zacate tree (see fig. 5.20 below). In contrast to the row of places at the top of the manuscript, Zacatepec is set in cartographic space. Surrounding it, on an inscribed rectangle, are the hieroglyphic place-names that mark Zacatepec's boundaries. The place-names falling outside the boundary are those of communities adjacent to Zacatepec, set on the sheet to correlate with their arrangement in space. Thus the *lienzo* shows not only the physical space that Zacatepec occupies, but also the historical events that led to the creation of Zacatepec and the definition of its territory. The subject matter and conventions of this map and other Mixtec *lienzos* link them closely to the Mixtec historical screenfolds. However, artists who painted screenfolds were confined by the narrow registers and strict reading order that ruled most manuscripts; in contrast, the large format of the cloth sheets used to make *lienzos* allowed them to show spatial arrangements.

Size of the original: 325 × 225 cm. Photograph courtesy of the Instituto Nacional de Antropología e Historia, Museo Nacional de Antropología, Mexico City (35-63).

axis. In addition, a vertical axis ran through the layers of the Upperworld and Underworld.⁵⁶

Each of the cardinal directions was associated with a particular color and particular years in the fifty-two-year "century." Different Mesoamerican cultures (and sources) assigned different colors to the directions and years (table 5.4).⁵⁷ These directional schemes and colors were most often expressed in cosmographical maps and calendars. Maps were sometimes oriented with east at the top, but this was hardly standard across Mesoamerica. Often a map would have no "top," being meant to be read from all sides. An overriding organizational principle for terrestrial maps was the opposition between center and periphery. This principle, more than directionality, ordered the location of elements on maps.

MENSURATION

A limited known group of terrestrial maps of small areas was drawn to an absolute scale, using a system of mensuration and notation of measurement. Many property plans from the Valley of Mexico are carefully annotated

TABLE 5.4 Year Bearers and Colors Associated with Cardinal Directions, Central Mexico and Maya

Direction	Central Mexico		Maya	
	Year Bearer	Color	Year Bearer	Color
East	Acatl	Red	Kan	Red
North	Tecpatl	Yellow	Muluc	White
West	Calli	Blue	Ix	Black
South	Tochtli	Green	Cauac	Yellow

with numerical measurements corresponding to the native *quahuatl* (about 2.5 m) and with measurements, thought to be fractions thereof, whose length varied from region to region.⁵⁸ These other measures were based on human proportions; most common was the *cemmatl* (meaning "one arm" or "one hand" in Nahuatl), which many scholars have found to measure about 1.67 meters, and which probably was thought of as the distance from the foot to the raised hand. Other measurements used by Nahuatl speakers included the *cemmitl* (one arrow), symbolized by an arrowhead, the *cenyollotli* (one heart), symbolized by a heart, and the *omitl* (one bone), symbolized by a bone. Ropes knotted at intervals were probably used to measure *quahuatl*.

Postconquest maps and property documents attest to a concern with precise mensuration, not only because Mesoamericans owned property and wanted to know its

56. This axis may have run along the earth's polar axis. See David A. Freidel, Linda Schele, and Joy Parker, *Maya Cosmos: Three Thousand Years on the Shaman's Path* (New York: William Morrow, 1993).

57. Anthony F. Aveni, *Skywatchers of Ancient Mexico* (Austin: University of Texas Press, 1980), 135, and John Eric Sidney Thompson, *Sky Bearers, Colors and Directions in Maya and Mexican Religion*, Carnegie Institution of Washington Contributions to American Archeology, vol. 2, no. 10 (Washington, D.C.: Carnegie Institution of Washington, 1934), 209–43.

58. See studies of the Oztoticpac Lands Map of ca. 1540 (and mention of the related Humboldt Fragment 4): Howard Francis Cline, "The Oztoticpac Lands Map of Texcoco, 1540," *Quarterly Journal of the Library of Congress*, 1966, 77–115, reprinted in *A la Carte: Selected Papers on Maps and Atlases*, comp. Walter W. Ristow (Washington, D.C.: Library of Congress, 1972), 5–33, and H. R. Harvey, "The Oztoticpac Lands Map: A Reexamination," in *Land and Politics in the Valley of Mexico: A Two Thousand Year Perspective*, ed. H. R. Harvey (Albuquerque: University of New Mexico Press, 1991), 163–86. See also Barbara J. Williams, "Mexican Pictorial Cadastral Registers: An Analysis of the Códice de Santa María Asunción and the Codex Vergara," in *Explorations in Ethnohistory: Indians of Central Mexico in the Sixteenth Century*, ed. H. R. Harvey and Hanns J. Prem (Albuquerque: University of New Mexico Press, 1984), 103–25. On Aztec measuring systems, see Victor M. Castillo F., "Unidades nahuas de medida," *Estudios de Cultura Náhuatl* 10 (1972): 195–223, and Lockhart, *Nahuas after the Conquest*, 144–46 (note 49). Few studies treat property maps from the Mixtec regions.



FIG. 5.14. DETAIL OF A RITUAL MEASURING FROM THE CODEX VIENNA. This drawing from the pre-Hispanic Mixtec Codex Vienna shows two unnamed and unclothed figures as they stretch a rope between them. The pair could be engaged in mundane land measurement, but the context makes this unlikely. They are shown in the part of the codex that describes a creation of the world and subsequent ordering of the earth's surface, so their task seems to be a ritual measurement at the beginning of the world. This illustration is one of the few preconquest pictures relating to mensuration. Taken together with colonial descriptions of land measurement carried out with ropes, it establishes that mensuration was both a ritual and a mundane activity.

Size of the detail: ca. 4 × 7 cm. Photograph courtesy of the Österreichische Nationalbibliothek, Handschriftensammlung, Vienna (Cod. Mex. 1, p. 21).

dimensions, but also because Mesoamerican peoples seem to have associated measuring with the important task of ordering the world. The Quiché Maya creation epic, the *Popol Vuh*, begins with the creation of the world, and it is described as

the fourfold siding, fourfold cornering,
measuring, fourfold staking,
halving the cord, stretching the cord
in the sky, on the earth,
the four sides, the four corners.⁵⁹

In the preconquest Mixtec screenfold Codex Vienna, two figures are likewise shown measuring with ropes at the inception of the world (fig. 5.14). Through measuring property, many Mesoamericans may have been reenacting one of the acts of their creation.

TYPES OF MESOAMERICAN MAPS

Mesoamericans left a legacy of maps, but not a system by which to organize them. The map corpus can, however, be divided into groups by way of subject matter, a schema that can embrace all maps and has the additional advantage of showing similarities of media between map types. The relative frequencies of these map types are shown in table 5.3. This schema does, however, gloss over regional differences between maps, a subject of rich possibilities.

CARTOGRAPHIC HISTORIES

Dominating the horizon of Mesoamerican cartography was the cartographic history. Communities throughout Mesoamerica made their own; each map would typically show the community's territory using hieroglyphic toponyms, with the community's own place-name lying at or near the map's center.⁶⁰ Often, near the edges of the map would be set hieroglyphic place-names of boundary markers: a line connecting them would correspond to the boundary line separating the community's landholdings from those of its neighbors. And somewhere on the map an account of the community's history would be included. Across Mesoamerica, this history had defined parameters: it was concerned with genealogies of the elite, campaigns of conquest, founding of cities, and migrations.

In taking as their subject single communities, cartographic histories captured the dominant sociopolitical unit of Mesoamerica. Autonomous community-kingdoms, called *altepetl* by Nahuatl speakers, were the norm; Mesoamericans felt a fierce attachment to their own individual polities rather than to some larger state. Community-kingdoms were ruled by a hereditary elite, and this elite was the subject of the histories contained in these maps. The community-kingdoms varied considerably in size and population; in this they are analogous to counties in the United States. For instance, the most populous *altepetl* at the time of conquest was Tenochtitlan—along with its sister city Tlatelolco, it had a population of between 250,000 and 400,000. The Mixtec community-kingdom of Texupa, although well peopled by Mixtec standards, may have had a population of about 6,500.⁶¹

Cartographic histories present selected truths about the communities that made them; the Mixtec scholar Mary Elizabeth Smith has compared them to modern Chamber

59. Dennis Tedlock, trans., *Popol Vuh: The Mayan Book of the Dawn of Life*, rev. ed. (New York: Simon and Schuster, 1996), 63–64.

60. Cartographic histories are often called *lienzos*, but this term is vague, describing medium rather than content. See Glass, "Survey" (note 4), for a guide to cartographic histories, and Glass and Robertson, "Census" (note 36), for an annotated list. Recent studies of cartographic histories include María del Carmen Aguilera García, "Códice de Huamantla: Estudio iconográfico, cartográfico e histórico," in *Códice de Huamantla* ([Tlaxcala]: Instituto Tlaxcalteca de la Cultura, 1984); José Luis Melgarejo Vivanco, *Los lienzos de Tuxpan* (Mexico City: Editorial la Estampa Mexicana, 1970); and Elizabeth Hill Boone, "Manuscript Painting in Service of Imperial Ideology," in *Aztec Imperial Strategies*, by Frances Berdan et al. (Washington, D.C.: Dumbarton Oaks, 1993), 181–206.

61. Charles Gibson, *The Aztecs under Spanish Rule: A History of the Indians of the Valley of Mexico, 1519–1810* (Stanford: Stanford University Press, 1964), 378; Ronald Spores, *The Mixtecs in Ancient and Colonial Times* (Norman: University of Oklahoma Press, 1984), 96; and Bruce E. Byland, "Political and Economic Evolution in the Tamazulapan Valley, Mixteca Alta, Oaxaca, Mexico: A Regional Approach" (Ph.D. diss., Pennsylvania State University, 1980).

of Commerce maps, showing the rosy picture the community wanted to present.⁶² Thus cartographic histories resist judgment by what we might consider objective standards. For example, the physical expanse of a community-kingdom would be difficult to measure using its cartographic history. The hieroglyphic place-names are usually shown at the edges of the map rather than plotted on a grid. The size of the map, in proportion to the territory depicted, varies with each example. And the history, written by the elites in control, shows what they wanted to be made known.

One representative cartographic history, in the post-conquest book the *Historia tolteca-chichimeca* of 1547–60, emphasizes the boundaries and the history of one *altepetl* (fig. 5.15). This map shows Cuauhtinchan, a community kingdom in the modern state of Puebla. The pictographic place-name of Cuauhtinchan, “Place of the Eagle,” lies in the center of the paper pages, where an eagle stands inside a cave mouth.⁶³ Place-names, most of them comprising the hill pictograph, line the edges of the map, representing the names of Cuauhtinchan’s boundary markers that separated it from neighboring *altepetl*. Although the sequence of these hieroglyphic place-names correlates with Cuauhtinchan’s boundaries, their placement on the map does not correspond exactly to the location of those boundaries on the ground.⁶⁴ The area delimited by these boundaries has been plotted on a modern map, and it covers a region in central Puebla that is a rough polygon about ninety kilometers across (fig. 5.16).

Upon this map of territory, a historical narrative is projected, like a movie on a screen. A group of recently arrived Nahuatl speakers is shown conquering the indigenous population of the region; each local leader, flanking the place-name of his town, has been sacrificed. Eight at right and center have arrows piercing their necks; two others, at lower left and upper right, are stretched on frames and shot through with arrows. In the midst of their conquests, victorious leaders surveyed their boundaries. Their activities are marked on the map by a string of footprints, as if left in their wake.

The *Codex Xolotl* is one of the earliest extant cartographic histories, dating to about 1542.⁶⁵ It is one of the few such works to survive from the Valley of Mexico (fig. 5.17), one of many map histories that must have been made in all the different *altepetl* of the valley.⁶⁶ The *Codex Xolotl* spans ten large unbound sheets of native paper that tell in chronological sequence the history of the community-kingdom of the Acolhuas, an Aztec group. Page 1 begins with the ruler Xolotl (ca. 1150–ca. 1230), who entered the valley to found his capital in Tenayuca (plate 9).⁶⁷ Each page of the codex uses pictures, hieroglyphs, and abstract signs to recount a part of the story of Xolotl and his extended family. Through conquest or marriage, Xolotl and his family seized control of much of the

valley, eventually making their capital in Texcoco. The power of this family was eclipsed after defeat by neighboring Tepanecs in 1418; it was only partly restored by their partnership in the Aztec Triple Alliance, where the Culhua-Mexica dominance was nonetheless unchallenged.

Most pages of the *Codex Xolotl* use as their backdrops maps of the Valley of Mexico. They are oriented to the east like many native maps, with the large valley lakes pictured in the center, their form abstracted into the shape of a hook. This series of maps delicately meters the rise and decline of city-states in the valley. For example, the city-state of Culhuacan was a major power at the time Xolotl arrived in the valley. Thus, on the first pages of the *Codex Xolotl* the hieroglyphic place-name of Culhuacan appears prominently. Tenochtitlan was late to emerge in valley politics, founded in 1325, and its hieroglyphic name does not appear until page 4, which covers much of the thirteenth and early fourteenth centuries. As the size of Tenochtitlan’s hieroglyphic name grows across the subsequent pages, Culhuacan’s shrinks, then disappears; from historical and archaeological evidence, we know the balance of power tipped as well.⁶⁸ Thus the *Codex Xo-*

62. Mary Elizabeth Smith, personal communication, 1994.

63. On the *Historia tolteca-chichimeca*, see Kirchhoff, Odena Güemes, and Reyes García, *Historia tolteca-chichimeca*, and Reyes García, *Cuauhtinchan* (both in note 22), as well as Dana Leibsohn, “The *Historia Tolteca-Chichimeca*: Recollecting Identity in a Nahuatl Manuscript” (Ph.D. diss., University of California, Los Angeles, 1993). No cave is known to exist at the center of Cuauhtinchan (Dana Leibsohn, personal communication, 1994). The cave is probably incorporated into Cuauhtinchan’s place-name because caves in Mesoamerica were often sites of origin myths.

64. Kirchhoff, Odena Güemes, and Reyes García, *Historia tolteca-chichimeca*, esp. map 7. The same general point is made by Robertson, *Mexican Manuscript Painting*, 180 (note 30).

65. See commentary and reproduction by Charles E. Dibble, ed., *Códice Xolotl*, 2d ed., 2 vols. (Mexico City: Instituto de Investigaciones Históricas, Universidad Nacional Autónoma de México, 1980).

66. There seem to have been different versions of the *Xolotl* story. Pages i bis and ii bis were probably part of another codex, also post-conquest, that told the *Xolotl* story (Dibble, *Códice Xolotl*, 1:12 and 46). Yet another version of Acolhua migration and settlement is recorded in the *Mapa Quinantzin* of ca. 1542–48, now in the Bibliothèque Nationale, Paris. For color reproductions, drawing, and description of the *Mapa Quinantzin*, see Pasztory, *Aztec Art*, 202–4, color pls. 39 and 40, and pl. 152 (note 36).

67. *Xolotl*’s story was written out by the colonial historian Ixtlilxochitl, who seems to have used the *Codex Xolotl* as a source for this history. See Fernando de Alva Ixtlilxochitl, *Obras históricas*, 4th ed., 2 vols., ed. Edmundo O’Gorman (Mexico City: Universidad Nacional Autónoma de México, 1985). Ixtlilxochitl dates *Xolotl*’s entry into the valley to the tenth century, but Dibble assigns the thirteenth-century date (Dibble, *Códice Xolotl*, 1:122 [note 65]). However, at least one archaeologist has argued that the earlier date of *Xolotl*’s entry better fits the archaeological record: Jeffrey R. Parsons, “An Archaeological Evaluation of the *Codice Xolotl*,” *American Antiquity* 35 (1970): 431–40.

68. On the history of the valley, see Nigel Davies, *The Aztecs: A History* (London: Macmillan, 1973; reprinted Norman: University of

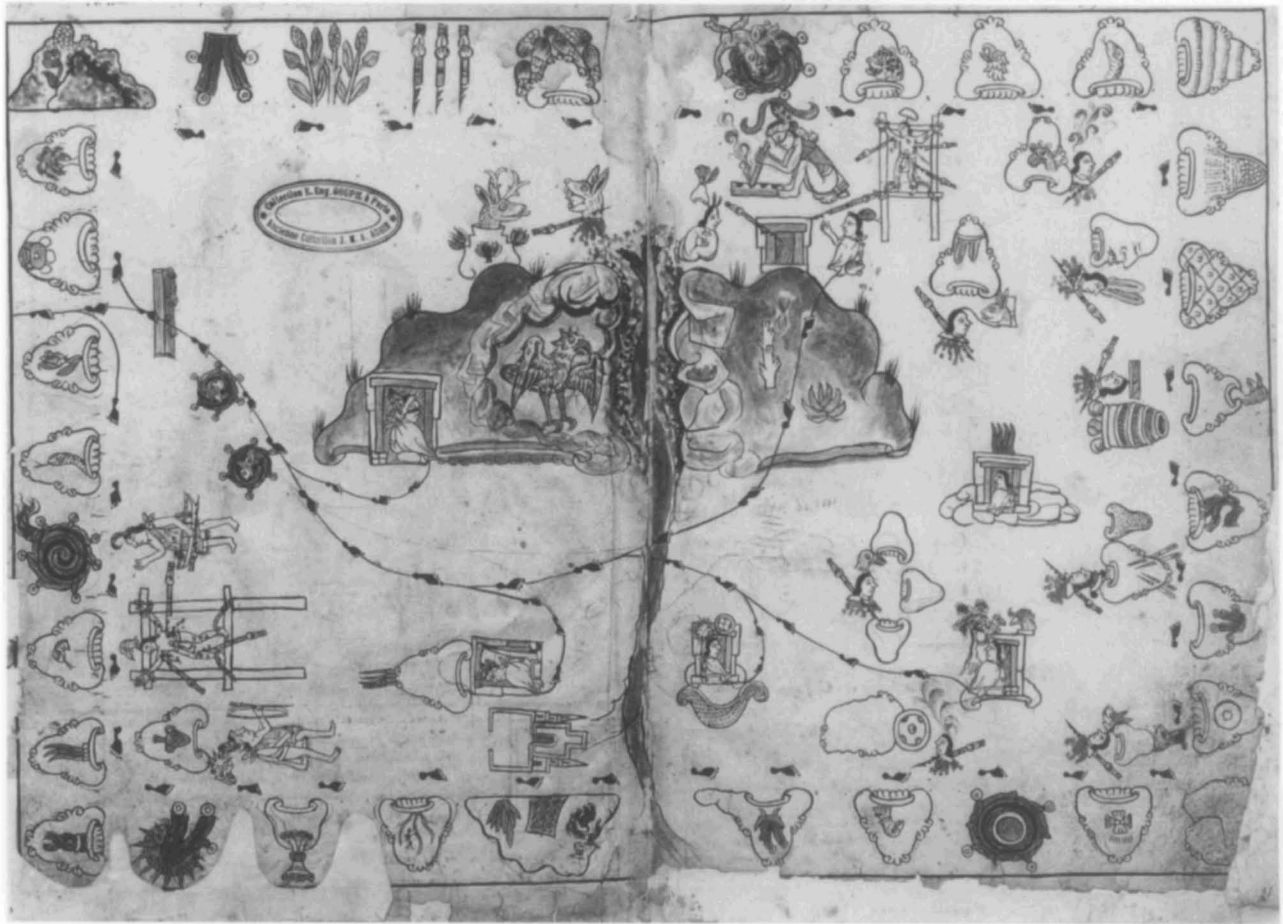


FIG. 5.15. CUAUHTINCHAN IN THE HISTORIA TOLTECA-CHICHIMECA. This map of the community-kingdom of Cuauhtinchan shows both the territory claimed by the people of Cuauhtinchan and the history of its possession. At its center is an elongated hill symbol; the left half is open, like a cave, and contains an eagle (*cuauhtli* in Nahuatl) to stand for the name Cuauhtinchan, "Place of the Eagle." The cave is unknown in Cuauhtinchan and probably is a conventional visual metaphor meaning "place of origin." The edges of the map are lined by the hieroglyphic place-names standing for the boundaries of Cuauhtinchan's territories with those of its neighbors. Almost all of these include the hill pictograph, either to stand for the Nahuatl word *tepetl* or as a marker for a more generalized idea of place. The boundaries pictured on these pages outline an area of about five thousand square kilometers in the

modern Mexican state of Puebla, shaped roughly like a kite. The rhythmic arrangement of boundaries in a rectangular format adheres more to artistic convention than to the planimetry of the boundaries shown.

The land is shown after its conquest by Cuauhtinchan leaders, and footprints order the postconquest narrative. We begin at the middle of the left border, as footprints are shown entering the bounded region. This is the path of the five Cuauhtinchan leaders as they circumambulated these lands after waging war on the inhabitants. After making a counterclockwise circuit, they each took possession of the sacrificed former leaders' lands by occupying their palaces, thus cementing their claim to the region.

Size of the original: 30 × 44 cm. Photograph courtesy of the Bibliothèque Nationale, Paris (46-50, fols. 32v-33r).

lotl's maps are not strictly geographical reckonings but are closely keyed to political changes in the valley during the course of the history.

The Codex Xolotl is a traditional cartographic history, yet it is one broadcast at enormous volume in that it embraces a huge region—much larger than most cartographic histories show. It adheres to convention by including a boundary map on its first page. Along the edges of this page, now sadly deteriorated, lie hieroglyphic place-names representing cities and mountain peaks. Planimetrically, they form a rough loop about 240 kilo-

meters in diameter in whose middle lies the Valley of Mexico (fig. 5.18). These bounding places, according to the seventeenth-century historian Ixtlilxochitl, were visited by Xolotl during a ritual perambulation of the limits of the region he was one day to control.⁶⁹ The Codex Xolotl commemorates his walk by showing Xolotl's

Oklahoma Press, 1980). The archaeological history of the valley is covered in William T. Sanders, Jeffrey R. Parsons, and Robert S. Santley, *The Basin of Mexico: Ecological Processes in the Evolution of a Civilization* (New York: Academic Press, 1979).

69. Ixtlilxochitl, *Obras históricas*, 1:295-96 (note 67).



FIG. 5.16. REFERENCE MAP OF CUAHTINCHAN LANDS. This modern map shows the historical lands of the people of Cuahtinchan, the same regions shown in the boundary map of the *Historia tolteca-chichimeca* (fig. 5.15). These lands lie to the southeast of Cholula, Puebla, in Mexico, and many modern place-names correlate with the ones rendered hieroglyphically in the manuscript. This reveals that the planimetry of Cuahtinchan's boundaries is somewhat different from that shown on the map, but that the sequence is consistent.

After Joyce Marcus, *Mesoamerican Writing Systems: Propaganda, Myth, and History in Four Ancient Civilizations* (Princeton: Princeton University Press, 1992), 164.

footprints threading through some of the boundary place-names, akin to the circumambulation carried out by the leaders of Cuahtinchan in the *Historia tolteca-chichimeca*. This map, however, departs from convention in that the territory mapped shows more than one *altepetl*; it includes many of those that checkered the valley floor. By framing this territory with boundaries, the *Codex Xolotl* makes the exaggerated claim that all these *altepetl* were once subsumed and subordinate to that of the Acolhuas. Cartographic histories were, after all, efforts at self-promotion.

After it was made, this postconquest version of the *Xolotl* story was amended with alphabetic glosses to guide the uninitiated through the labyrinthine twists of the story. In contrast, pre-Hispanic versions of this cartographic history, none of which survive, would have relied only on the hieroglyphs, pictorial images, and signs as well as the foreknowledge of the reader-reciter. Conse-

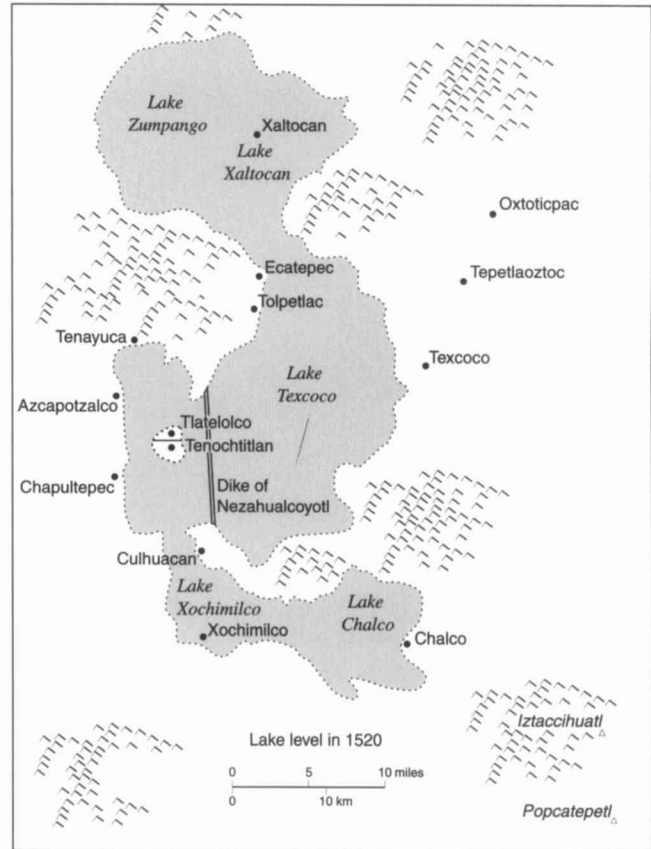


FIG. 5.17. REFERENCE MAP OF THE VALLEY OF MEXICO.

quently, the *Xolotl* map was never meant as a geographic guide for one unfamiliar with the valley. Instead, it served to anchor this story to an ancient arena: the Valley of Mexico.

Cartographic histories were made by other ethnic groups. Members of the important Coixtlahuaca group, for example, were made by speakers of Chocho and Popoluca (see fig. 5.19).⁷⁰ Mixtec speakers created the *Lienzo of Zacatepec 1*, a large cloth sheet (thus given the name *lienzo*) of about 1540–60 (see fig. 5.13). Hieroglyphic place-names, arranged along the edge of this large sheet, map the boundaries of the community of Zacatepec, whose hieroglyphic place-name lies in the middle of the ring (fig. 5.20). Hieroglyphic place-names of neighboring towns are shown outside this ring. Mary Elizabeth Smith, using documents and maps, has identified some of these hieroglyphic place-names; the *Lienzo of Zacatepec*

70. The Coixtlahuaca group comprises native-style manuscripts from the Coixtlahuaca Valley, mostly cartographic histories. See Parmenter, *Four Lienzos* (note 26); Carlos Rincón-Mautner, "A Reconstruction of the History of San Miguel Tulancingo, Coixtlahuaca, Mexico, from Indigenous Painted Sources," *Texas Notes on Precolumbian Art, Writing, and Culture*, no. 64 (1994): 1–18; and Rincón-Mautner's forthcoming dissertation, Department of Geography, University of Texas.

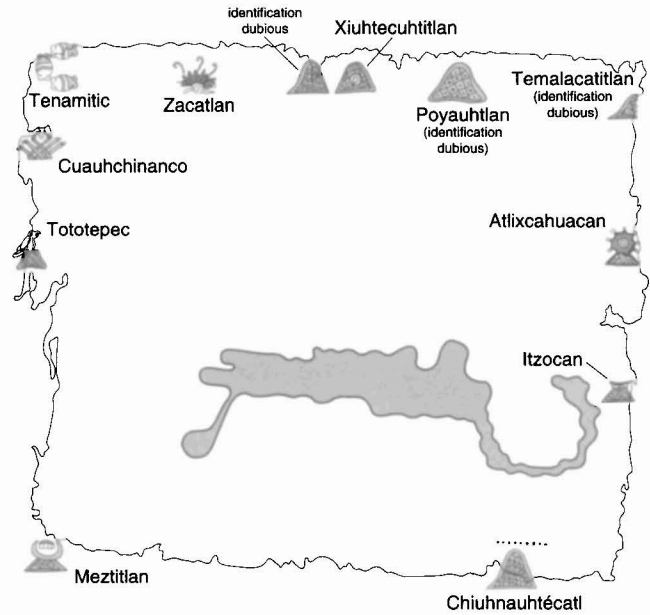
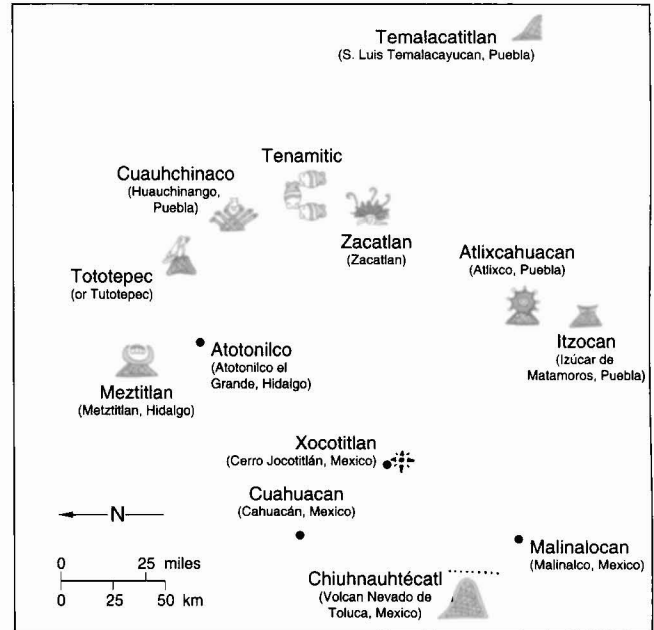


FIG. 5.18. MAP OF CODEX XOLOTL BOUNDARY HIEROGLYPHS. The exterior hieroglyphic place-names on page 1 of the Codex Xolotl limn the boundaries of Xolotl's realm in central Mexico; their placement was dictated as much by the composition of the page as by the planimetry of its subject. The left frame shows the enlarged outer border of hieroglyphic place-names found on page 1 of the Codex Xolotl (compare plate 9). The identifications of these boundary points are based on those given by the seventeenth-century mestizo historian Fernando de Alva Ixtlilxochitl. At right, the known boundaries are arranged planimetrically, following a modern map of cen-



tral Mexico. The star in the center marks Tenochtitlan, and dots mark the boundary sites named by Ixtlilxochitl but not found on the codex. The comparison makes it clear that the Xolotl painter adhered to the sequence and rough orientation of boundary sites. For instance, Zacatlan does lie to the east of the valley and to the south of Tenamitic on both maps. However, the painter was unconcerned with representing absolute distances from the Valley of Mexico or the placement of sites along a scale model grid. As with many native maps, the scale decreases as one moves farther from the center.

probably describes an irregularly shaped region about twenty kilometers across.⁷¹

This cartographic structure is furnished with a historical narrative. The genealogy of the rulers of Zacatepec—shown by pairs of human figures—appears above and within the boundary map established by the ring of place-names.⁷² The *lienzo* shows three generations of Zacatepec's rulers entwined in a historical tale that begins in A.D. 1068 and leads to the foundation of the town of Zacatepec and the establishment of its territory.

The cartographic history was widespread throughout Mesoamerica, and the Mayas may have made such works as well (fig. 5.21). A rare account, recorded about 1690, describes a cartographic history written in Maya or possibly a neighboring language, Pibil.⁷³ This Maya or Pibil map seems to have resembled its central Mexican counterparts, for it reportedly combined a map of territory with a history of its possession. However, this map is known only through a description, and no examples survive to answer the question of the existence of a Maya cartographic history.

The presence or absence of a cartographic history is just one of the many puzzles that surround the subject of

Maya maps. In central Mexico, the many postconquest maps that exist allow us to postulate large numbers of preconquest counterparts. The Spanish conquest hit when the Aztec empire was in full glory, so we have scores of written records and maps that vividly capture the preconquest Aztecs. But the Maya case is different. Few Maya maps survive to tell us of the qualities and breadth

71. The Lienzo of Zacatepec 1 has been studied by Smith (*Picture Writing*, 89–121 [note 25]), and her analysis is the basis for the following discussion.

72. The historical narrative overlying the map may have been drawn from a screenfold manuscript, for it is read in boustrophedon fashion—from left to right then right to left, moving up or (as in this case) down the registers of the page, a reading order shared by some Mixtec screenfolds (Smith, *Picture Writing*, 10, 93, fig. 1). A further connection between this *lienzo* and screenfolds comes with one of the figures in the historical narrative, a man named 4 Wind, who is also an actor in four of the pre-Columbian-style Mixtec screenfolds; see Alfonso Caso, "Vida y aventuras de 4 Viento 'Serpiente de Fuego,'" in *Miscelánea de estudios dedicados a Fernando Ortíz*, 3 vols. (Havana, 1955–57), 1:289–98, and idem, *Reyes y reinos*, 1:137–44 (note 18).

73. Francisco Antonio de Fuentes y Guzmán, *Recordación Florida*, 3 vols., Biblioteca "Goathemala" de la Sociedad de Geografía e Historia, vols. 6–8 (Guatemala City, 1932–33), 2:107–8 (pt. 2, bk. 2, chap. 11).

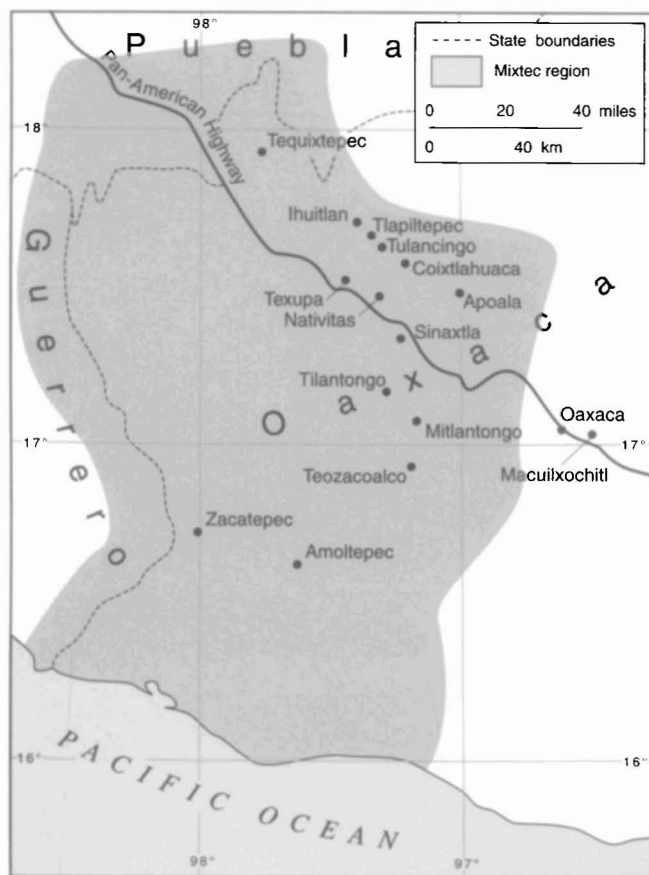


FIG. 5.19. REFERENCE MAP OF MIXTEC REGION.

of their mapping tradition. And the great classic Maya civilization collapsed sometime in the ninth century, so it was at great remove from the collective memory some seven centuries later. The Maya scholar John Eric Sidney Thompson argued for a wide array of preconquest Maya maps, but the secondhand accounts of colonial maps he was able to marshal offer unsteady support for his hypothesis.⁷⁴

A recent study offers a plausible reason for the paucity of Maya terrestrial maps, suggesting that the Mayas, with their textual writing—that is, writing that organized hieroglyphs into blocks of text—primarily recorded territory and history in a textual format, making graphic forms secondary.⁷⁵ The map of the boundaries of the Maya province of Maní is a second- or, more likely, third-generation copy made in 1596 from a 1557 original. In it, boundary markers (platforms topped with Christian crosses) are all set on the outside of a double circle, oriented to the east (fig. 5.22). In the zone between the circles, the names of the boundaries are written in alphabetic script; having a partly syllabic script themselves, the Mayas were quick to adapt the alphabetic script brought by the Spanish. In the interior of the circle, Maya



FIG. 5.20. DETAIL OF THE PLACE-NAME OF ZACATEPEC FROM THE LIENZO OF ZACATEPEC 1. The place-name of Zacatepec is bilingual, expressing both that town's Nahuatl name (Zacatepec, meaning Hill of the Zacate Plant) and its Mixtec one (*yucu satuta*, meaning Hill of Seven Waters). The smaller Nahuatl toponym, at left, shows a hill sign sprouting with zacate plants. A thin black line extends from its base connecting it to the Mixtec toponym, lying at center. Taller and more prominent, it contains within it the symbol for the day sign "water," connected to seven dots. The Mixtec toponym sports some unusual and notable features. The hill sign is marked on its base with an open-mawed earth monster, and on top with a double-faced bird head and a three-branched tree. This combination of monster, bird, and tree is also a feature of cosmographical maps (compare fig. 5.40 below). Size of the detail: ca. 31 × 66 cm. Photograph courtesy of the Instituto Nacional de Antropología e Historia, Museo Nacional de Antropología, Mexico City (35-63).

towns are marked with symbols of churches and likewise named.⁷⁶

If the Maní map were more like a central Mexican cartographic history, we would expect the history associated with the map to be written—with pictures, hieroglyphs, and symbols—right on the map's surface. Instead, it is recounted in accompanying documents written in alphabetic script. These tell how the high lord, the *halach uinic* Don Francisco de Montejo Xiu (fl. ca. 1557), gathered with other nobles from both within and outside his province of Maní to agree on and consecrate boundaries.⁷⁷ In her detailed study of the Maní maps and documents, Frauke Johanna Riese has found the map to be wholly ancillary—a secondary version of the information contained in the text. From the documents—not the map—we learn that Don Francisco then traveled with certain of the nobles around the limits of the province of

74. Thompson, *Dresden Codex*, 9 (note 5).

75. Frauke Johanna Riese, *Indianische Landrechte in Yukatan um die Mitte des 16. Jahrhunderts: Dokumentenanalyse und Konstruktion von Wirklichkeitsmodellen am Fall des Landvertrages von Maní* (Hamburg: Hamburgisches Museum für Völkerkunde, 1981), 175–77.

76. For discussion and reproduction of the Maní map and another noncircular copy, along with associated documents, see Roys, *Indian Background*, 175–94 and figs. 1–3 (note 8). These maps are discussed and their prototypes reconstructed by Riese, *Indianische Landrechte*.

77. Roys, *Indian Background*, 185–86.

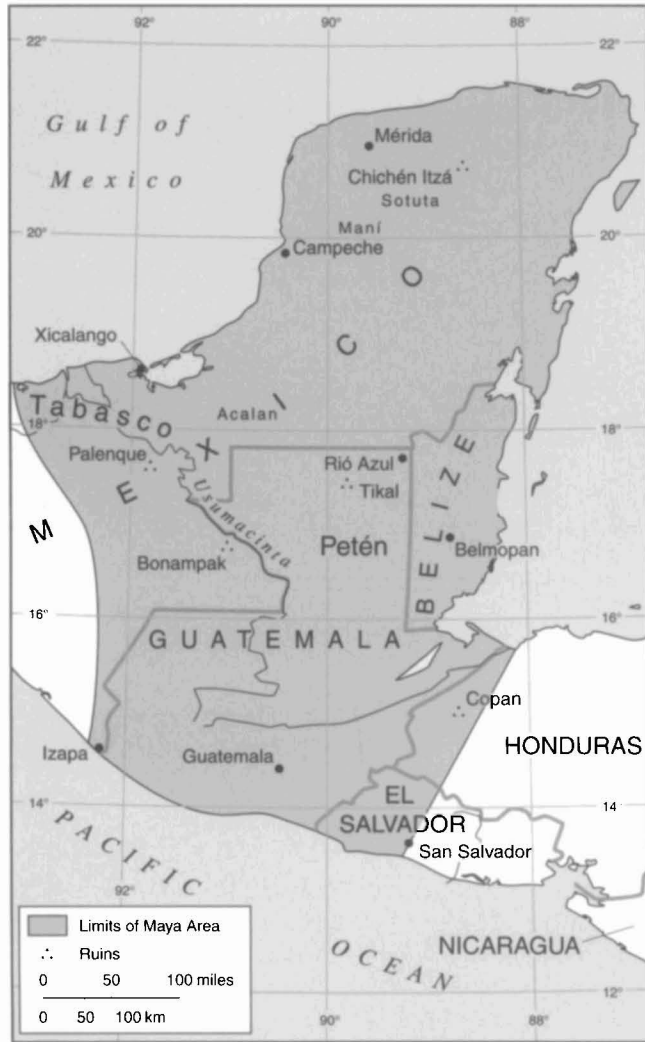


FIG. 5.21. REFERENCE MAP OF MAYA REGION.

Maní to consecrate these boundaries. This account of perambulation is like the graphically rendered footprints we saw in the *Historia tolteca-chichimeca* and the *Codex Xolotl* (fig. 5.15 and plate 9), but it is strictly confined to the text rather than set on the map.⁷⁸

The primacy of the alphabetic text distances the map of Maní from the tradition of cartographic histories; its circular format brings it closer to other Mesoamerican maps. Circular cartographic histories and boundary maps were made across Mesoamerica. Although a rectangular format is more common, perhaps because the media of maps were usually rectangular, a number of such maps are circular; the description of Maya maps as *pepet dz'ibil* (circular paintings or writings) suggests that many Maya maps may have been circular. A map of Sotuta, a province adjoining Maní, shows the boundaries of this province arranged in a circular format, as does a schematic map (without boundaries) of towns in the

(Facing page)

FIG. 5.22. THE MAP OF THE PROVINCE OF MANÍ, 1596. A copy of a now-lost Maya boundary map, this map of Maní is one of the few Maya maps known from the colonial period. It is heavily influenced by Spanish conventions: the town of Maní (center) is represented by a Catholic church and identified by an alphabetic gloss. Radiating out from Maní are other towns in its jurisdiction, most of them identified by churches and alphabetic glosses. The entire province of Maní is ringed by a boundary represented as a double circle, and this circular format seems to be an indigenous one, for examples of it are found throughout Mesoamerica. On the outside of the circle, rectangles topped with crosses likely represent the actual boundary markers—stone piles with crosses. On the inner circle, the names of these boundaries appear. Although some of these boundaries were settlements, others were probably topographic features, like trees or springs. Modern scholars have correlated many of these boundary names to sites on the Yucatan Peninsula around Maní, and they form a rough oval with an east-west axis of about seventy kilometers and a north-west one of about one hundred kilometers. The town of Maní lies within this oval, slightly to the northeast of its center. Size of this copy: 41 × 31 cm. Photograph courtesy of the Latin American Library, Tulane University, New Orleans.

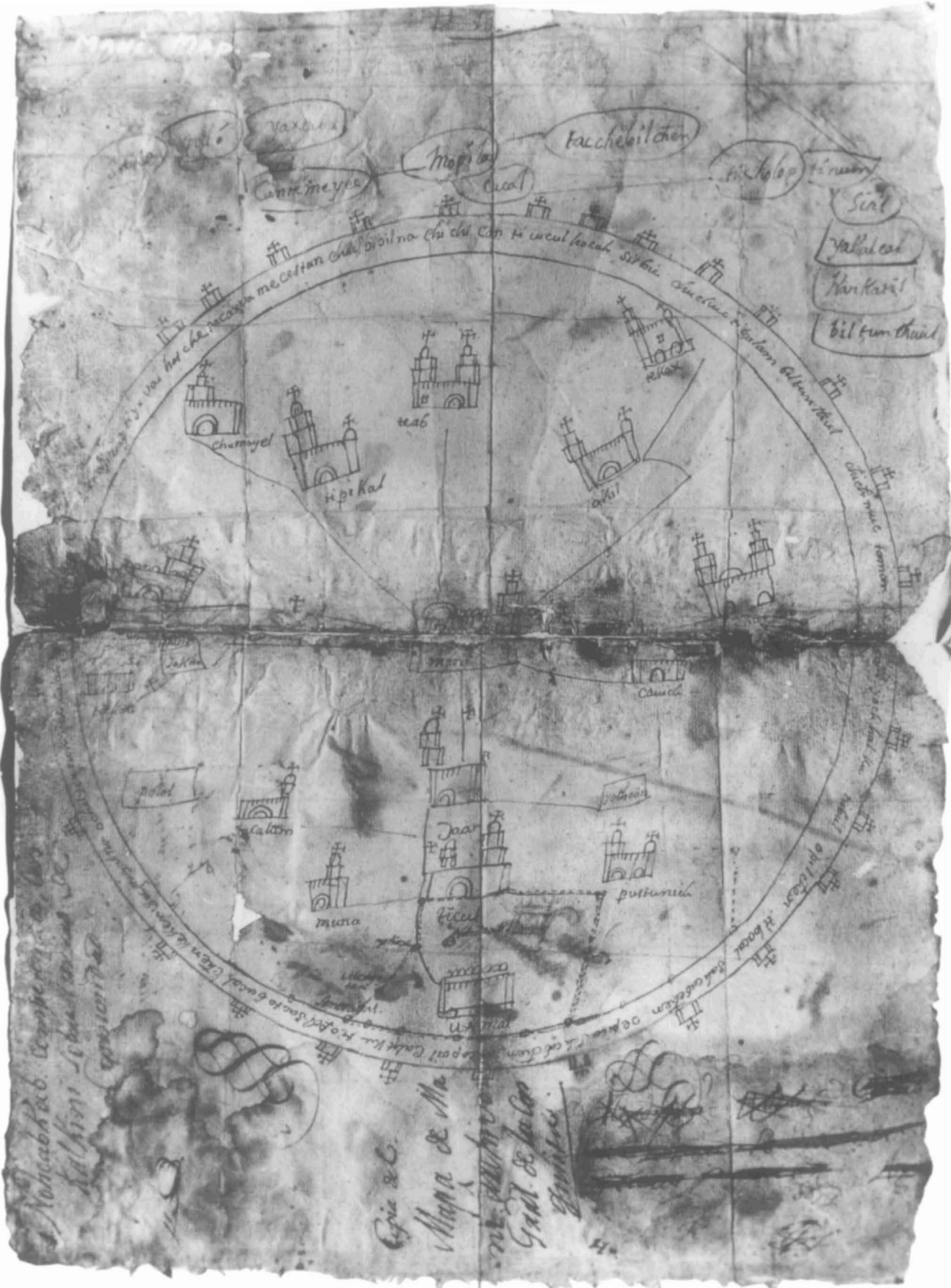
northern Yucatan.⁷⁹ In addition, a 1579 map from Tabasco, though drawn by a European, is also circular and may have been based on Maya convention.⁸⁰ Two Mixtec maps made in the 1580s, one in Tezacoalco and one in Amoltepec, are circular maps, their rings defined by pictographic place-names of Tezacoalco's and Amoltepec's boundaries (figs. 5.23–5.25); much later, in the eighteenth century, the circular format of Mixtec boundary maps resurfaced in a schematic map made in San Andrés Sinaxtla.⁸¹ An Aztec example, the *Mapa circular de*

78. Riese, *Indianische Landrechte* (note 75).

79. A drawing of the Sotuta map is reproduced in Ralph Loveland Roys, *The Titles of Ebtun* (Washington, D.C.: Carnegie Institution, 1939), 9. The map of northern Yucatan is discussed and a drawing is provided in Ralph Loveland Roys, trans., *The Book of Chilam Balam of Chumayel* (Washington, D.C.: Carnegie Institution, 1933), 125.

80. This map is reproduced, with a translation of the glosses, in France Vinton Scholes and Ralph Loveland Roys, *The Maya Chontal Indians of Acalan-Tixchel: A Contribution to the History and Ethnography of the Yucatan Peninsula*, 2d ed. (Norman: University of Oklahoma Press, 1968), 16, map 2.

81. Both Amoltepec and Tezacoalco maps are cataloged by Donald Robertson, "The Pinturas (Maps) of the Relaciones Geográficas, with a Catalog," in *Handbook of Middle American Indians*, vol. 12, ed. Howard Francis Cline (Austin: University of Texas Press, 1972), 243–78. See Caso, "El Mapa de Tezacoalco" (note 18); Barbara E. Mundy, *The Mapping of New Spain: Indigenous Cartography and the Maps of the Relaciones Geográficas* (Chicago: University of Chicago Press, 1996), 112–17; and Ferdinand Anders, Maarten E. R. G. N. Jansen, and Gabina Aurora Pérez Jiménez, *Crónica mixteca: El rey 8 Venado, Garra de Jaguar, y la dinastía de Tezacoalco-Zaachila, libro explicativo del llamado Códice Zouche-Nuttall*, MS. 39671 *British Museum, Londres* (Mexico City: Fondo de Cultura Económica; Graz: Akademische Druck- u. Verlagsanstalt, 1992), for a current account of the map's hieroglyphic toponyms. The San Andrés Sinaxtla map is listed in Glass and Robertson, "Census," 198 (no. 291) (note 36).



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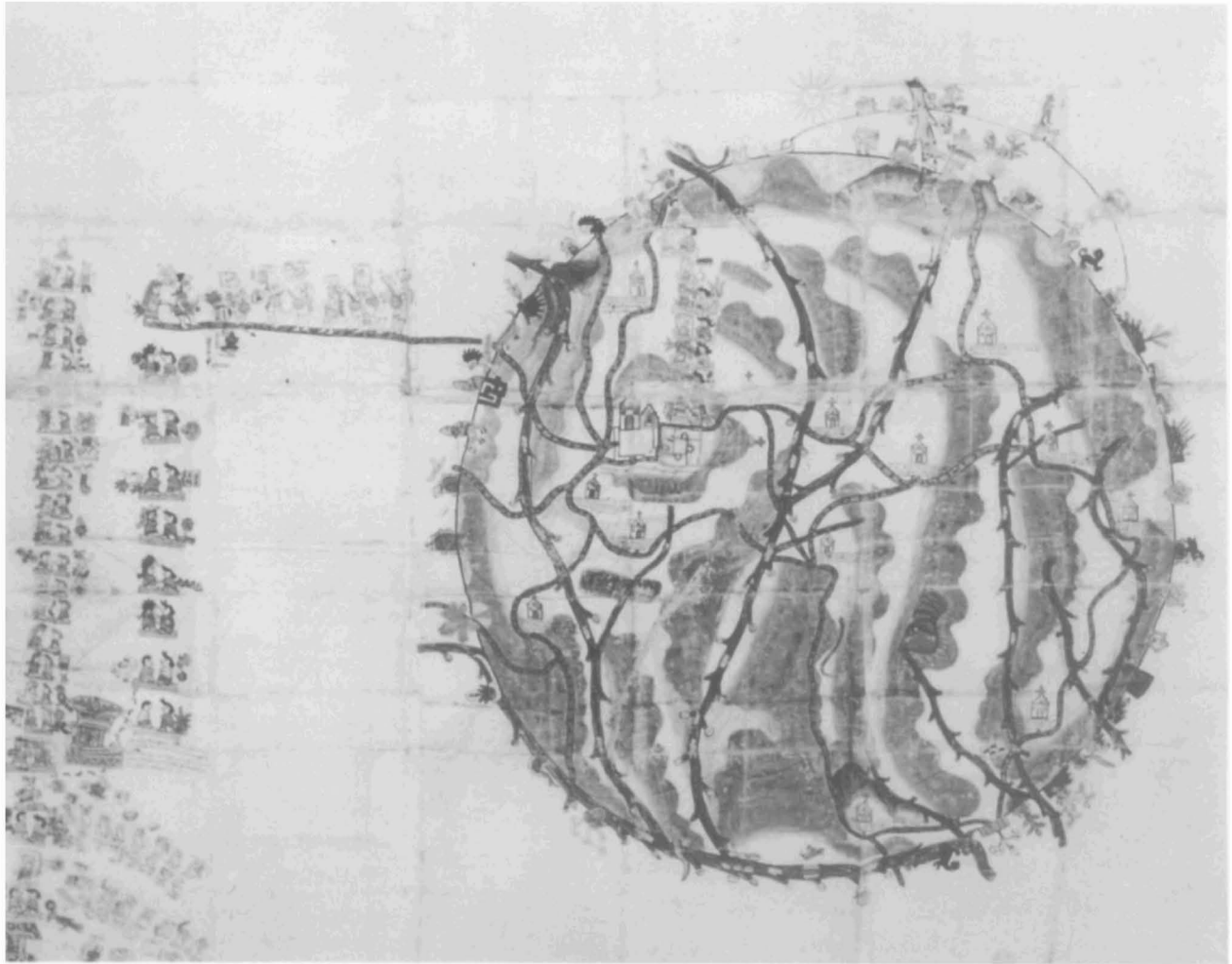


FIG. 5.23. RELACIÓN GEOGRÁFICA MAP OF TEOZACOALCO. This manuscript map was made in a small Mixtec town in 1580, one of many such community maps commissioned by the Spanish king, Philip II. It shows the territory controlled by Teozacoalco as a large circle defined by Teozacoalco's boundaries with its neighbors; this ring encloses a vivid topographical map of the region. The map oscillates between European and Mesoamerican mapping traditions. It is quite large, much like Mixtec community histories painted on cloth, yet the Teozacoalco map is made out of twenty-three sheets of European paper pasted together at their edges. The circular format of the map connects it to the indigenous tradition, yet its painter was undoubtedly exposed to conventions of European maps and landscape paintings. Within the circle, Teozacoalco and its subject towns are each designated by Catholic churches and set within an elaborate European-style landscape of undulating hills. In many respects, the European

Cuahquechollan, also exists.⁸² Thus the circular map was made throughout Mesoamerica and is, in my view, wholly indigenous in origin.⁸³

Purpose and Contexts

We know that a large number of Mesoamerican commu-

elements are just filler; at its heart the map mirrors indigenous cartographic traditions. True to the requirements of cartographic histories, the map includes a genealogical record of the rulers of Teozacoalco and another town, Tilantongo, who supplied Teozacoalco with its ruling caste. This genealogy is shown by columns of human figures that can be seen to the left of and within the circular map; it begins in the tenth century and ends with a postconquest ruler of Teozacoalco. The inscribed circle defining Teozacoalco's territory is studded with forty-six hieroglyphs that refer to the names of Teozacoalco's boundaries. The crescent-shaped hump at the upper right of the map is also lined with hieroglyphic place-names; these mark a former set of boundaries. The correlation of the Teozacoalco map with a modern map can be seen in figure 5.24.

Size of the original: 142 × 177 cm. Photograph courtesy of the Nettie Lee Benson Latin American Collection, University of Texas, Austin (JGI xxv-3).

82. The Mapa circular de Cuahquechollan is described and reproduced in Glass and Robertson, "Census," 117 (no. 90) and fig. 34 (note 36).

83. Smith (*Picture Writing*, 166 [note 25]) points to the possible influence of European T-O maps on native artists, such maps being well known to the Aztec artists illustrating Sahagún's *Codex Florentine*. Smith describes the format as "a European import," while Robertson thinks the circular form "had Pre-Conquest antecedents" (*Mexican Manuscript Painting*, 180 [note 30]). I argue in support of Robertson's

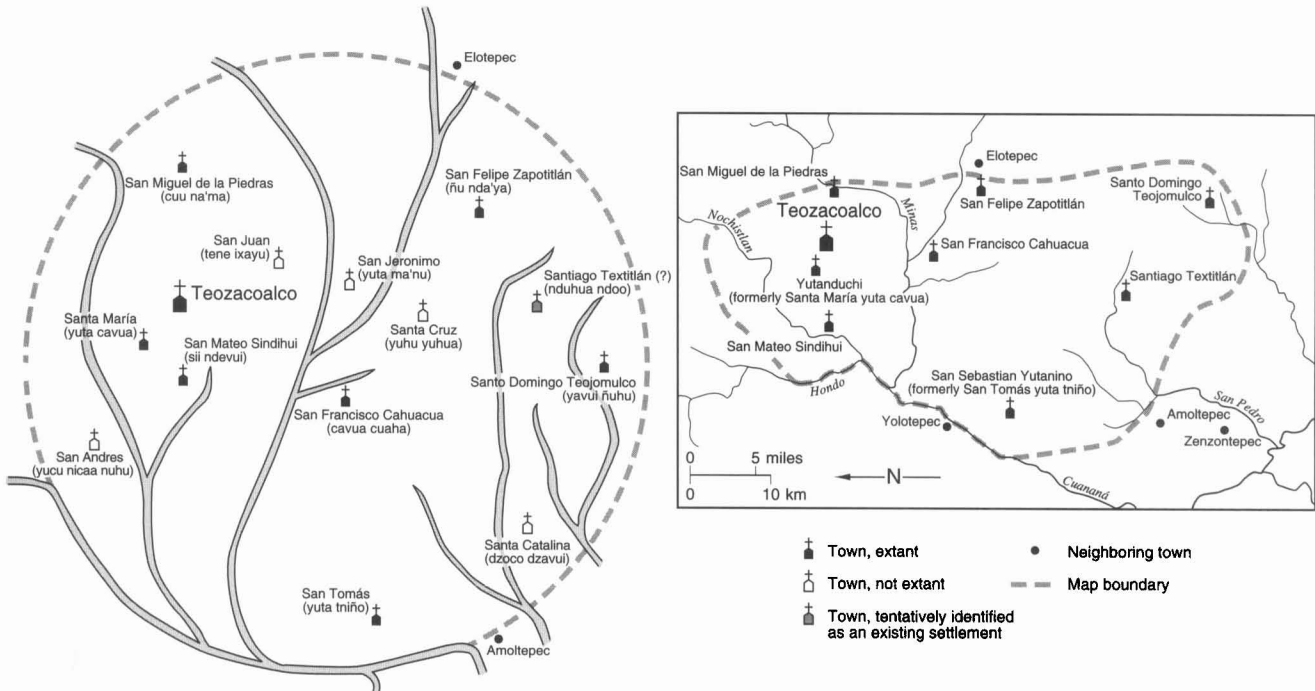


FIG. 5.24. COMPARISON OF THE TEOZACOALCO REGION AND THE RELACIÓN GEOGRÁFICA MAP OF TEOZACOALCO. On the left is the topography of the Relación

geográfica map of Teozacoalco (see fig. 5.23), and on the right is a modern map of the region. Mixtec names are shown in parentheses.

nities held cartographic histories because many survive today. These maps functioned on two levels, their cartographic information playing an instrumental role in a community's dealings with other communities, and their historical component defining relations among community members.

The extracommunal role of community maps is clear. Since Mesoamerican peoples held most land communally,⁸⁴ the fields, watersheds, and forests that boundaries fenced in were the source of both their subsistence and their wealth; boundaries were carefully guarded for good reason. Border disputes between communities flared both before and after the conquest, and a detailed map of boundaries not only reminded a community of its own holdings but served as a kind of legal title during territorial disputes with neighbors.

Before the conquest, Mesoamericans might have used maps in appeals to their region's higher political authority. After the conquest, they also used them to appeal to authorities outside the community, in this case the courts of law established by the Spanish: many indigenous maps are attached to or referred to in court records from the sixteenth century on.⁸⁵ We see a continuity of purpose in the two versions of the Lienzo of Zacatepec. The first version (fig. 5.13) is a detailed map of the boundaries of the town of Zacatepec. It was written almost entirely in Mixtec style, with hieroglyphs naming places, and no doubt was meant to be used by a wholly Mixtec audience, most

likely to prove Zacatepec's claim to the territory shown. Some forty or sixty years after this *lienzo* was painted, a copy was made, but in this one the hieroglyphs were all glossed with alphabetic transcriptions.⁸⁶ This change seems to show that the new *lienzo*, called the Lienzo of Zacatepec 2, was aimed not only at Mixtecs, who would read the hieroglyphs, but also at Spaniards, who would read the alphabetic glosses and who ultimately controlled all land rights. Both these *lienzos* were brought to Mexico City to be presented as evidence before Spanish-speaking authorities in a land dispute in 1892, and it seems likely that the second *lienzo* had been made centuries earlier for a similar appeal.

Although cartographic histories were used to prove

view in Barbara E. Mundy, "The Maps of the Relaciones Geográficas, 1579–c. 1584: Native Mapping in the Conquered Land" (Ph.D. diss., Yale University, 1993), 209–10.

84. Systems of native land tenure throughout Mexico have been the subject of much study. Although the picture has grown clearer in recent years for the Valley of Mexico, it is still dim for other regions. See Lockhart, *Nahuas after the Conquest*, 141–76 (note 49), for discussion and pertinent bibliography.

85. On pre-Hispanic disputes, see John M. D. Pohl, *The Politics of Symbolism in the Mixtec Codices* (Nashville: Vanderbilt University, 1994). For postconquest suits, see Lockhart, *Nahuas after the Conquest*, 353–57 (note 49); Gibson, *Aztecs under Spanish Rule*, 268 (note 61); and Mundy, *Mapping of New Spain*, 180–211 (note 81).

86. The two *lienzos* are discussed in Smith, *Picture Writing*, 89–121 (note 25).

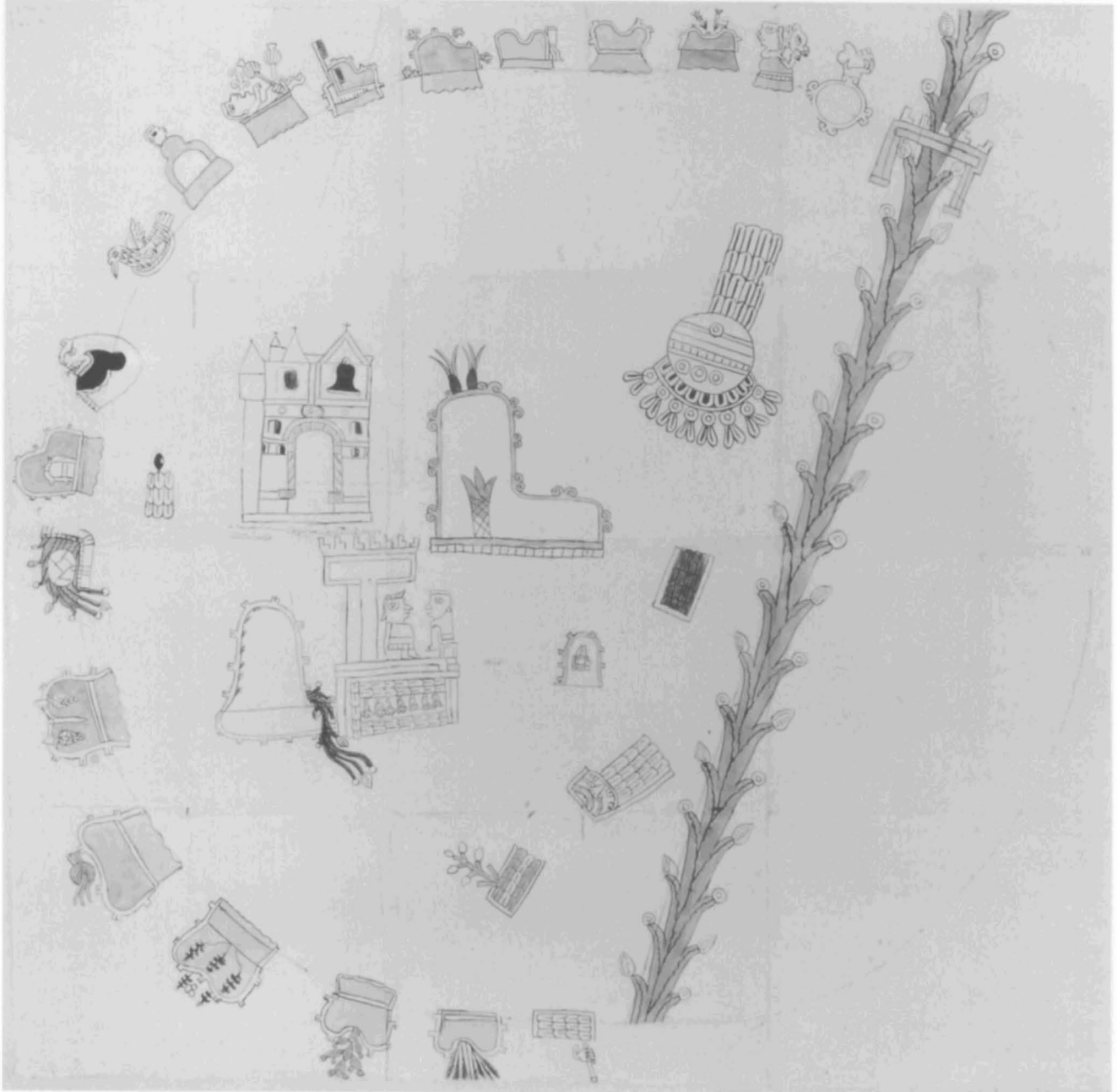


FIG. 5.25. RELACIÓN GEOGRÁFICA MAP OF AMOLTEPEC, 1580. The small Mixtec town of Amoltepec, responding to Philip II's request for a community map, produced one that is similar in many respects to that of its close neighbor, Teozacoalco. Amoltepec's boundaries are also arranged in a circular format, with nineteen hieroglyphic place-names set on an inscribed circle. This circle of boundaries is cut on the right by a river, represented as a straight line of flowing water. Within this enclosure of boundaries and river are several hieroglyphs. The toponym of Amoltepec, or *yucu nama* in Mixtec, meaning "Hill of the Soap Plant" is at the center. It is an L-shaped

hill symbol that encloses a plant and also has two similar plants growing from its apex. To the left of the Amoltepec place-name lies the town's Catholic church, with its arched doorway and belfry. Below the church and hieroglyphic place-name, Amoltepec's ruling couple are shown facing each other, seated in a T-shaped palace. Unlike the Teozacoalco map, this map offers little in the way of history; the ruling couple are not named, nor is their genealogy traced.

Size of the original: 86 × 92 cm. Nettie Lee Benson Latin American Collection, University of Texas, Austin (JGI xxv-3). Photograph courtesy of Barbara Mundy.

land rights, we have scant record of how they were used within the communities that made them. Here, no doubt,

the histories recorded were crucial. The histories centered on elites and often provided rationales for elite predomi-

nance; Joyce Marcus has gone so far as to call them propaganda.⁸⁷ Whether propaganda or enlightenment, *lienzo*-format cartographic histories were a means of showing this history to the community at large. The very large format of *lienzos*—the size of a bedsheet—suggests they were meant for public viewing, perhaps hung out like banners during community celebrations. In addition, the hieroglyphic, pictorial, and symbolic vocabulary used on these community histories is quite simple; the hieroglyphic toponyms and genealogies could be easily decoded by almost any member of the community. Their semipermanent medium, cloth, tells us they were not intended to last forever and thus could be recopied and updated as boundaries shifted and historical narratives changed course.

Cartographic histories in other formats may have been meant for elites only, to bolster their authority within a clique. For example, the manuscript book the *Historia tolteca-chichimeca* includes four intact cartographic histories telling of various groups settling around Cholula. It seems to have been painted for a local leader, Don Alonso de Casteñeda (fl. ca. 1550), to establish the antiquity and prominence of his lineage among all Cholula elites.⁸⁸

Origins

Cartographic histories are not the only place we see a concern with elite genealogies and conquest; this was the business of historical writing throughout Mesoamerica. In fact, cartographic histories were probably an offshoot of written histories. They may have begun as pages in historical codices—painted in registers in screenfold manuscripts—and come to have a life of their own. The evidence for this origin is inferential rather than direct. First, the kind of history and the conventions of its presentation are nearly identical in many cartographic histories and screenfold histories. Both established the authority of elites through genealogy and conquest,⁸⁹ and both used the same written forms. Second, a pre-Hispanic screenfold manuscript, the *Codex Nuttall*, reveals pages that look like cartographic histories.⁹⁰

The *Codex Nuttall* was a Mixtec history that most agree was painted before the Spanish conquest, for it shows no trace of European influence. Most of its pages are lined with figures, places, and dates arranged in registers that were read in sequence.⁹¹ But the arrangement of page 36 is markedly different from that of most of the rest of the manuscript. It is not broken into registers. Instead, the whole page is taken up with a schematic map of the Apoala Valley, the *fons et origo* of Mixtec kingly lineages (fig. 5.26), for it was here that royal ancestors were miraculously born from a tree.⁹² Figures 5.27 and 5.28 compare the toponyms and geographic features of page 36 of the *Codex Nuttall* with a sketch of the Apoala Valley, showing the correlations scholars have made. The

open-mouthed serpent at the left edge stands for the Mixtec toponym *yahui coo maa* (Deep Cave of the Serpent), the name of a spring on the northeast edge of the valley. The central symbol within each of the two rivers pictured on the valley floor is a toponym. On the left, a hank of knotted grass within the river represents the Mixtec name *yuta ndua nama* (River of the Barranca of the Soap Plant). In the river to the right, a hand grabbing a bunch of feathers is used to show *yuta tnuhu* (River of the Lineages). *Tnuhu* means “lineages” but is represented on this map by a near homonym, *tnoho*, meaning “to pluck, as birds,” and is shown by the hand holding a bunch of feathers.⁹³ These two rivers do in fact run across the floor of the valley. The figure of the lower half of a human may represent the drop-off between the upper and lower plains of the Apoala Valley, or it may be a rendering of the name *cabua quina* (Cliff of the Childbirth), as this precipice is known today.⁹⁴ A comparison with the schematic map confirms that the rendering on *Codex Nuttall*, page 36, is a perfectly readable map of the Apoala Valley, one that combines a southward-directed view with certain elements shown in cross section.

This map is a stage for a drama. The principal players in this scene are named, as were most Mesoamerican peoples, after their birthdates. This combination of a number with a day name would be akin to calling William Shakespeare “23 Sunday.” At bottom we see the deities 13 Flower and her husband 1 Flower, their daughter 9 Crocodile, and her husband 5 Wind. 13 Flower is identified by a pictograph for flower flanked by thirteen dots, while her husband is shown with a flower and one dot. The characters 9 Crocodile and 5 Wind are likewise identified; the pictograph for Crocodile and the symbol for Wind are flanked by corresponding numbers. As we

87. See Marcus, *Mesoamerican Writing* (note 45).

88. See Kirshhoff, Odena Güemes, and Reyes García, *Historia tolteca-chichimeca*; Reyes García, *Cuauhtinchan* (both in note 22); and Leibsohn, “Historia Tolteca-Chichimeca” (note 63).

89. See Caso, *Reyes y reinos*, vol. 1, *passim* (note 18).

90. Also called the *Codex Zouche-Nuttall*. See Zelia Nuttall, ed., *The Codex Nuttall: A Picture Manuscript from Ancient Mexico* (New York: Dover, 1975). See also Anders, Jansen, and Pérez Jiménez, *Crónica mixteca* (note 81); Byland and Pohl, *Realm of 8 Deer* (note 27); and Pohl, *Politics of Symbolism* (note 85).

91. The *Codex Nuttall*, like other Mixtec screenfolds, was read in boustrophedon fashion.

92. Jill Leslie Furst, “The Tree Birth Tradition in the Mixteca, Mexico,” *Journal of Latin American Lore* 3 (1977): 183–226. Jansen has identified the map as showing the Apoala Valley and correlated the *Codex Nuttall* hieroglyphic place-names to Apoala toponyms. Jansen, “Apoala y su importancia” (note 27).

93. Smith, *Picture Writing*, 75 (note 25).

94. Compare the interpretation of Jansen, “Apoala y su importancia” (note 27), and Ferdinand Anders and Maarten E. R. G. N. Jansen, *Schrift und Buch im alten Mexiko* (Graz: Akademische Druck- u. Verlagsanstalt, 1988), 173.

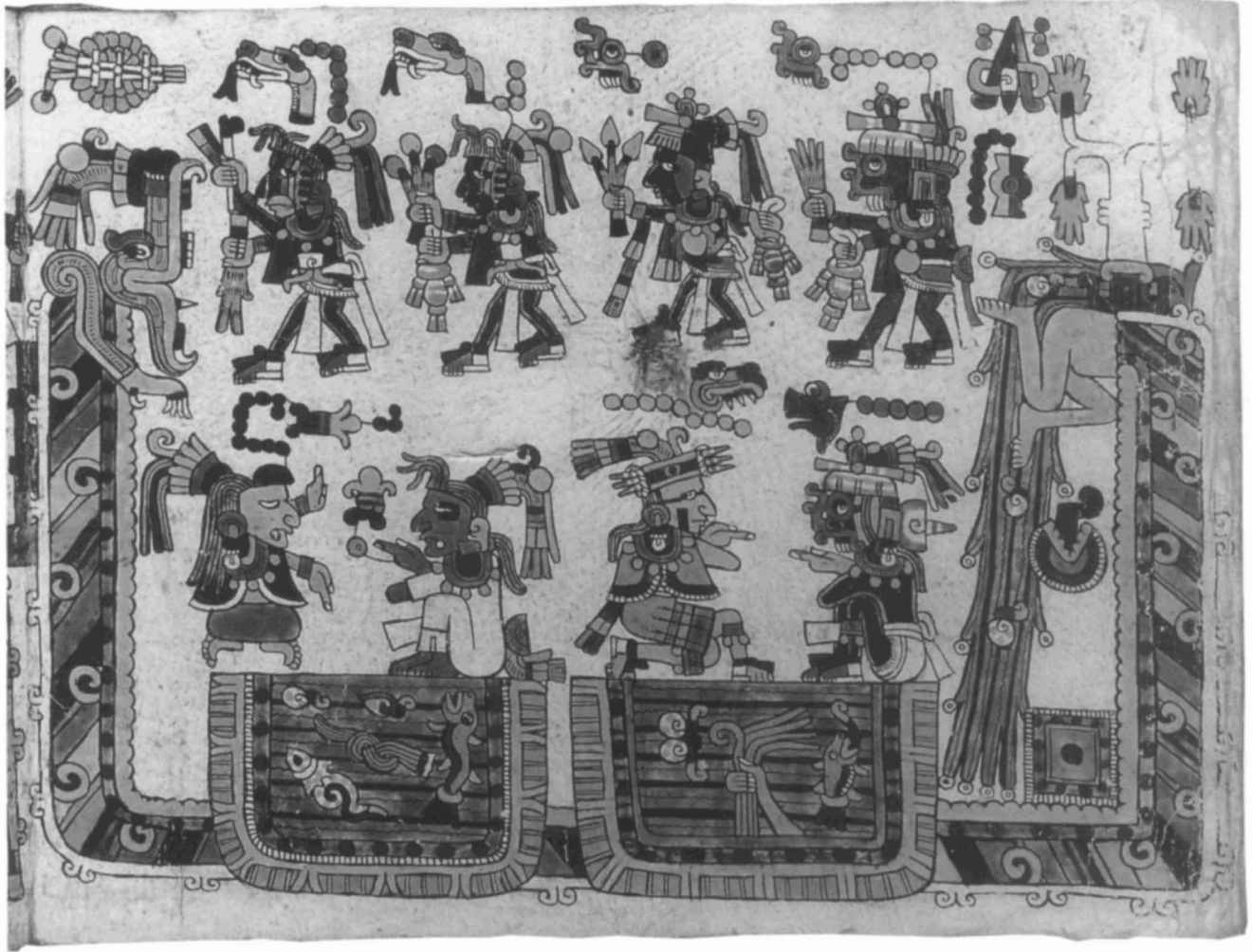


FIG. 5.26. PRE-HISPANIC MAP IN THE CODEX NUTTALL. This page from a rare preconquest Mixtec screenfold is one of the few pre-Hispanic maps to survive. It is a schematic map of the Apoala Valley, an important Mixtec site. Much of the valley is shown in cross section. The large U-shaped frame that runs two-thirds of the way up the page represents the steep valley walls and floor. This striated band is meant to symbolize the earthly surface: it is marked on its exterior with double curlicues, the symbol of stoniness. The base of this valley U is inlaid with two smaller U shapes, the conventional Mixtec symbol for river, again presented as if seen in cross section (see fig. 5.9g above). These two river symbols are filled with alternating wavy and straight horizontal bands, blue pigment, and aquatic images to represent water. Both the left and the right side of the U-shaped valley end with important features. At the left, the U terminates in a snake with the open

know from other pre-Hispanic codices, 9 Crocodile and 5 Wind founded Apoala's ruling dynasty.⁹⁵ They sit in the lower register of the page and are framed by both the toponyms and landscape features that define the Apoala Valley.

This map page of the Codex Nuttall may point to the cartographic history as developing out of a narrative,

maw of the earth monster, meant to symbolize a cave. The right part of the U ends with a four-branched tree; near its base there springs a waterfall, and below it the buttocks and legs of a human emerge from the earth. These are a combination of topographic features and toponyms. For instance, a waterfall cascades over a cliff in the middle of the Apoala Valley. The tree may refer to the Apoala birth tree, from which important Mixtec lineages were born, and which Apoala residents have recently identified as a huge tejocote or perhaps ceiba tree that once grew on the bank of the river above the waterfall. (Note that although the page the map appears on is generally identified as page 36, the British Museum uses page number 37 and uses the title *Codex Zouche Nuttall*.)

Size of the original: ca. 19 × 23.5 cm. Copyright the British Museum, London (Add. MS. 39671, p. 37).

noncartographic history written in screenfold manuscripts. This Codex Nuttall page is not unique, for it is similar to two others in the manuscript, pages 19 and 21,

95. Jill Leslie Furst, *Codex Vindobonensis Mexicanus I: A Commentary* (Albany: Institute for Mesoamerican Studies, State University of New York, 1978), 62. Also, Jansen, *Huisi Tacu* (note 27).

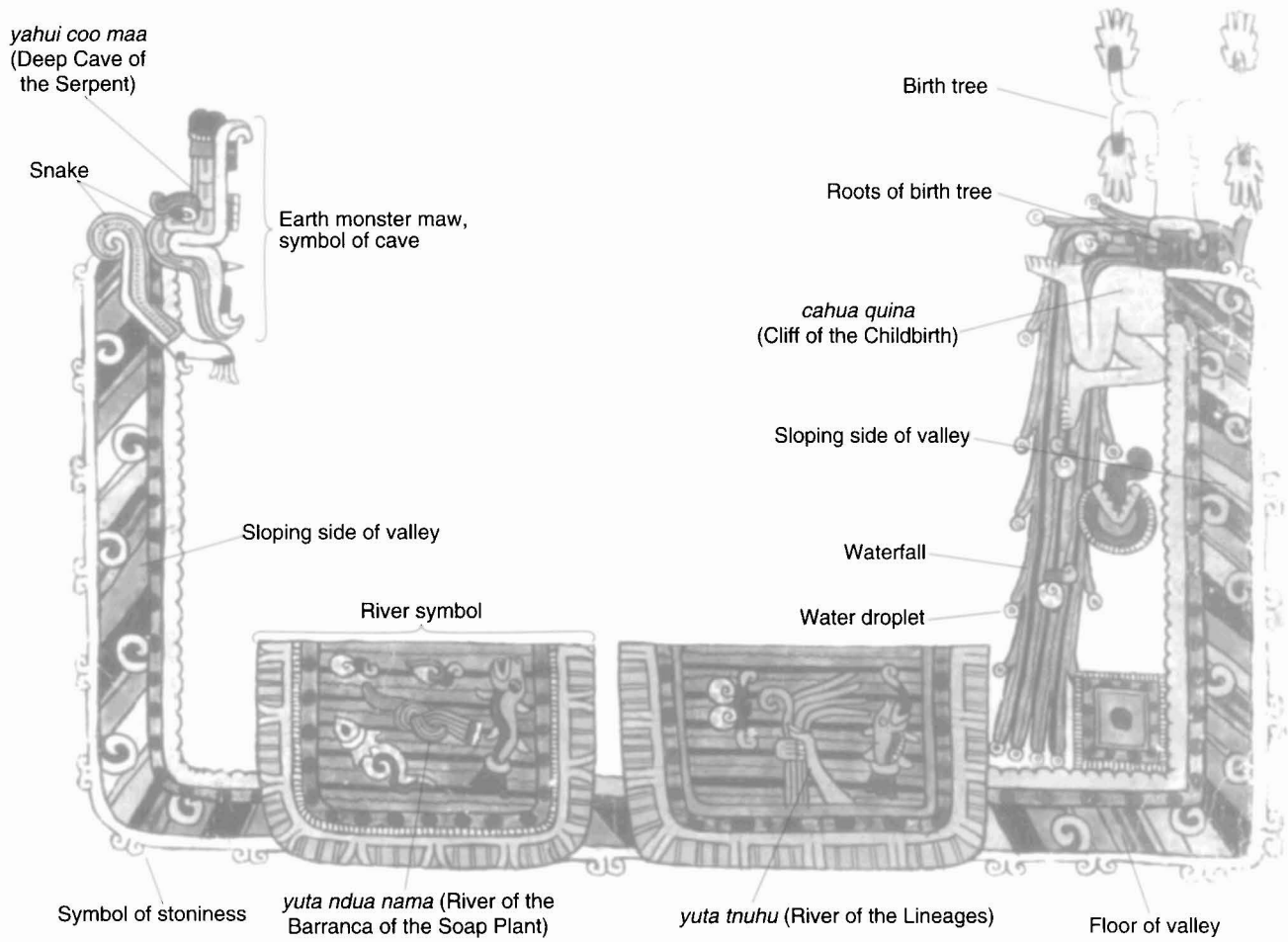


FIG. 5.27. DRAWING OF LANDSCAPE ELEMENTS AFTER THE CODEX NUTTALL. Compare figure 5.26. Mixtec names in italic.

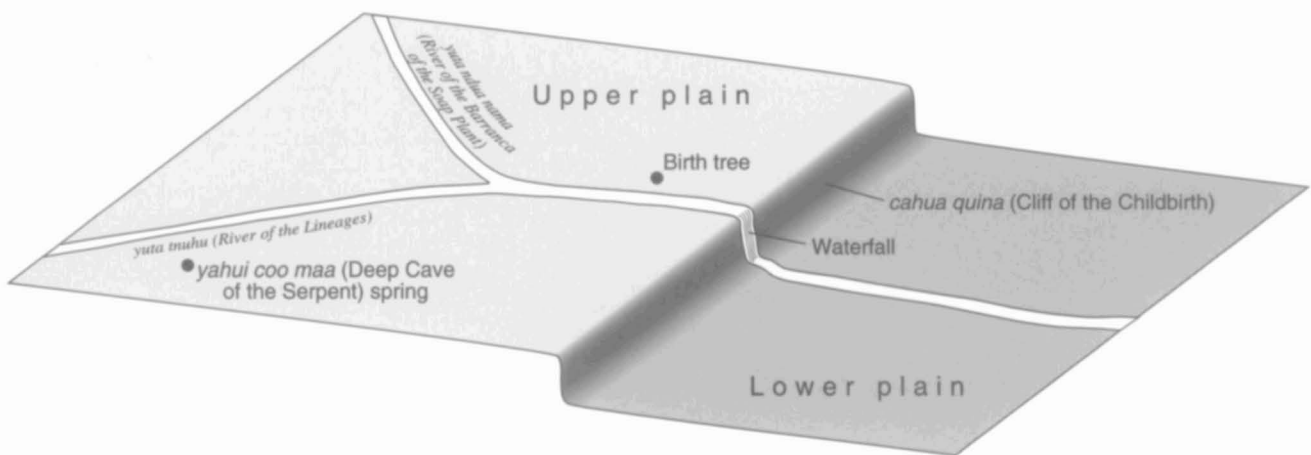


FIG. 5.28. MAP OF THE APOALA VALLEY. Compare figures 5.26 and 5.27.

that seem to be projections of other parts of the Mixtec region.⁹⁶ These pages are similar in turn to sections of the Codex Vienna (for example, 45c and 14b), which show series of hieroglyphs that seem to be arranged cartographically.

In sum, cartographic histories, as their compound name suggests, had dual purposes. The first, arising from the history, was to confirm the identification, origin, and status of ruling elites in that territory. The second, arising from the map, was to record the extent of territory a community held. The earliest known context of these maps—in the Codex Nuttall—seems to confirm that the historical purpose was a precursor of the cartographic.

RELATED ITINERARY HISTORIES

Cartographic histories as described above did not exist in isolation. I have discussed their close relation to, and inclusion in, books of history, whether postconquest ones or preconquest screenfolds. Also related to cartographic histories are the itinerary histories. Like cartographic histories, itinerary histories seem to be an offshoot of the tradition of written histories and flourished among some ethnic groups in the Valley of Mexico and among others throughout Puebla. They differ from cartographic histories in their format, which was essentially linear and showed a sequence of places. Notable events en route would be rendered like dramatic tableaux along the itinerary. The difference between the spatial arrangements of the itinerary history and the cartographic history is analogous to that between a straight line and a net, but their function was much the same. In the Codex Xolotl, the Acolhuas of Texcoco employed a map to record the historical conquests and marriages of Xolotl and his family and thus expressed their rights to territory. In nearby Tenochtitlan, the Culhua-Mexicas used an itinerary instead of a map to document their rights to territory.

Perhaps the Culhua-Mexicas favored the itinerary because it fit their ideology of possession. Sometime in the semimythic past, the Culhua-Mexicas claimed to have been called out from the island paradise of Aztlan, and they then traveled for years, enduring hardships and defeats in search of a new homeland.⁹⁷ The driving force behind their move was their tutelary god, Huitzilopochtli, who in time led them to Tenochtitlan. The Culhua-Mexicas believed this long journey was their initiation as a chosen people, conferring on them the right to settle in Tenochtitlan. In representing their history, the Culhua-Mexicas found that the itinerary format, a sequence of places leading irrevocably to Tenochtitlan, best captured their sense of divinely ordained mission.

One of these pictorial migration histories is the Mapa de Sigüenza (fig. 5.29), and its name “Mapa” suggests it maps the Culhua-Mexica migration route. But in truth,

the Mapa de Sigüenza lies somewhere between the linear itinerary form and the two-dimensional format of the cartographic history. The arrangement of places on the right side is determined by their sequential order along the itinerary route rather than by their planimetric relations. In the left quadrants, however, the planimetric relations between places are more specifically expressed (fig. 5.30). Here, Culhuacan, a town in the Valley of Mexico, and the swampy valley lakes are prominent. The placement of the lakes, of Culhuacan, and of the identifiable hieroglyphic toponyms in the valley show that this side of the Mapa de Sigüenza—and this side alone—roughly shows the planimetric relations between these features.

The Codex Boturini (also known as the Tira de la peregrinación; fig. 5.31) tells a narrative similar to that of the Mapa de Sigüenza, but the linear format, which offers little in the way of orientation, underscores the predominance of the itinerary sequence.⁹⁸ The places the Culhua-Mexicas visited on their migration are arranged along a long strip of *amatl* paper, a *tira*, one hieroglyphic toponym following the next like beads on a string. Upon this spatial trajectory, the artist of the Codex Boturini imposed a temporal ordering, interspersing hieroglyphic year dates among the hieroglyphic toponyms. The uneventful train of dates and places is broken by events that are rendered as tableaux, as in the Mapa de Sigüenza. Whether he is cajoling or punishing, the deity Huitzilopochtli figures prominently as he prods the Culhua-Mexicas toward their predestined capital of Tenochtitlan.

The Culhua-Mexicas were not alone among the Nahuatl-speaking peoples in using itineraries to show divinely ordained arrival and, by extension, a right to possess a particular territory. To the east, in the center of the modern state of Puebla, other Nahuatl speakers used itinerary maps to show their emigrations from the mythic cave of origin, Chicomoztoc, or from the ancient Toltec capital of Tula. The left side of the Mapa de Cuauhtinchan 2, for example, shows the travels of two heroic figures, Ixcicohuatl and Quetzaltehueyac, from the city of

96. Pohl and Byland, “Mixtec Landscape Perception” (note 27).

97. The Culhua-Mexica migration history seems to have been based in historical events, as are the migration histories of other Nahuas who pushed southward into the valley sometime in the postclassic period. Michael Smith, “The Aztlan Migrations of the Nahuatl Chronicles: Myth or History?” *Ethnohistory* 31 (1984): 153–86. On the larger group of migration histories, including the Codex Sigüenza, below, see Elizabeth Hill Boone, “Migration Histories as Ritual Performance,” in *To Change Place: Aztec Ceremonial Landscapes*, ed. David Carrasco (Niwot: University Press of Colorado, 1991), 121–51.

98. This migration is also told in the pictographic history of the Codex Azcatitlan (Bibliothèque Nationale, Paris), which shares many characteristics with the Codex Boturini. It has been published and discussed by R. H. Barlow and Michel Graulich, *Codex Azcatitlan/Códice Azcatitlan* (Paris: Bibliothèque Nationale de France/Société des Américanistes, 1995).

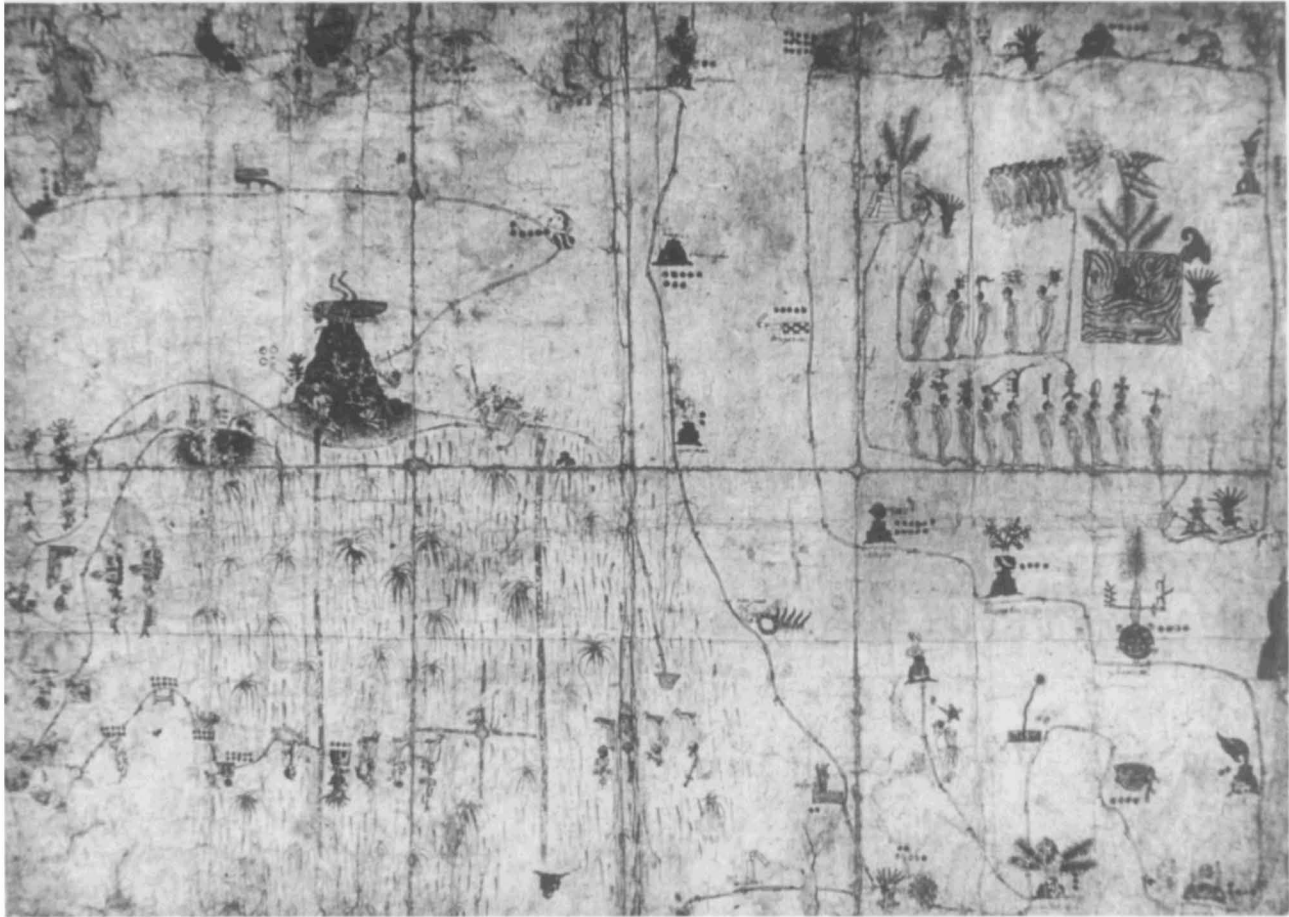


FIG. 5.29. MAPA DE SIGÜENZA. This late sixteenth-century map or early seventeenth-century copy shows the peregrination of the Culhua-Mexicas as they left their homeland of Aztlan and migrated southward into the Valley of Mexico. The narrative begins at the square cartouche in center of the upper right quadrant. The square is filled with water; within lies a hill symbol topped by a tree with a bird rising from it. This singing bird, the guise of the deity Huitzilopochtli, speaks to a pack of Aztec leaders, probably urging them to leave, for below this scene they are shown setting out on a long migration. Their path, marked by footprints, weaves back and forth, up, over, and down the page, then loops around before cutting up the middle of the page and over to the left half, where the map is meant to be inverted. From the scant place-names that can be matched to extant places, we find that the right part of the

map reproduces a circuitous itinerary but does not show known places relative to planimetric positions. In the left side, planimetric relations are more faithfully expressed. This part of the map pictures the area of the Valley of Mexico around the Culhua-Mexica capital of Tenochtitlan at the time of its founding in 1325. It is filled with reed plants to show the swampy, shallow lake bed and hosts a number of historical players in the Culhua-Mexica drama. Prominently placed in the center of the left half is Chapultepec, "Grasshopper Hill," which lay to the west of Tenochtitlan. Planimetry of this section of the map is shown in figure 5.30.

Size of the original: 54.5 × 77.5 cm. Photograph courtesy of the Instituto Nacional de Antropología e Historia, Museo Nacional de Antropología, Mexico City (35-14).

Cholula to the mythic Chicomoztoc (Seven Cave) and back to Cholula again (fig. 5.32).⁹⁹ Like the Culhua-Mexica Mapa de Sigüenza, this part of the Mapa de Cuauhtinchan 2 emphasizes linear itinerary over two-dimensional representation. The Lienzo of Tlapitepec, a member of the Coixtlahuaca group, also combines an itinerary beginning at Chicomoztoc with a more planimetric rendering of the Coixtlahuaca region in Oaxaca, where Tlapitepec lies.¹⁰⁰

To Western eyes, works like the Mapa de Sigüenza, Codex Boturini, and Mapa de Cuauhtinchan 2 might be

seen as veering toward planimetric rendering without reaching consistent scale. But to pass such a judgment would be to ignore the primary aim of these works: to impart a narrative. The itinerary format, with its carefully delineated sequence of places, easily lent itself to telling a linear narrative about a journey, where one place fol-

99. Bittmann Simons, *Mapas de Cuauhtinchan*, 25–80 (note 22); Glass and Robertson, "Census," 119 (no. 95) (note 36); and Yoneda, *Mapas de Cuauhtinchan* (note 22).

100. Parmenter, *Four Lienzos*, 15–44 (note 26).

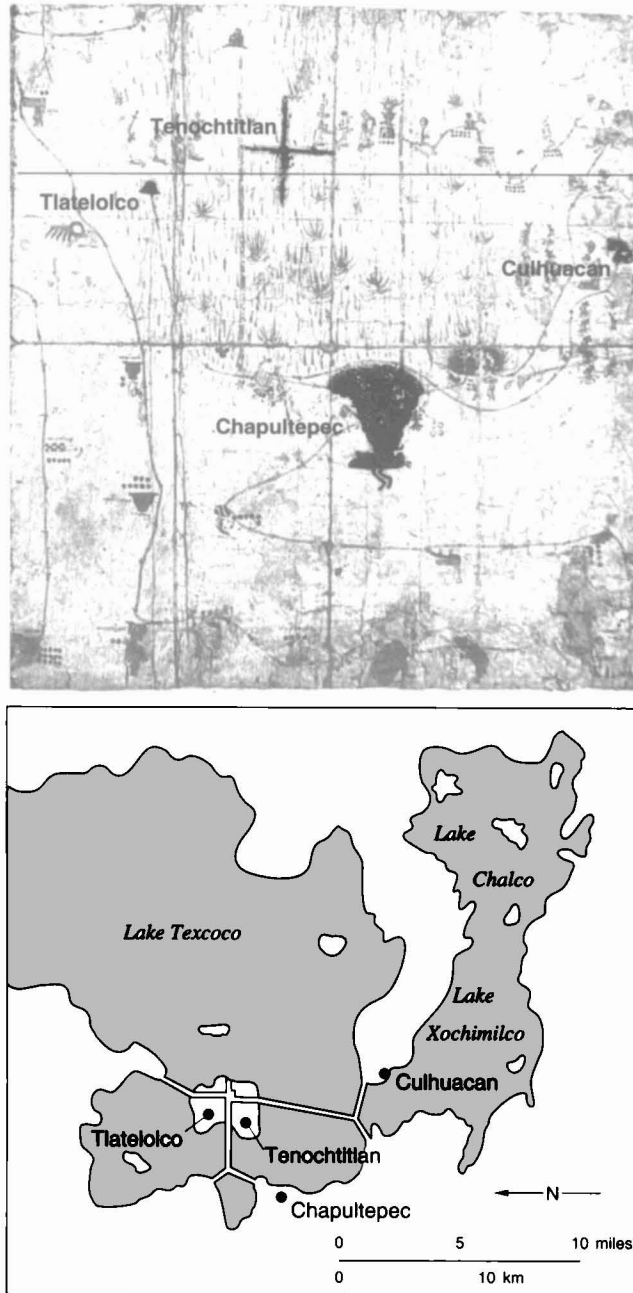


FIG. 5.30. COMPARISON OF PLACE-NAMES IN THE LEFT SIDE OF THE MAPA DE SIGÜENZA WITH A MODERN MAP OF THE SAME REGION. This detail of the map has been inverted from its appearance in figure 5.29 because readers of the map were meant to invert it as they followed its narrative from the right side over to the left.

lowed the next. Compare the itinerary-based Codex Boturini with the more planimetric Codex Xolotl. The narrative sequence of the former makes itself absolutely clear, even to the novice reader of hieroglyphs. By contrast, a page of the Codex Xolotl provides a greater wealth of information, but with no linear path of narrative. The story line is obtuse and unyielding except to the

most adroit historian. Although the competing claims that narrative progression and cartographic acuity would make on the telling of history might ultimately be irreconcilable, central Mexicans were nonetheless compelled to combine history and space. Their search for forms to accommodate their understanding of the world led to the continuum of maps that range from the Codex Xolotl to the Codex Boturini.

RELATIONS BETWEEN PERMANENT AND GESTURAL CARTOGRAPHIC HISTORIES

Cartographic histories offer insight into the procedures that led to the map. In some, like those of the *Historia tolteca-chichimeca* described above, the maps are marked by footprints, indicating the path traveled, that run parallel to the hieroglyphic place-names of the boundaries (fig. 5.15). The text accompanying this figure also tells us that the leaders of Cuauhtinchan carried out a ritual circumambulation to establish these boundaries. Page 1 of the Codex Xolotl (plate 9; discussed above) shows Xolotl circumambulating boundaries to validate his possession of territory. This leads me to believe that a ritual circumambulation would be recorded in a map; if boundaries changed, the maps would be redrawn or, in the case of the *Mapa de Tezacoalco* (fig. 5.23), amended.

Rituals of circumambulation are still carried out in hundreds of Mexican and Central American communities today, especially in towns with histories of border disputes. For instance, in the Zapotec town of Macuilxóchitl in Oaxaca, the boundaries are walked every year or so by the *comisario de bienes comunales* (commissioner of communal assets) and his assistants to ensure that boundary markers are clearly marked and have remained undisturbed by neighboring towns, assumed to be perpetually acquisitive. It is not a map that guides him around community property, although such a boundary map exists, but an oral litany of boundary sites committed to memory.¹⁰¹ No doubt the value of these circumambulations from the sixteenth century onward was confirmed by the Spanish, who practiced a similar perambulation as part of establishing legal title.¹⁰² Whatever the Spanish influ-

101. Personal communication, Victorino Zarate (*agente* of Macuilxóchitl), Matías Santiago, Saturnino Mendoza Valeriano, Saturnino García Jiménez, Jacobo Lopez, and Aron Villanueva Martínez, August 1990. A similar spoken boundary map was used by the Mayas of Yucatan in 1600 (Roys, *Titles of Ebtun*, 87–89 [note 79]). A document describing the foundation of the town of Ajusco also describes boundary walking (Marcelo Díaz de Salas and Luís Reyes García, “Testimonio de la fundación de Santo Tomás Ajusco,” *Tlalocan* 6 [1970]: 193–212, esp. 200–201).

102. Evidence of the impression Spanish practices of legal title made upon Nahuas is seen in a document, “Sale of Land, with All the Acts of Investigation, Confirmation, and Possession; Will Attached, Azcapotzalco, 1738,” in *Beyond the Codices: The Nahuatl View of Colonial Mexico*, ed. and trans. Arthur J. O. Anderson, Frances Berdan, and

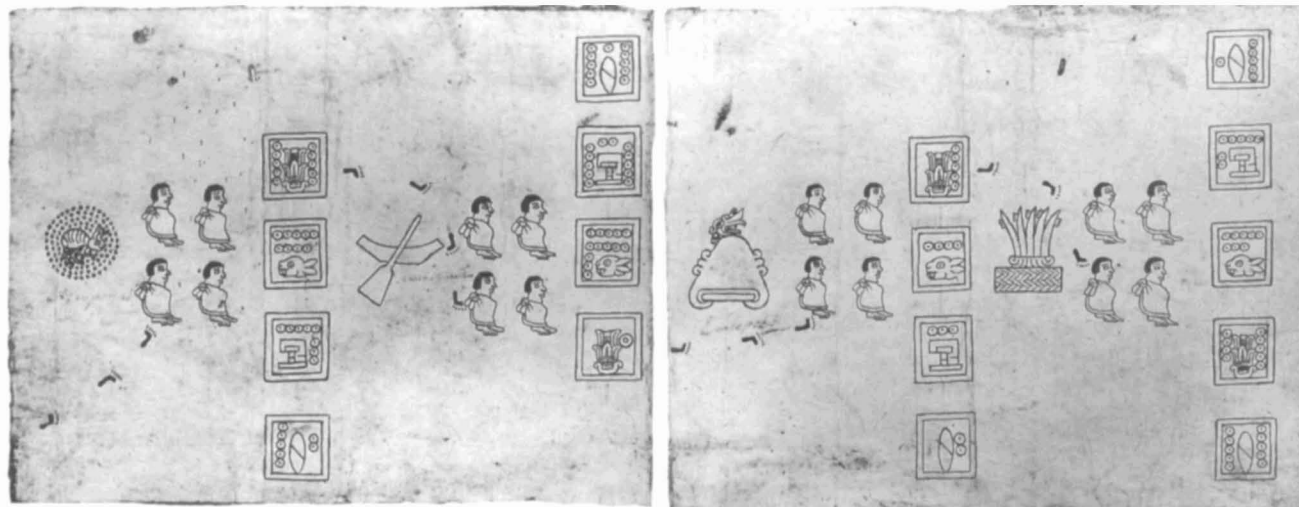


FIG. 5.31. TWO PAGES OF THE CODEX BOTURINI. Two of the twenty-one leaves of the Codex Boturini, or Tira de la peregrinación, an early postconquest manuscript. The unwavering outline, clear and precise, distinguishes the Codex Boturini as a masterwork of Aztec drawing. It depicts the long migration of the Culhua-Mexicas as they searched for a homeland. Page 11 (left) shows the itinerant Culhua-Mexicas—represented by four men wearing cloaks—arriving at Xaltocan, a city in the Valley of Mexico. The Mexicas' act of travel is conveyed by the line of footprints; the places are represented by hieroglyphic place-names that are read like rebuses. Xaltocan's name means "Place of the Spiders in the Sand," and its place-name, showing a spider on a disk of dotted ground, is seen at far left. The four Mexicas face four square cartouches,

each one containing the number (counted in dots) and the hieroglyphic name of a year. Reading from the bottom, these dates are 7 Tecpatl (Flint Knife), 8 Calli (House), 9 Tochtli (Rabbit), and 10 Acatl (Reed) and show that the Mexicas stayed at Xaltocan for this four-year period. They then move to Acalhuacan (Place of Those Who Have Canoes) for four years, from 11 Tecpatl (top) through 1 Acatl (bottom). At the end of this time they journey to Ecatepec (Hill of the Wind God), pictured on the left of page 12 (right). Again, they stay four years and then go to Tolpetlac (Place of the Reed Mats) pictured at center right.

Size of each page: 19.8 × 25.5 cm. Photographs courtesy of the Instituto Nacional de Antropología e Historia, Museo Nacional de Antropología, Mexico City (35-38, pp. 11-12).

ence on these rituals may have been, the records that native peoples made of perambulations in the sixteenth century and the emphasis placed on them in the present suggest that the extant boundary maps we know may have been the graphic record of a performative tradition.

OTHER TERRESTRIAL MAPS

Although cartographic histories were dominant and widespread, other kinds of terrestrial maps existed as well. Most of these other maps were produced in highly specialized contexts and were a minor chord of the native mapping traditions. Many came from the Valley of Mexico, where they were designed to serve the ends of the sleek and centralized bureaucracy of the Aztecs, whose high level of state organization was unparalleled in coeval Mesoamerica. However, we know of them only through postconquest examples, when the Spanish took over the machinery of the Aztec state. They can be divided into two broad categories: property plans, which usually mapped lands devoted to agriculture and house lots and were held by individuals or communities; and maps, often schematic, of urban centers.

Property Plans: Cadastral Maps

Spanish commentators observing facets of Aztec life in the mid- and late sixteenth century commented on the carefully drawn maps of agricultural lands that community leaders made.¹⁰³ In the densely populated Valley of Mexico, where residents reclaimed acres of swamp and farmed every foot of arable land, survival depended on the smooth functioning of complex land tenure systems—an apparatus that was recorded in maps. Most land was not owned per se but was allocated to various groups. Aztec maps showed this with color codes to mark out different lands: dark red for lands of the imperial household, pink or cochineal for the nobility, and yellow for the *calpolli*, the social groups that made up most of the population.¹⁰⁴ Although no such colored map illustrating this

James Lockhart (Berkeley: University of California Press, 1976), 101-9, esp. 107.

103. Juan de Torquemada, *Monarquía indiana*, 3d ed., 7 vols. (Mexico City: Instituto Nacional de Antropología e Historia, 1975), 4:332-34 (bk. 14, chap. 7), and Zorita, *Life and Labor*, 110 (note 15).

104. This follows the schema described by Torquemada, *Monarquía indiana*, 4:332-34 (bk. 14, chap. 7); Yoneda gives a reference to a slightly different color system used in the valley in *Mapas de Cuauhtin-*



FIG. 5.32. COPY OF THE MAPA DE CUAUHTINCHAN 2. The Mapa de Cuauhtinchan 2 is an important cartographic history from Cuauhtinchan, a Nahuatl-speaking region to the east of the Valley of Mexico; the map is akin to the Mapa de Sigüenza both formally and thematically. Like the Mapa de Sigüenza, it has two sides; the left shows a ritual pilgrimage made by the leaders Ixcicohuatl and Quetzaltehueyac between Cholula and the mythical Chicomoztoc, a seven-chambered cave of origin. On this side, place-names are arranged sequentially rather than planimetrically. The leaders' itinerary is sometimes twisted into the meander pattern common to screenfold manuscripts, suggesting that it may have also been recorded in a screenfold. The right side is a boundary map of the

Cuauhtinchan-Tecali-Tepeaca region, including the ritual center of Cholula. Also like the Mapa de Sigüenza, the Mapa de Cuauhtinchan 2 relates the history of an exodus and the establishment of a homeland. Despite regional differences, the itinerary-based cartographic history was a widespread vehicle for recording peregrination histories throughout Mesoamerica. This copy was made at the end of the nineteenth century when the original was still held in Cuauhtinchan; the original now lies in private hands.

Size of this copy: ca. 109 × 204 cm. Photograph courtesy of the Instituto Nacional de Antropología e Historia, Museo Nacional de Antropología, Mexico City (35-24).

three-tiered system of landholding exists today, some maps show parts of it. The Humboldt Fragment 2, a large map on native paper painted sometime after the conquest, shows strips of lands in some location in the Valley of Mexico (fig. 5.33). Each is marked with names in both hieroglyphs and the Latin alphabet. These people include members of the Culhua-Mexica royal house, among them the ruler Motecuhzoma Xocoyotzin (Montezuma II) (r. 1502–20), who witnessed the arrival of the Spaniards and the unraveling of his empire.¹⁰⁵ These august men—clearly not the tillers of the soil—were likely named on these lands because the products derived from the land were delivered to them as tribute.

The *calpolli* heads, the local leaders who controlled most of the populace, also maintained detailed maps, al-

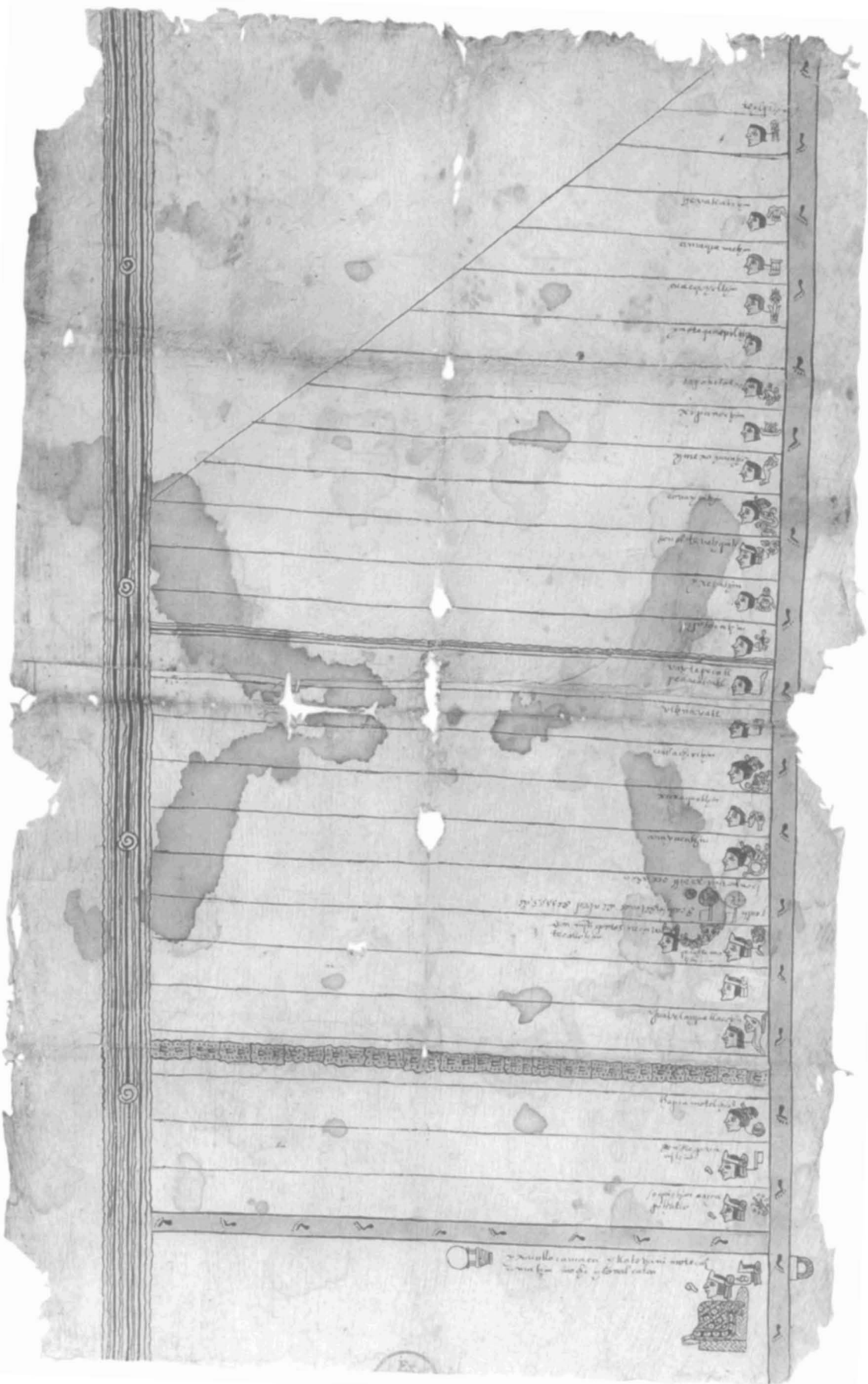
chan, 26 (note 22). For more on the nature of *calpolli*, see Lockhart, *Nahuas after the Conquest*, 16–20 (note 49).

105. See Eduard Seler, "The Mexican Picture Writings of Alexander von Humboldt in the Royal Library at Berlin," *Smithsonian Institution, Bureau of American Ethnology Bulletin* 28 (1904): 123–229.

(Facing page)

FIG. 5.33. HUMBOLDT FRAGMENT 2. This postconquest territorial map painted on *amatl* paper documents the ownership of some unknown acreage, probably in the Valley of Mexico. The lands shown fall between a canal, the vertical band punctured by circular eddies at left, and a parallel road marked with footprints at right. A smaller canal runs horizontally through the middle of the map, and another road crosses its bottom. Apart from a triangular portion at top left, the lands are divided into narrow horizontal strips. The keepers or owners of these fields are shown by the heads at the right, each distinguished by name in both alphabetic and hieroglyphic form. The lands at the bottom are the biggest and best. They are shown held by the high Aztec nobility, beginning with the emperor Motecuhzoma Xocoyotzin, who appears seated in the bottom right corner. Directly above him are the rulers who controlled towns within the valley; their rank and importance seem to decrease farther up the map. Today the map is bereft of reasons that led to its creation, but it may have been among the many *pinturas* (pictures) that native Mesoamericans brought before Spanish officials.

Size of the original: 76 × 45 cm. Photograph courtesy of the Staatsbibliothek zu Berlin-Preussischer Kulturbesitz (MS. Amer. 1, fol. 1).



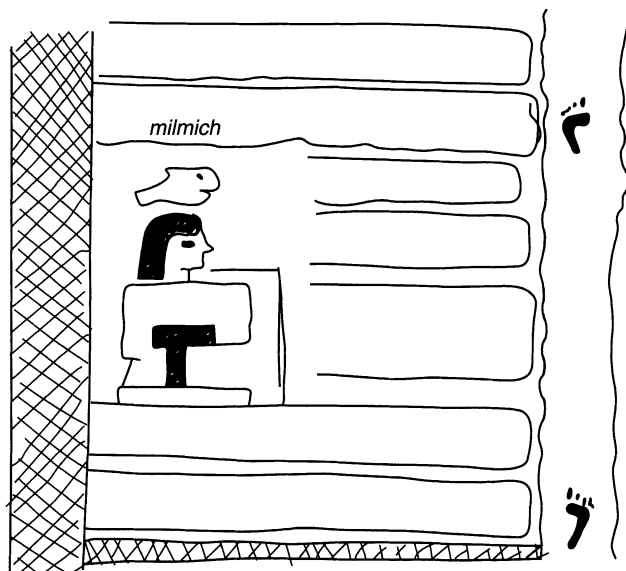


FIG. 5.34. DRAWING AFTER THE PLANO EN PAPEL DE MAGUEY. This sketch shows one of the over three hundred house plots of the map. The plot comprises seven raised beds (*chinampas*) for agriculture. At center left, a house pictograph is seen in profile. In the map all the houses are depicted this way, but in reality their shape and appearance would have varied to suit the needs of the residents. Above the house pictograph in this plot, a male head stands for the occupant; he is named with a hieroglyph of a fish, transliterated in the alphabetic gloss as *milmich*. In Nahuatl the name means “field of fish.” The crosshatched vertical band to the left of the plot represents a canal, and a narrower ditch runs along the bottom of the plot. A road, marked with conventional footprints, runs at right.

lowing them to keep track of their districts, to assign lands, and to collect appropriate amounts of tribute.¹⁰⁶ The Plano en papel de maguey, figure 5.3, seems to be a postconquest copy of such a *calpolli* map. Painted on a large sheet of *amatl* paper, its name, “plan on maguey-fiber paper,” is somewhat misleading.¹⁰⁷ Nonetheless, the map fits the descriptions of *calpolli* maps by being a scrupulous large-scale map showing more than three hundred houses and their adjoining fields as well as naming each of the residents with hieroglyphic names (fig. 5.34). Scholars believe that the Plano en papel de maguey represents a suburban region to the north of Tenochtitlan. But unfortunately the map omits mention of location and offers no measurements that would supply scale, for these would allow us to figure the density of Tenochtitlan’s population and the size of local landholdings.¹⁰⁸

The same Spaniards who commented on the use of *calpolli* maps also noted that they were constantly updated and revised by the people who held them.¹⁰⁹ Since such maps were later accepted as legal evidence by Spanish authorities (or the natives they appointed to adjudicate in their stead), early maps like the Plano en papel de maguey could be used in courts of law. Many native maps

have survived pressed between the papers documenting court cases. It seems that the original content of the Plano-householders and the measure of their lands—was amended some years after the map was painted so that it could be presented as evidence in a court case. A list of rulers of Tenochtitlan from 1427 to 1562 was added to the upper right corner, and other spots on the map were revised by pasting European paper onto the original fig bark paper.¹¹⁰ All these changes seem to have been made to this cadastral map to prove that in pre-Hispanic wars of conquest, waged about 1430, the Culhua-Mexicas of Tenochtitlan seized this land. Members of the losing side, after coming under Spanish rule, used the map to try to regain their former dominion over these properties.¹¹¹ They lost again. Thus maps originally designed for *calpolli* leaders may have been transformed into a document directed at a Spanish judge. Many native maps led such a double life.¹¹²

Property Plans: Maps of Individual Properties

Many maps documenting individual properties—house lots, orchards, gardens—have survived from the early colonial period, especially from the Valley of Mexico. These likely grew out of two sets of pre-Hispanic models—

106. Zorita, *Life and Labor*, 110 (note 15). *Calpolli* leaders also made use of cadastral registers. These registers listed individual plots of land, like separate pieces of a jigsaw puzzle, without putting them together in a map format; see H. R. Harvey, “Aspects of Land Tenure in Ancient Mexico,” in *Explorations in Ethnohistory: Indians of Central Mexico in the Sixteenth Century*, ed. H. R. Harvey and Hanns J. Prem (Albuquerque: University of New Mexico Press, 1984), 83–102; Williams, “Mexican Pictorial Cadastral Registers,” 103–25 (note 58); and Hanns J. Prem, ed., *Matrícula de Huexotzinco* (Graz: Akademische Druck- u. Verlagsanstalt, 1974). On the use of hieroglyphs to identify soil types, see Barbara J. Williams, “Aztec Soil Glyphs and Contemporary Nahua Soil Classification,” in *The Indians of Mexico in Pre-Columbian and Modern Times*, International Colloquium, Leiden, 1981 (Leiden: Rutgers B.V., 1982), 206–22.

107. Robertson, *Mexican Manuscript Painting*, 77 (note 30), following Lenz, “Las fibras y las plantas” (note 39). This map is studied by Edward E. Calnek, “The Localization of the Sixteenth-Century Map Called the Maguey Plan,” *American Antiquity* 38 (1973): 190–95, and Manuel Toussaint, Federico Gómez de Orozco, and Justino Fernández, *Planos de la Ciudad de México, siglos XVI y XVII: Estudio histórico, urbanístico y bibliográfico* (Mexico City, 1938).

108. This location of the map is argued in detail by Calnek, “Maguey Plan.”

109. Zorita, *Life and Labor*, 110 (note 15).

110. Robertson, *Mexican Manuscript Painting*, 81–83 (note 30), and Calnek, “Maguey Plan” (note 107).

111. Following Calnek, “Maguey Plan.” See also Toussaint, Gómez de Orozco, and Fernández, *Planos de la Ciudad México*, 55–84 (note 107).

112. See, for example, Mary Elizabeth Smith, “Las glosas del Códice Colombino/The Glosses of the Codex Colombino,” published with the facsimile reproduction *Códice Colombino* (Mexico City: Sociedad Mexicana de Antropología, 1966).

the *calpolli* maps discussed above and other written documents drawn up to present to judges in disputes.¹¹³ These older pre-Hispanic forms were channeled into colonial-era property maps, made at a time when Spanish officials championed claims of individual ownership, often at the expense of the communal holdings that were the mainstay of pre-Hispanic life. Many of these postconquest property maps were made to be legal documents, specifically drawn up for litigation and property transfers, and it is in these contexts that they are known to us today. For instance, the 1576 map of the properties of Don Miguel Damian is typical (fig. 5.35).¹¹⁴ It seems to have been entered in litigation between the Damian family and Pedronilla Francisca, a native of the valley town of Xochimilco. The bottom shows Don Miguel with his wife Doña Ana and another relative, perhaps his sister or a daughter by another woman, and above are Don Miguel and Doña Ana's four children. Above and to the left is a plan of his two house compounds and enclosed orchards. To the right are seven fields, each named with hieroglyphic place-names. All properties are parceled out among Don Miguel's heirs, the ones pictured below being marked with their names. No preconquest examples assure us that such property maps were part of the repertory of native mapping before the conquest. Even so, such property maps quickly gained prominence as native peoples, especially the Aztecs, adapted to the demands of Spanish colonial law and government by using maps as proof of possession.

Maps of Urban Centers

Mesoamericans may have mapped their great cities, including the ceremonial centers—those sacred landscapes they built with mountainous pyramids and forested with sculpture. Two schematic maps of the great city of Cholula are found in the *Historia tolteca-chichimeca*, and two indigenous maps survive of Tenochtitlan, the largest Mesoamerican urban center.¹¹⁵ One, from the *Codex Mendoza*, was described above (fig. 5.6). Another map, showing only the central temple precinct of Tenochtitlan (figs. 5.36 and 5.37), appears in a sixteenth-century manuscript book, the *Primeros memoriales*, written and painted by Aztec scribes working under the direction of the Franciscan Bernardino de Sahagún (1499–1590).¹¹⁶ The map shows the walled precinct, with the massive twin temples at its center (also seen in the Cortés map of Tenochtitlan of 1524, fig. 5.7), along with other temples, palaces, and deity figures.

Not only is this map a rare example of a Mesoamerican urban-center map, it also prefigured a great archaeological discovery. During the Spanish occupation and reconstruction of Tenochtitlan in the 1520s, this ceremonial core was razed; this map is the only known native

sixteenth-century map to show how the precinct was laid out and what it contained. Since the map was first published in the mid-nineteenth century, scholars have debated its merits, but recent excavations have proved it corresponds faithfully to areas of the precinct that have been uncovered.¹¹⁷

Was this map one of many? Or was it a unique example, created at Sahagún's behest for inclusion in his *Primeros memoriales*? Although we have other depictions of the twin temples and plans of palace complexes, this map is quite singular in what it shows.¹¹⁸ Sahagún, who knew of the rich European tradition of city plans with their emblematic architectural renderings, may have prompted his artists to make him an equivalent work for his book. The result is hardly derivative of a European example, but the awkwardness of its design and execution and the idiosyncrasies of the deities portrayed suggest that this map was not the final phase of a well-articulated tradition but a colonial Aztec innovation.

Maps for Trading and War

To the Aztecs, trading and war were interlocking—indeed, inseparable—means toward their imperial goal of conquest and expansion. Key players were the *pochteca*, the long-distance Aztec traders, whose ranks included military spies. From their capital in Tenochtitlan, the Culhua-Mexicas would send the *pochteca* to regions outside their

113. For the pre-Hispanic legal system of one part of the valley, see Jerome A. Offner, *Law and Politics in Aztec Texcoco* (Cambridge: Cambridge University Press, 1983).

114. The map and litigation are discussed in Glass and Robertson, "Census," 238–39 (note 36); on the genre see Lockhart, *Nahuas after the Conquest*, 353–57 (note 49).

115. Renderings of individual palace complexes in the Valley of Mexico do survive, as in the *Mapa Quinantzín*, p. 2, *Codex Mendoza*, fol. 69r, and *Historia tolteca-chichimeca*, fols. 26v–27r. Other renderings of architecture are discussed in *Las representaciones de arquitectura en la arqueología de América*, vol. 1, ed. Daniel Schávelzon (Mexico City: Universidad Nacional Autónoma de México, 1982–). Petroglyphs, probably dating to the classic period (A.D. 250–900), from the Maya site of Planchón de las Figuras show an unidentified cluster of pyramids, perhaps a map of a ceremonial complex. Stephen Houston, "Classic Maya Depictions of the Built Environment," paper presented at Dumbarton Oaks, 9 October 1994.

116. The manuscript is painted on sheets of European paper. It has been separated into two parts, one at the Biblioteca del Palacio Real, Madrid, and the other at the Real Academia de la Historia, Madrid. Folio 269r, which contains the map, is at the Palacio Real. Bernardino de Sahagún, *Primeros memoriales*, facsimile ed. (Norman: University of Oklahoma Press, 1993).

117. Elizabeth Hill Boone, "Templo Mayor Research, 1521–1978," in *The Aztec Temple Mayor*, ed. Elizabeth Hill Boone (Washington, D.C.: Dumbarton Oaks, 1987), 5–69.

118. Miguel León-Portilla, "The Ethnohistorical Record for the Huey Teocalli of Tenochtitlan," in *The Aztec Temple Mayor*, ed. Elizabeth Hill Boone (Washington, D.C.: Dumbarton Oaks, 1987), 71–95, esp. 85–87.

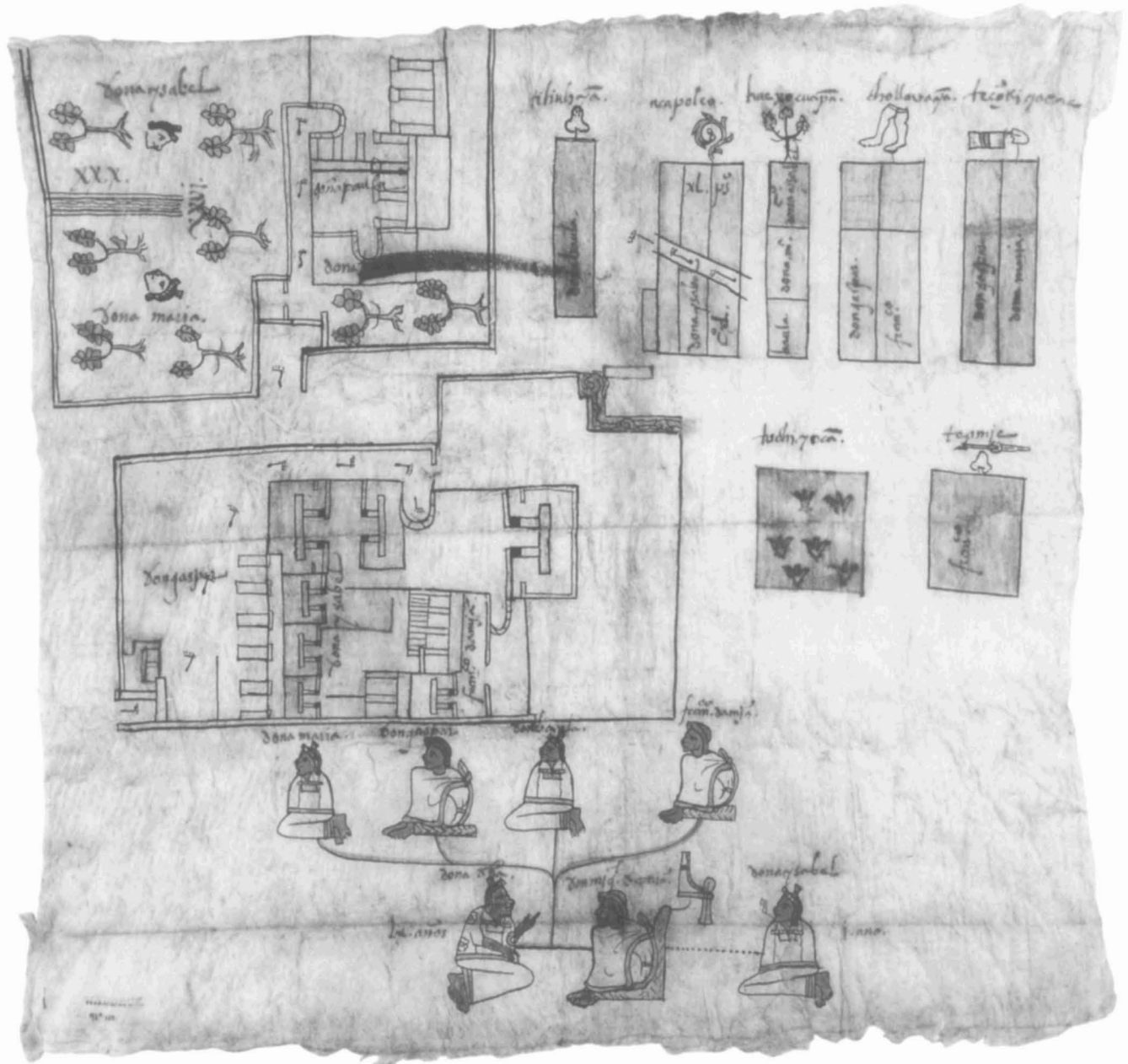


FIG. 5.35. MAP OF DON MIGUEL DAMIAN'S PROPERTIES. This small map registers the properties of Don Miguel Damian, a Nahuatl elite pictured seated at the center bottom of the sheet of native paper. A lawsuit of 1576 between Nahuatl speakers occasioned the map, and such legal battles often inspired the production of maps. Don Miguel's family is clustered around him, arranged to show genealogical relationships. The top part of the map comprises layouts of his two house lots (at left) and seven fields (at right). The fields are named hieroglyphically and alphabetically, and they and the house lots are parceled out among Don Miguel's heirs. These properties were probably scattered across a landscape that is not identified

on the map: although the map is quite specific about the names, layout, and proportions of each of the nine properties pictured, it does not show their spatial relation to each other. The viewer was expected to know their whereabouts, either through the text that once accompanied the map or through prior knowledge of Xochimilco, where the map was made. This particular map is also silent about the dimensions of houses and fields, but other coeval maps denote both lineal and area measurements precisely, using indigenous systems of whole units and fractions.

Size of the original: 38.5 × 39.3 cm. Photograph courtesy of the Newberry Library, Chicago (Ayer MS. 1900).

control, probing with the delicate tendrils of trade. Unsuspecting towns would welcome the *pochteca* into their markets; only after they left would the residents hear the

tramp of Aztec battalions advancing from the horizon.¹¹⁹

119. On the role of the *pochteca*, see Ross Hassig, *Aztec Warfare: Im-*

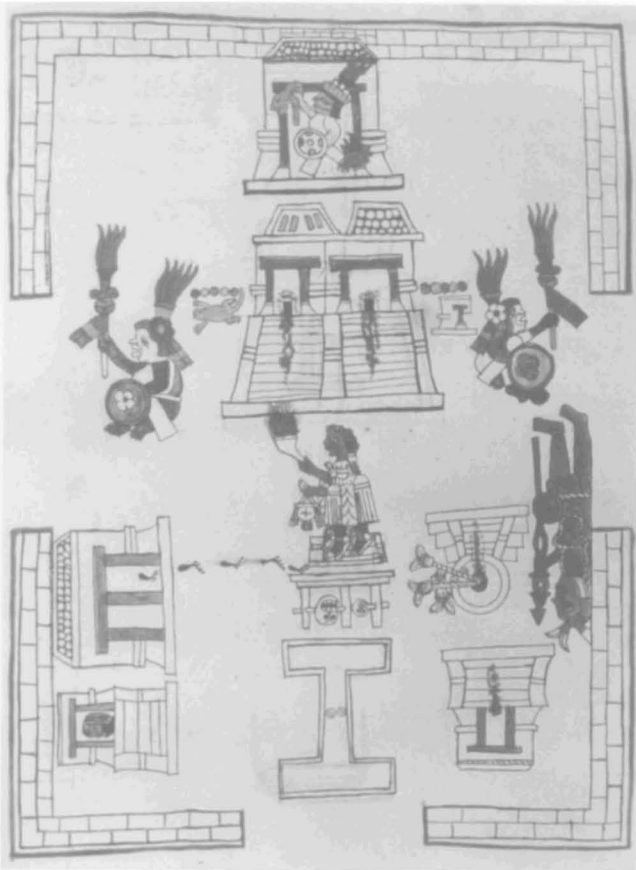


FIG. 5.36. ONE FOLIO OF THE PRIMEROS MEMORIALES. This map shows the walled central temple precinct of Tenochtitlan, the Culhua-Mexica capital. It was here that the rituals of heart sacrifice and bloodletting that so appalled the Spanish took place on an imperial scale. The map marks these sanguinary practices by showing many of the temples spattered with blood. Architecturally, the map's distinguishing feature is the central twin temples, the left side dedicated to Tlaloc, a rain-agriculture deity, and the right to Huitzilopochtli, the Culhua-Mexica patron deity.

Size of the original: 31 × 22 cm. Copyright © Patrimonio Nacional, Biblioteca del Palacio Real, Madrid (Códice Matriense, II-3280, fol. 269r).

Two related, perhaps even interchangeable, kinds of maps were instrumental in the Aztec bid for power: maps the *pochteca* used to reach outlying provinces, and maps they brought home to help military leaders plan an attack of conquest. No original examples of these maps exist, so their appearance remains speculative. But the postcontact Codex Florentine (ca. 1575), an encyclopedia of Aztec life that grew out of the Primeros memoriales, describes and illustrates the maps Aztec military leaders might have used. The drawing in figure 5.38 shows an Aztec military spy in the upper center, traveling to a town. Later the strategic information he has collected is conveyed by a map. The picture of the spy map shows it to be a kind of urban plan. From what we know of Mesoamerican warfare, this picture makes sense: the main temple precinct

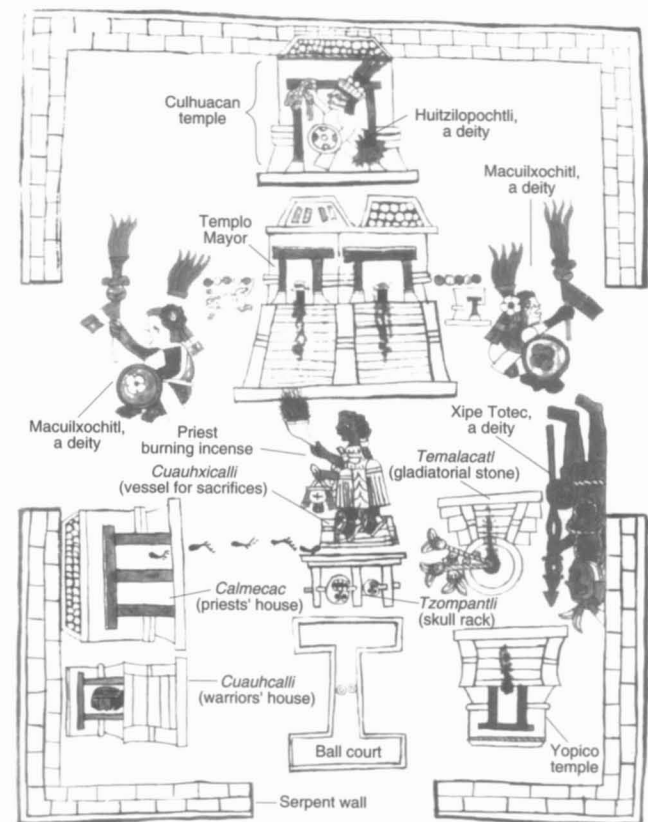


FIG. 5.37. FOLIO OF THE PRIMEROS MEMORIALES WITH GLOSSES. Compare figure 5.36. In addition to the central twin temples, notable buildings shown within the precinct confines include the *tzompantli*, or skull rack, seen upside-down in the lower half, where the skulls of sacrificial victims were displayed. Below this is an I-shaped structure that represents a ball court, used for ritual play. The facing page of the manuscript (not shown here) gives a list of the buildings included, and that is the source for the buildings identified here. This is the only known map of the precinct; recent excavations have shown this map to be very accurate in portraying both the content of the precinct and the placement of its structures.

was the heart of a town's resistance; its downfall meant capitulation.

But this picture of the spy map raises as many questions as it answers. The artist was probably illustrating the textual account of such a map rather than drawing on first-hand knowledge. The artist's understanding may have been flawed, for the spy is portrayed as a warrior rather than a merchant, as would be more likely. And because the artist was trying to give a quick impression of the map rather than a faithful reproduction, the map we see is cropped and condensed.

perial Expansion and Political Control (Norman: University of Oklahoma Press, 1988), esp. 48–52. Sahagún, *Florentine Codex*, 10:3–20 (bk. 9, chaps. 2–5) (note 7).



FIG. 5.38. AZTEC MILITARY MAP FROM THE CODEX FLORENTINE. This picture of a war map was made ca. 1570 to illustrate the Codex Florentine, an encyclopedic account of pre-Hispanic Aztec life written in both Spanish and Nahuatl and lavishly illustrated. This picture accompanies a passage about military spies, and it offers one of the few accounts of how maps were made and used in pre-Hispanic times. Spies supplied information to Nahua military commanders about the towns and peoples outside their domain, and they would travel among the ranks of the *pochteca*, the long-distance merchants. This illustration comprises two sequential parts in a single frame. On the right half, the military spy explores a foreign town, shown in the upper corner as a group of five houses portrayed frontally. Cutting through the surrounding landscape, the main roads into the town are marked by footprints. Presumably, the spy draws a map and returns to Tenochtitlan with it. The subsequent scene appears on the left half. In it, a warrior is seated at the center bottom. He speaks with two military commanders, the *tlacochealcatl* and the *tlacatecatl* (seated at center and bottom left), to report the findings by means of the map, which he points to.

Size of the original: ca. 9 × 12 cm. Photograph courtesy of the Biblioteca Medicea Laurenziana, Florence (Med. Palat. 219, c. 283 v., bk. 8, chap. 17). By permission of the Ministero per i Beni Culturali e Ambientali.

Accounts of the maps used in planning military attacks add flesh to the skeletal map portrayed in the Codex Florentine. In addition to the main temple precinct, such maps laid out in detail the various overland routes to a town, probably showing, through hieroglyphic place-names, the position of neighboring towns as well. The Spanish conquistador Hernán Cortés describes using such a map during the devastating internecine war he helped ignite after his troops entered the Valley of Mexico in 1519. Chalco, a town in the southern valley, had allied itself with the Spaniards as it rebelled against Tenochtitlan, which lay about thirty kilometers to the north (see fig. 5.17). When the Culhua-Mexicas of Tenochtitlan moved to suppress the Chalca revolt and expel

the Spaniards, the Chalcas appealed to Cortés for reinforcements using a map to illustrate the position and routes of their enemies. Cortés describes the map that accompanied the Chalca plea as “a large white cloth [that] showed the symbols for all the towns which were to attack them and the routes they were to follow.”¹²⁰

The map the Chalcas gave Cortés was probably similar in function and appearance to the one the Culhua-Mexicas themselves had given him some months before during their initial and unsuccessful attempt to appease the Spanish intruders. Cortés had been cautiously welcomed into the court of Motecuhzoma Xocoyotzin. Once he was in the palace, Cortés boldly demanded a map of the eastern shore of Motecuhzoma’s domain. This map was duly made, and Cortés reported that it had “all the coast painted on it,” including the rivers that ran to the sea.¹²¹ The purpose of this map was to aid Cortés’s soldiers in exploring the Gulf Coast, especially to determine how ships sailing from Cuba could travel inland. To create such a map for Cortés, Motecuhzoma’s artists probably used native maps of similar function: the maps made for the tandem forces of *pochteca* and army that enabled them to explore and attack.

The Aztec war map and trading map were probably interchangeable. In other regions of Mesoamerica, however, merchants’ maps of long-distance routes may have had fewer bellicose uses. As with those of their Aztec counterparts, knowledge of merchants’ maps comes to us mainly through Spanish sources, particularly the letters of Cortés and the writings of his foot soldier Bernal Díaz del Castillo. During his odyssey in 1524–26 into what is now Honduras, Cortés mentions being supplied with native maps that must have been kin to the maps made by long-distance traders.¹²² The first map given to Cortés on this trek was composed by noble emissaries from Tabasco and Xicalango, and Cortés reported that this native map showed “the whole country.”¹²³ Later in the journey, the Chontal Maya lord of the province of Acalan sketched a map for Cortés.¹²⁴ Although none of these maps survive

120. Cortés, *Letters*, 192 (note 14).

121. Cortés, *Letters*, 94. Some scholars have argued that it was this itinerary map that gave rise to the 1524 map of Tenochtitlan. However, a close reading of the passage suggests that the itinerary map supplied by Motecuhzoma showed a coastal profile and was the inspiration for another map, a sketch of the Gulf Coast that was printed adjacent to the Tenochtitlan map. See Mundy, “Aztec Capital” (note 35).

122. Cortés, *Letters*, 339–40, 344.

123. Thompson argues that this map was made by the Chontal Maya inhabitants of the region (*Dresden Codex*, 9 [note 5]). However, Xicalango was a Nahuatl-speaking town and had Aztec troops stationed in it. Any map from Xicalango could have reflected Aztec, not Maya, mapping traditions. The Aztec presence is described by Nancy M. Farris, *Maya Society under Colonial Rule: The Collective Enterprise of Survival* (Princeton: Princeton University Press, 1984), 21.

124. Cortés, *Letters*, 365. Cortés’s account of Maya maps is also men-

today, they seem to have been simple itinerary maps, like those traders would use, whose bare graphic descriptions would have been elaborated by spoken accounts that traders would share with each other. The dependence of these maps on oral tradition was readily understood by Cortés, who took them from his Mesoamerican hosts but still relied heavily on local guides. Whether through cross-cultural misunderstanding or perhaps willful miscommunication, the Maya maps and guides were of limited use to the Spanish conquistadores: time and again, Cortés and his men got lost.¹²⁵

COSMOGRAPHICAL MAPS

Mesoamericans shared a view of the cosmos that cut across linguistic and geographic barriers. Their template of the horizontal and vertical cosmos was described above. Although representations of its many facets may appear dissimilar, they are all parts of the same whole, a cosmic scene diagrammed in figure 5.39. Surviving cosmographical maps usually represent either the vertical strata or the horizontal layout of the cosmos.

The audience for these maps can be construed from their contexts. Many cosmographical maps showing the three tiers of the earth took the form of carved public monuments that were set facing large plazas or in front of pyramids. These kinds of cosmographical maps would have been quickly identified by Mesoamerican viewers, their content transparently legible. Cosmographical maps found in painted manuscripts were different (see table 5.3). They presented a much more complex and nuanced version of cosmographical layers and layout, meant to be seen and interpreted only by the initiated elites. We know that a priestly caste existed among the Aztecs, and cosmographical manuscript maps would have been kept in the libraries of these men.

The maps of the horizontal design of the cosmos emphasize the associations between the four quarters of the world, assigned to the cardinal directions, and calendrical time. The Codex Fejérváry-Mayer contains perhaps the most famous map of the Mesoamerican cosmos (fig. 5.40). On it, we see a compact and elegant statement of a Mesoamerican worldview; not surprisingly, given the Mesoamerican interest in spatializing time, it situates the layout of space within a calendrical almanac. Although the codex was probably not an Aztec work (it may have been a Mixtec creation), we understand it best through the sources of the Aztecs of central Mexico, whose cosmology was well documented in the sixteenth century.¹²⁶ The Codex Fejérváry-Mayer shows us the surface of the earth in the shape of a Maltese cross. The artist uses a peculiarly Mesoamerican radial perspective whereby vertical objects are laid out horizontally on the page, all pressed outward from a central point. For example, a

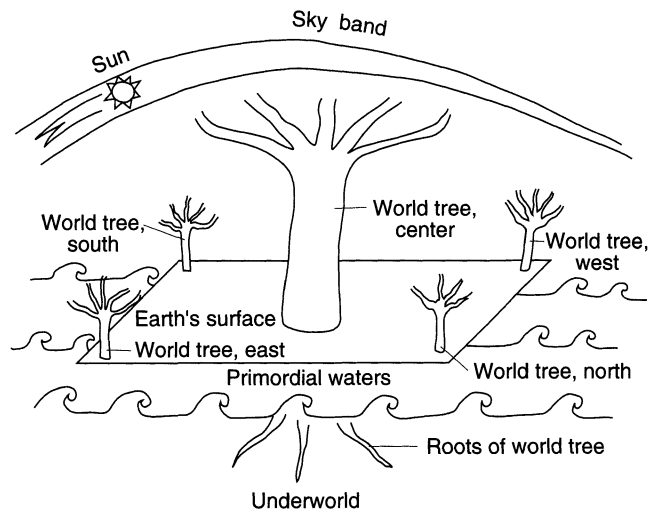


FIG. 5.39. DIAGRAM OF THE MESOAMERICAN COSMOS. The cosmos was conceived with a similar layout throughout Mesoamerica. The surface of the earth falls into four quadrants, corresponding to the cardinal directions. East is primary, since the sun rises from this direction. The principal vertical axis of the cosmos is the world tree, which separates the earth from the skies. World trees grow at both the center and the four corners of the earth. The sky is usually represented as a band, but some Mesoamericans understood it to comprise thirteen layers, the lowest of which was the earth. The earth floats on primordial waters, which form the surface of the Underworld. The Underworld is striated into layers, as are the skies.

Mesoamerican artist would portray a circle of standing dancers as if they were spokes of a wheel.

In the codex, four trees stand within the branches of the cross, representing those at the four corners of the world, which kept the skies from crashing down on the

tioned by his biographer and secretary, Gómara, and by the conquistador Bernal Díaz del Castillo, who went along with Cortés to Honduras. Francisco López de Gómara, *Cortés: The Life of the Conqueror by His Secretary*, ed. and trans. Lesley Byrd Simpson (Berkeley: University of California Press, 1964), 345; and Díaz del Castillo, *True History*, 5:12, 14, and 24–25 (note 14).

125. Cortés, *Letters*, 354–55.

126. For a concise summary of Aztec religion, see H. B. Nicholson, "Religion in Pre-Hispanic Central Mexico," in *Handbook of Middle American Indians*, vol. 10, ed. Gordon F. Ekholm and Ignacio Bernal (Austin: University of Texas Press, 1971), 395–446. This page of the Codex Fejérváry-Mayer is closely analyzed by Eduard Seler, *Codex Fejérváry-Mayer: An Old Mexican Picture Manuscript in the Liverpool Free Public Museums* (London, 1901–2), as well as in Eduard Seler, *Comentarios al Códice Borgia*, 3 vols., trans. Mariana Frenk (Mexico City: Fondo de Cultura Económica, 1963), the Spanish edition of his *Codex Borgia: Eine altmexikanische Bilderschrift der Bibliothek der Congregatio de Propaganda Fide*, 3 vols. (Berlin, 1904–9) (the third volume of each edition contains a facsimile of the Codex Borgia). My interpretation follows Seler's. See also Miguel León-Portilla, *Tonalámatl de los pochtecas (Códice mesoamericano "Fejérváry-Mayer")* (Mexico City: Celanese Mexicana, 1985), and Aveni, *Skywatchers*, 156–58 (note 57).

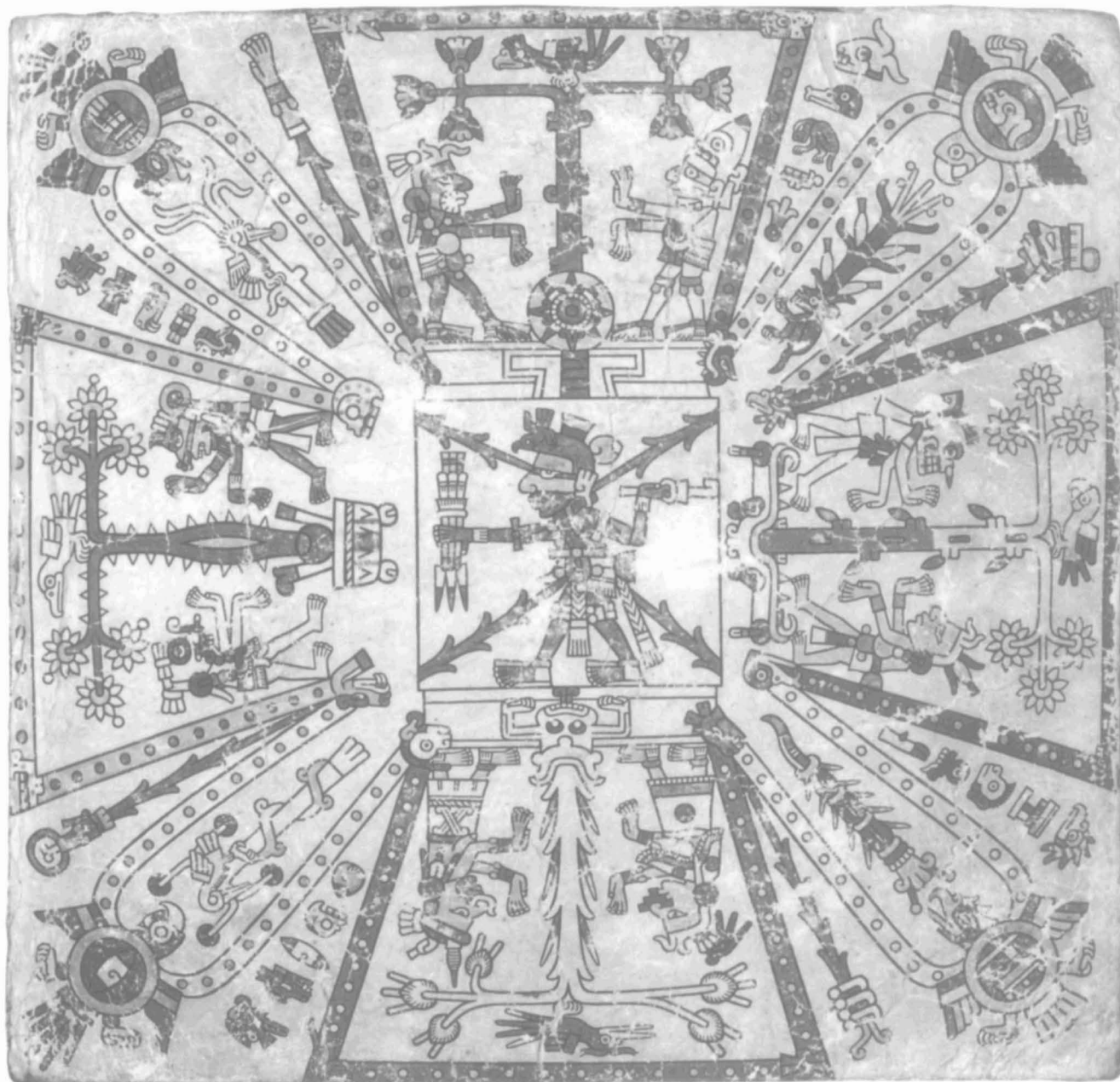


FIG. 5.40. MAP OF THE COSMOS IN THE CODEX FEJÉRVÁRY-MAYER, CA. 1400–1521. This pre-Columbian screenfold manuscript on hide shows a map of the Mesoamerican cosmos, stretching out along four axes toward the four world trees that hold up the corners of the sky. The whole is set within a calendrical day count that takes the shape of a

Maltese cross, a Mesoamerican symbol of completion. See also figures 5.41–5.44.

Size of the original: ca. 16.5×17.5 cm. Photograph courtesy of the Board of Trustees, National Museums and Galleries on Merseyside, Liverpool Museum (M12014, p. 1).

earth.¹²⁷ At the foot of the tree at the top, the sun rises above a temple platform: this is east, which the Aztecs called *tonalquizayampa*, or “place of dawn” (fig. 5.41a). The quadrant to the left represents the north, *mictlampa*, “land of the dead,” realm of self-sacrifice and death, and is marked by a bowl holding a lump of rubber or resin for incense, a thorn, and a sharpened bone awl to pierce

flesh and let blood. To the west was called *cihuatlampa*, “woman’s land”; the Aztecs believed that here resided the souls of women who had died in childbirth. At the root

127. “Historia de los Mexicanos por sus pinturas,” in *Nueva colección de documentos para la historia de México*, ed. Joaquín García Icazbalceta, vol. 3 (Mexico City, 1891), 228–63, esp. 234.

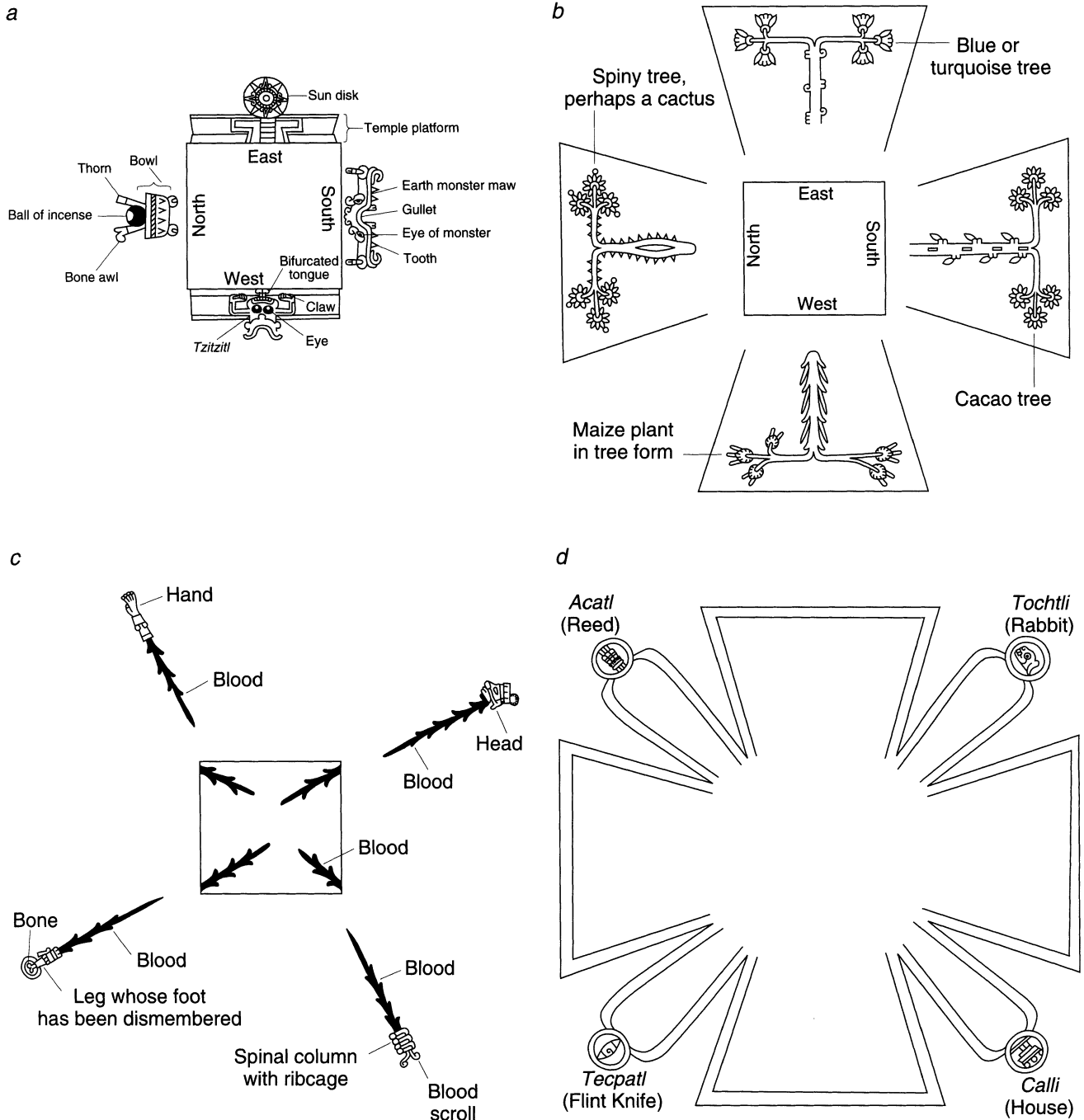


FIG. 5.41. EXPLANATORY DIAGRAMS OF THE CODEX FEJÉRVÁRY-MAYER. (a) The center; (b) the four world trees; (c) the body of Tezcatlipoca, the creator god (his dismembered

parts—head, spine, foot, and hand—are seen in the interstices of the four quadrants); and (d) circular cartouches of year signs set on the framing Maltese cross.

of the western world tree is a crouching *tzitzitl*, a demon of the dusk, lying in wait for the souls of the unwitting. The southern (*huitztlampa*, “thorny land”) world tree rises from the open maw of the earth monster, a frightening yet fecund creature whose reptilian skin covers some plebeian hill symbols in other manuscripts (see figs. 5.9 and 5.12).¹²⁸ Each of the world trees on the Codex Fe-

jérváry-Mayer is rendered with distinct attributes (fig. 5.41b). To the east grows the blue or turquoise tree; to the west, a maize plant in tree form; to the north, a spiny plant that is likely a cactus; to the south, a tree with pods

128. Sahagún, *Florentine Codex*, 8:21 (bk. 7, chap. 7) and passim (note 7).

on its trunk that are probably cacao pods.¹²⁹ These trees roughly correspond to the biogeography of central Mexico: fertile crop lands to the west, deserts to the north, and tropical lowlands to the southeast. The most important direction was the east where, as pictured in the codex, the turquoise tree gave rise to the Turquoise Prince, the name the Aztecs gave to the sun.¹³⁰

Flanking the world trees are four pairs of deities, and an additional deity reigns over the center. Other manuscripts describe these nine gods as the nine lords of the night, showing them presiding over cycles of nine nights. In the Codex Fejérváry-Mayer they are associated with the four cardinal directions and the center. The deities presiding over the western quadrant (*cihuatlampa*, “woman’s land”) of this diagram are female, wearing skirts instead of the loincloths of men.

The expansive and mythic space of the map collapses at the center; this fifth direction shows the intimacy of a human hearth, symbolized in the central figure of Xiuhtecuhtli, “Fire Lord,” an ancient pan-Mesoamerican deity whose ubiquitous shrine was the household hearth.¹³¹ Linking Xiuhtecuhtli, the god of fire, back to the larger cosmos were four streams of blood. As presented in the Codex Fejérváry-Mayer, these currents of blood flow into the center from the body of Tezcatlipoca, the creator god. His dismembered body parts—head, spine, leg, and hand—are seen in the interstices of the four quadrants (fig. 5.41c).¹³² These streams of blood would remind Mesoamerican viewers of their blood debt to their deities, who had created humans through their own self-sacrifice. These deities demanded blood sacrifice—often from birds or humans—in return.

Although this cosmic diagram of the Codex Fejérváry-Mayer informs us about the shape and Atlantean supports of the earth, its primary function is to integrate the cardinal directions and calendrical time. Around the edges of the flowerlike Maltese cross is the ritual 260-day calendar, counted by meshing twenty day names with numbers one to thirteen. The count of the Codex Fejérváry-Mayer begins in the east, with the first day of the calendar, 1 Crocodile, whose small reptilian head can be glimpsed to the right of the sun and temple platform. The succeeding twelve days, 2 to 13, are ticked off by dots above the crocodile. And then, in the upper corner, the next day, 1 Ocelot, is figured. The count is continued counterclockwise, with every first day of this thirteen-day “week” pictured until the cycle reaches the beginning date of 1 Crocodile again. Thus, as expressed in the Codex Fejérváry-Mayer the cosmos is encapsulated by the perpetual cycle of the passage of days, each oriented toward one of the four cardinal directions.

Years were also associated with directions. At the four corners of the Maltese cross, the four names the Aztecs used for years—Calli (House), Tochtli (Rabbit), Tecpatl

(Flint Knife), and Acatl (Reed)—are displayed in circular cartouches (fig. 5.41d). This diagram confirms what Aztec written and pictorial sources tell us: that years named Acatl were associated with the east, Tochtli with the south, Calli with the west, and Tecpatl with the north.¹³³ These directions and years are in turn linked to colors (table 5.4). This close association of space and time may strike the modern viewer as odd or even impenetrable. We may more easily grasp an analogous association of space and time as presented in cartographic histories, where space—in the form of community territory—also dovetails with time, manifest as episodes of human history.

The Codex Madrid is one of the four surviving pre-Hispanic manuscripts made by the Mayas. Two pages of this screenfold are an almanac that is close kin to the frontispiece of the Codex Fejérváry-Mayer (fig. 5.42).¹³⁴ Like the Codex Fejérváry-Mayer, the Codex Madrid uses the 260-day calendar composed of named days and counters to create a frame in the rough shape of a Maltese cross. Four sets of hieroglyphs, each at the upper center of one of the quadrants, mark the four directions, making this a picture of the quadripartite division of the world’s surface. Unlike the Codex Fejérváry-Mayer, this codex shows west at the top of the pages. Although they lack the Atlantean trees of the Codex Fejérváry-Mayer that stand at the edges of the world, having only one at the center, these pages of the Codex Madrid share with that work an emphasis on the directionality of the calendar days.

A host of examples on ceramics show the simple layout of the cosmic layers. Often the iconography used to show

129. Aveni, *Skywatchers*, 157 (note 57).

130. Sahagún, *Florentine Codex*, 8:1–2 (bk. 7, chap. 1) (note 7).

131. For an analysis of Culhua-Mexica ritual practice, including the multiple roles of Xiuhtecuhtli, see Inga Clendinnen, *Aztecs: An Interpretation* (Cambridge: Cambridge University Press, 1991).

132. Tezcatlipoca’s dismemberment may have been reenacted in the Aztec festival of Toxcatl, when a deity impersonator of Tezcatlipoca was sacrificed by heart extraction. Diego Durán, “*Book of the Gods and Rites*” and “*The Ancient Calendar*,” ed. and trans. Fernando Horcasitas and Doris Heyden (Norman: University of Oklahoma Press, 1971), 107. Most of the elements of the first page of the Codex Fejérváry-Mayer—the world trees and birds, the calendrical counts, the nine lords of the night—are also found on the pages of other members of the Borgia group, such as in the Codex Borgia, pp. 49–52, and Codex Vaticanus 3773, pp. 17–23 and passim. However, only in the Codex Fejérváry-Mayer are they all arranged on the page to correlate to their orientation in space.

133. Durán, “*Book of the Gods*,” 388–93.

134. The similarities between the Madrid and the Fejérváry-Mayer codices were first pointed out by Cyrus Thomas, “Notes on Certain Maya and Mexican Manuscripts,” in *Third Annual Report of the Bureau of Ethnology (1881–1882)* (Washington, D.C.: United States Government Printing Office, 1884), 3–65, and discussed by Seler at length in his *Codex Fejérváry-Mayer* (note 126), and again by Ernst Wilhelm Förstemann, *Commentar zur Madrider Mayahandschrift (Codex Trocortesianus)* (Danzig: L. Saunier, 1902), 136.

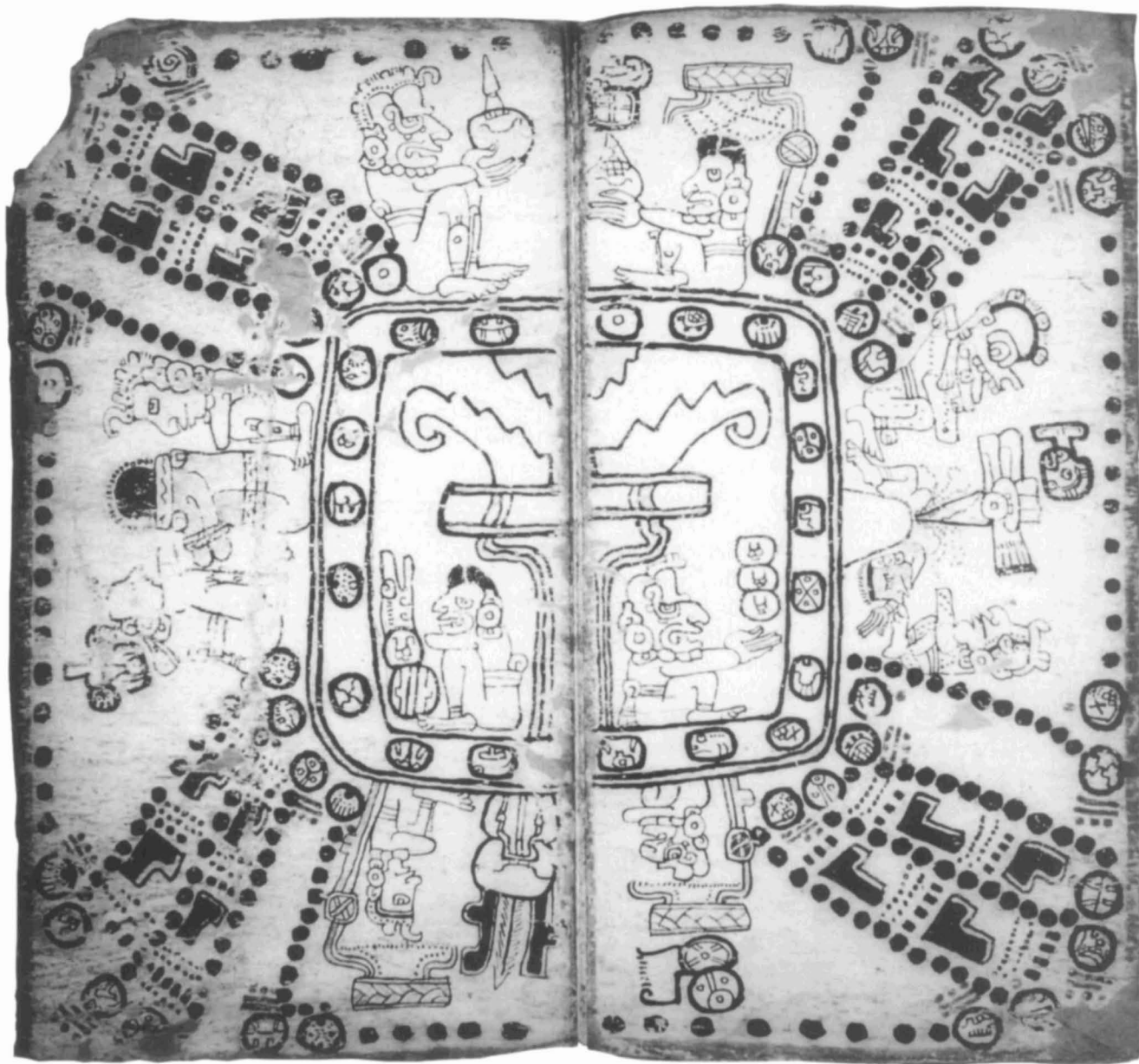


FIG. 5.42. MAYA COSMOGRAPHICAL MAP IN THE CODEX MADRID. These two folios show a Maya cosmographical map akin to that in the central Mexican Codex Fejérváry-Mayer. In this version, the stylized world tree grows from the center of the map, flanked by two deities who are probably the ancestral couple. Each of the quadrants contains a pair of deities engaged in ritual activities; the couple on the right, or northern quadrant, oversee a heart sacrifice of a victim stretched out over a stone. The hieroglyphs that sit at the top center of each quadrant spell, clockwise from the top,

the stratified cosmos was far from simple. One Maya tripod plate from the late classic period (A.D. 600–900), for instance, shows the heavens, embodied by the celestial monster, arching along the upper half of the rim (figs. 5.43 and 5.44).¹³⁵ The lower half is dominated by the maw of the Underworld monster, and in the plate's cen-

ter rises the world tree, growing out of the head of Chac Xib Chac, a Maya deity. In typical Maya fashion, this lay-

west, north, east, and south, marking orientation. Just like the Codex Fejérváry-Mayer, the Codex Madrid anchors the world directions to a 260-day calendar. Beginning at the lower left corner of the inner square is a day count, with every first and thirteenth day named hieroglyphically and the others signaled by black dots serving as counters. This day count creates the framing Maltese cross.

Size of the original: ca. 22.6 × 24.4 cm. Photograph courtesy of the Museo de América, Madrid (fols. 75–76).

135. Analyzed and illustrated in Schele and Miller, *Blood of Kings*, 310–12, pl. 122 (note 54). For more examples from Maya ceramics, see Dorie Reents-Budet, *Painting the Maya Universe: Royal Ceramics of the Classic Period* (Durham: Duke University Press, 1994).

out of the cosmos is shown in ornate splendor, with parts of the cosmos symbolized by their deified personifications.

However, in some regions the tripartite cosmos coexisted with a cosmos as layered as a mille-feuille, with at least twenty-one tiers. This layered cosmos appears in the Codex Ríos, a post-Hispanic book produced for European patrons (fig. 5.45).¹³⁶ Folios 1v and 2r show the vertical arrangement of the cosmos, slicing through its twenty-one strata like an archaeologist's core sample.¹³⁷ The twelve layers of the sky and one of the earth were ruled over by thirteen deities, not all pictured on these two pages but known from other sources. They also presided over a never-ending cycle of thirteen days.¹³⁸ Their nocturnal counterparts were the nine lords of the night, pictured on the cosmographical map in the Codex Fejérváry-Mayer. These night deities ruled over the nine regions of the Underworld (which included the earth) through which souls had to pass before reaching a zone of stasis at the bottom. For this reason the Mayas of the classic period (A.D. 250–900) typically buried their rulers in pyramids composed of nine layers, as at Copan (i.e., structure 16), Palenque, and Tikal, to symbolize the nine layers of the dead rulers' Underworld journey.¹³⁹

The conception of the cosmos as divided vertically into layers and horizontally into quadrants, held together by the world tree, was very ancient and is found among works made by the Olmecs. For example, a small square tablet of mottled greenstone, no larger than a cigarette case, dating to 900–500 B.C., is incised with a simple cosmogram. Its four corners are marked with right-angle incisions, as if to emphasize their directions. A mountain rises at its center; at its summit is a world tree. At its base are the three stones of the household hearth, which prefigure by two thousand years the figure of Xiuhtecuhtli, the god of the hearth, found in the cosmogram of the Codex Fejérváry-Mayer.¹⁴⁰ In the wake of the Olmecs, other societies commemorated in sculpture the cosmic model they inherited. Izapa stela 5 dates from 300 B.C.–A.D. 1 (fig. 5.2). At the central axis of the stela stands the world tree; above it is an abstracted sky band, and below it are the primordial waters, shown with a wave pattern.¹⁴¹ Cosmographic maps, like the Izapa stela, presented the cosmos as immutable and ordered, standing in sharp contrast to the chaotic and hazard-ridden world of humans. Their permanence in an ever-changing world made them images of great force.

Because of their power, cosmographical maps were often used by rulers who cast themselves on a cosmographical stage rather than a terrestrial and mundane one. Mesoamerican rulers were believed to be the semidivine mediators between humans on earth and the deities inhabiting the Upperworld and Underworld.¹⁴² Rulers perpetuated this understanding by commissioning public works that show them as fulcrums of the cosmic order, in life and in death. Thus cosmographical maps often say as

much about human affairs as about the shape of the cosmos. In the Maya city of Río Azul, a Maya lord of about A.D. 450 was treated as an *axis mundi* in his tomb. The four walls of the tomb were vividly painted with hieroglyphs marking the four directions and associated phenomena: the east was linked to the sun and the south to Venus, and at the center, where the world tree would stand, lay the dead king.¹⁴³

The connection between the dead lord and the world tree is made explicit in the seventh-century sarcophagus lid of Lord Pacal (r. 615–83), a Maya ruler of the city of Palenque, a sculptured counterpart to the Río Azul paintings. This bas-relief limestone panel, set above Pacal's body, lay hidden in its crypt within the nine-layered Temple of the Inscriptions until archaeologists broke its thirteen-hundred-year-old seal in 1952. The lid shows Pacal as the linchpin of a cosmic map (fig. 5.46).¹⁴⁴

136. The Codex Ríos was an Italian copy of an earlier book, now lost, that was composed by Nahuatl-speaking artists and that reproduces within it pre-Hispanic screenfolds. See Stacey Simons, *The Codex Ríos*, Vanderbilt University Publications in Anthropology, forthcoming.

137. The model presented in the Codex Ríos may not have been the standard one. A different version of the nine Underworld layers was described by Sahagún, *Florentine Codex*, 4:43–44 (bk. 3, appendix, chap. 1) (note 7). These versions and others are collated, compared, and discussed in Nicholson, "Religion" (note 126).

138. This thirteen-layered heaven may be a variation on an earlier nine-layered one. See Nicholson, "Religion."

139. On Copan, see Miller, "Main Acropolis," 165–66 (note 16); on Palenque, see Alberto Ruz Lhuillier, *El Templo de las Inscripciones, Palenque* (Mexico City: Instituto Nacional de Antropología e Historia, 1973); and on Tikal, see Aubrey S. Trik, "The Splendid Tomb of Temple I at Tikal, Guatemala," *Expedition* 6, no. 1 (1963): 2–18, and Michael D. Coe, "The Funerary Temple among the Classic Maya," *Southwestern Journal of Anthropology* 12 (1956): 387–94.

140. The catalog entry for the piece in *The Olmec World: Ritual and Rulership* (Princeton: Art Museum, Princeton University, 1995), 234, discusses the correlation of the cosmic model with the architecture of the Olmec site of La Venta, and Schele, "Olmec Mountain" (note 16), discusses further elaborations of cosmograms in Olmec art and architecture. See also Frank Kent Reilly, "Visions to Another World: Art, Shamanism, and Political Power in Middle Formative Mesoamerica" (Ph.D. diss., University of Texas at Austin, 1994).

141. V. Garth Norman, *Izapa Sculpture*, 2 pts., Papers of the New World Archaeological Foundation 30 (Provo: New World Archaeological Foundation, 1973–76), pt. 2, 165–236. Norman compares this world tree with others from Mesoamerica (pt. 2, 65–67).

142. For a fuller explanation of the role of Maya kings, see Schele and Miller, *Blood of Kings* (note 54). For the Aztecs, see Richard F. Townsend, *State and Cosmos in the Art of Tenochtitlan*, Studies in Pre-Columbian Art and Archaeology 20 (Washington, D.C.: Dumbarton Oaks, 1979). Susan D. Gillespie, "Power, Pathways, and Appropriations in Mesoamerican Art," in *Imagery and Creativity: Ethnoaesthetics and Art Worlds in the Americas*, ed. Dorothea S. Whitten and Norman E. Whitten (Tucson: University of Arizona Press, 1993), 67–107.

143. Ian Graham, "Looters Rob Graves and History," *National Geographic* 169 (1986): 452–60, esp. 456, and Freidel, Schele, and Parker, *Maya Cosmos*, 72, 418–19 (note 56).

144. On the sarcophagus lid, see Schele and Miller, *Blood of Kings*, 282–85, and 306 n. 2 (note 54); Linda Schele and David A. Freidel, *A Forest of Kings: The Untold Story of the Ancient Maya* (New York:



FIG. 5.43. MAYA TRIPOD PLATE. While many known cosmographical maps appear in manuscripts or on sculpture, they are also found on ceramics. The goal of the iconography on this elegant plate is to render the layout of the cosmos, and it accomplishes this through visual analogies and metaphors. Its fine drawing was likely derived from manuscript painting; this “codex style” plate may have shared its subject matter, as well as style, with the codices of its era. Diameter of the original: ca. 31 cm. By permission of Barbara and Justin Kerr, New York.

Pacal—with Xibalba, or the Underworld, below and the heavens above—is at the center of the cosmic levels. A monument with an emphasis similar to that of Pacal’s sarcophagus lid was made eight centuries later to commemorate the brief reign of the Culhua-Mexica ruler Tizoc, who headed the Aztec empire from 1481 to 1486. This disk of stone (fig. 5.47), set like a wheel on its side, shows Culhua-Mexica warriors repeatedly taking captives along the circular band. Most prominent among the warriors is the one named as Tizoc (far left in drawing, fig. 5.48), whose costumed figure stands like a pillar to keep the sky band above him from collapsing onto the earthly crocodile below his feet.¹⁴⁵

These sculptured examples—a few among many—show us the antiquity of the cosmographical map and its long association with rulers.¹⁴⁶ Many cosmographical maps were large public monuments—Izapa stela 5 was set up facing a large open plaza¹⁴⁷—and thus their iconography was simple and writ large, with heavens above and Underworld below. Manuscripts and elite painted ceramics, on the other hand, were meant for close and careful scrutiny and therefore could articulate an understanding of the cosmos that was more complex, meant for the very few. Such is the case for the Maya tripod plate and the

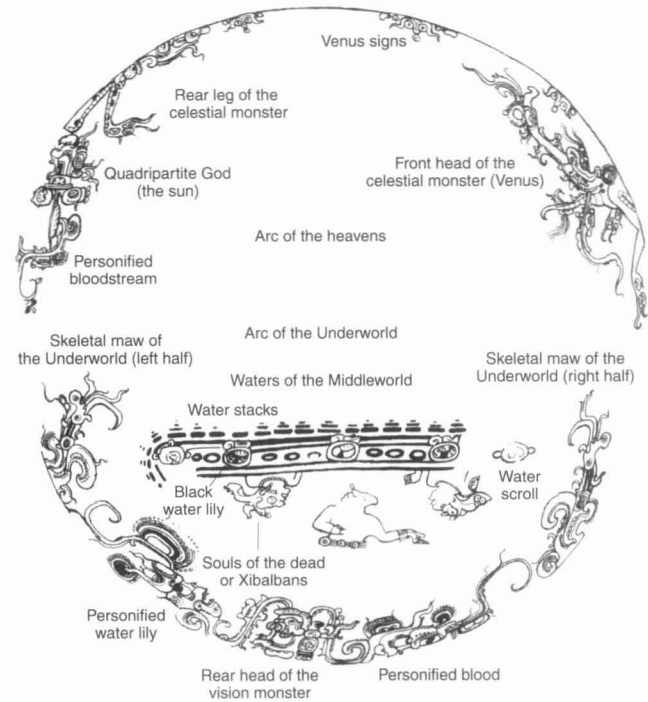


FIG. 5.44. DRAWING OF MAYA TRIPOD PLATE (FIG. 5.43). The upper rim of the plate is lined with the elongated body of the celestial monster, which embodied the sky, while the lower rim shows the maw of the Underworld. The wide black circles and lines running horizontally along the lower third of the plate represent waters on the earth’s surface. The hieroglyphic text of the plate further describes the celestial events that are pictured taking place within this cosmographical map: the rising of Venus as evening star.

After Linda Schele and Mary Ellen Miller, *The Blood of Kings: Dynasty and Ritual in Maya Art* (New York: George Braziller, 1986), pl. 122c (p. 310).

sarcophagus lid of Pacal. For us such complex images resist facile interpretation.

Just as rulers used cosmographical maps to situate themselves in the cosmos, one city did as well. We have compared the Codex Mendoza map of Tenochtitlan (fig. 5.6) with a coeval European map, but this Culhua-Mexica map calls out to be compared with the cosmic map of the Codex Fejérváry-Mayer (fig. 5.40). The map of Tenochtitlan declares its affiliation with cosmographical maps by its mimicry of forms. Out from its center

William Morrow, 1990), 225–26, 231, and passim; and Freidel, Schele, and Parker, *Maya Cosmos*, 77–79.

145. Charles R. Wicke, “Once More around the Tizoc Stone: A Reconsideration,” in *Actas del XLI Congreso Internacional de Americanistas* (1974), 3 vols. (Mexico City: Instituto Nacional de Antropología e Historia, 1975), 2:209–22, and Townsend, *State and Cosmos*, 43–49 (note 142).

146. See Schele, “Olmec Mountain” (note 16).

147. Gareth W. Lowe, Thomas A. Lee, and Eduardo Martínez Espinosa, *Izapa: An Introduction to the Ruins and Monuments*, Papers of the New World Archaeological Foundation, no. 31 (Provo: New World Archaeological Foundation, 1976), 158–77.

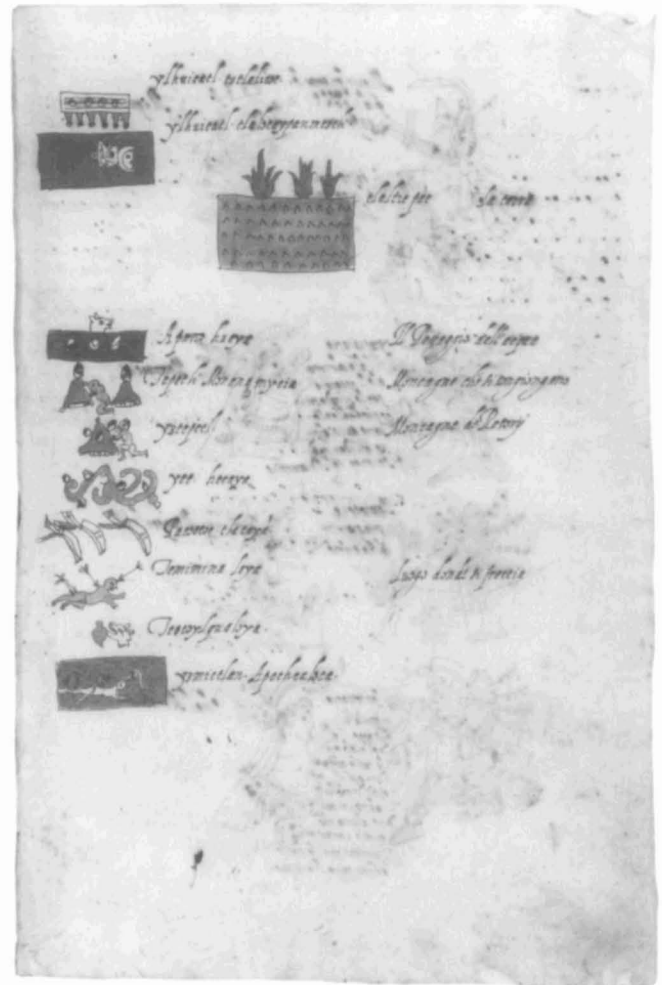
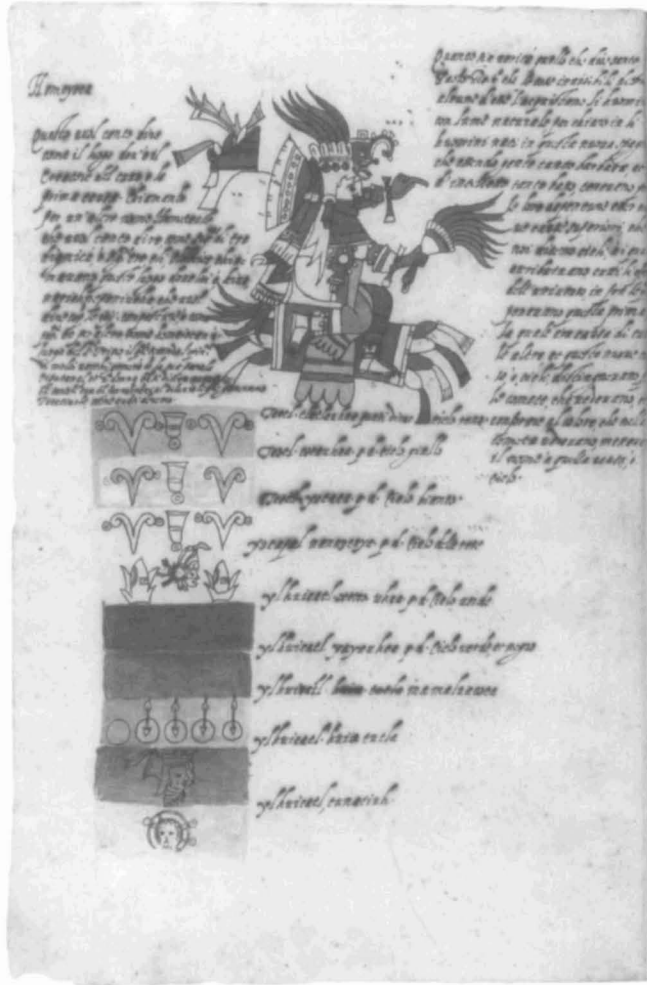


FIG. 5.45. COSMOGRAPHICAL MAP FROM THE CODEX RÍOS. This map, from a colonial book (paint and ink on European paper), shows the cosmographical layers: thirteen of sky and nine of Underworld (the earth is counted as both a sky and an Underworld level). In the middle of the cosmos, seen in the upper center of the second page, the cultivated earth (*tlatlīcpac*) yields food plants. Above the earth on folio 2r and at the bottom of folio 1v, eleven additional layers of the heavens are shown, many of them different colors; at the top layer is a creator deity, Ometeotl. The eight additional layers of the Underworld are pictured below the earth, each with a small picture of the elements encountered there. The Codex Ríos gives the names of these celestial and Underworld layers in Nahuatl and Italian as (13) Hometeule (Ometeotl); (12) Teotl Tlatlauhea, Red Sky; (11) Teotl Cocaueha, Yellow Sky; (10) Teotl Yztaca, White Sky; (9) Yztapal Nanazcaya, Sky of the Roses; (8) Ylhuicatl Xoxouhca, Green Sky; (7) Ylhuicatl Yayaueha, Green and Black Sky; (6) Ylhuicatl Mamaluacoca;

(5) Ylhuicatl Huix Tutla; (4) Ylhuicatl Tunatiuh; (3) Ylhuicatl Tztlalicoe; (2) Ylhuicatl Tlalocaypanmeztli; (1) Tlaltic Pac, the Earth. The layers of the Underworld are given as (1) Tlaltic Pac, the Earth; (2) Apano Huaya, the Passing of Water; (3) Tepteli Monana Mycia, the Mountains That Clash; (4) Yztepetl, the Mountains of the Knives; (5) Yee Hecaya; (6) Paoecoe Tlacaya; (7) Temimina Loya, Place Where One Shoots Arrows at Oneself; (8) Tecoylqualoya; (9) Yzmictlan Apochcaloca. The Codex Ríos explains many Aztec religious beliefs. It is an Italian copy of a lost original that seems to have been commissioned by Catholic priests to explain aspects of native culture to Europeans. Although the schema of the cosmos pictured here is consistent with other written sources, no other such map exists, and this graphic rendering of the cosmic order may have been created at the behest of a friar. Size of each folio: 46 × 29 cm. Photographs courtesy of the Biblioteca Apostolica Vaticana, Rome (Vat. Lat. 3738, fols. 1v–2r).

stretch four blue bands, dividing Tenochtitlan into its four quadrants; out from the center of the cosmographical map in the Codex Fejérváry-Mayer stretch four rivers of blood, dividing the cosmos into the four directions. The outermost frame of the Codex Mendoza page is a series of year dates, each within a blue rectangle; the flow-

erlike border of the Codex Fejérváry-Mayer map is a day count. These formal similarities were purposeful: the Aztec artist meant to show how the meshing of space and time and history within the human world echoed the cosmic order. This same pattern of modeling human space on the perceived cosmic order pervades the Quiché Maya

myth, the *Popol Vuh*. In one section, for instance, the road to Xibalba, the ghastly home of the gods of death and putrefaction, shares a number of physical similarities with the road into the lowlands of the Petén, where the Itzás, enemies of the Quichés, once lived, and which to the Quichés today is still “an abode of evil.”¹⁴⁸ These concerns for integrating human activity with cosmic order are also evident in all Mesoamerican maps, whether cosmological, terrestrial, or both.

CELESTIAL MAPS

All Mesoamerican peoples kept close track of the movements of the planets and constellations.¹⁴⁹ The cynosure of their firmament was Venus, believed by the Aztecs and other peoples of central Mexico to be the deity Quetzalcoatl. Mesoamerican astronomers observed Venus during its 584-day cycle as it transmuted from morning star to evening star and disappeared altogether during its superior and inferior conjunctions with the sun. They also watched the Pleiades, whose appearances often coincided with cyclical beginnings in the agricultural year. In addition, Mesoamericans planned their cities so that buildings were aligned with important celestial events; they also built structures that were meant as observatories.

We have long known of Mesoamericans' keen interest in the night sky but are only beginning to understand the nature and scope of their celestial maps. Mesoamericans had names for the constellations, just as we do, and recorded such groups of stars with “embodied maps.” Just as Westerners have used the figure of twin boys to show the arrangement of the stars in the constellation Gemini, the Mayas used the figure of copulating peccaries. For the Mayas, the three stars in the belt of Orion studded the back of a turtle. These “embodied maps” could be combined into larger maps. For instance, on the painted north wall of room 2 at Bonampak, a classic Maya city, four cartouches appear above the main scene.¹⁵⁰ The outermost show the peccary pair on the left and a turtle on the right. In between are two crouching figures, believed to represent the planets Mars and Saturn. The main scene of this Bonampak mural shows a battle waged on 6 August 792. As pointed out by Schele, this line of figures roughly captures the planimetry of these four constellations and planets on that very night



FIG. 5.46. SARCOPHAGUS LID OF PACAL. Pacal, the Maya ruler of Palenque, is the central figure of his sarcophagus lid. He is seen slightly reclining, gazing upward. Cradling his body are the jaws of the Underworld; their tips touch the base of his neck and his upraised knee. Since these jaws mark the entrance to Xibalba, or the Underworld, we are meant to see Pacal as he leaves the middle world of human life and falls into the Underworld of the dead. A cross-shaped world tree grows out of Pacal's loins; at its top sits a celestial bird, much like the ones on the cosmographical map in the Codex Fejérváry-Mayer. The narrow top band of the lid is marked with symbols for both sun and night and thus is meant to represent the sky. By showing Pacal as the fulcrum of this world order, the Mayas meant both to honor their dead king and to reassert the central role that rulers played in the ordering of their cosmos. Size of the original: 372 × 217 cm. By permission of Merle Greene Robertson, San Francisco.

148. Tedlock, *Popol Vuh*, 116, 354 (note 59); the connection of Xibalba with the home of the Itzá is supplied by Delia Goetz and Sylvanus Griswold Morley, from the translation by Adrián Recinos, *Popol Vuh: The Sacred Book of the Ancient Quiché Maya* (Norman: University of Oklahoma Press, 1950), 114 n. 6.

149. Aveni, *Skywatchers* (note 57); Anthony F. Aveni, ed., *Archaeoastronomy in Pre-Columbian America* (Austin: University of Texas Press, 1975); and Anthony F. Aveni, ed., *Native American Astronomy* (Austin: University of Texas Press, 1977).

150. Mary Ellen Miller, *The Murals of Bonampak* (Princeton: Princeton University Press, 1986), 30–38, and Freidel, Schele, and Parker, *Maya Cosmos*, 59–122 (note 56) (these authors identify thirteen Maya constellations—a Maya zodiac—in the Paris Codex).



FIG. 5.47. THE TIZOC STONE. This large drum-shaped stone was carved for the Culhua-Mexica ruler Tizoc to commemorate his conquests and those of previous rulers. It shows both how prevalent cosmographical maps were and the way ruling elites used cosmic iconography for their own political ends.

Size of the original: 90 cm high, 270 cm in diameter. Photograph courtesy of the Instituto Nacional de Antropología e Historia, Museo Nacional de Antropología, Mexico City.

and thus is a somewhat abbreviated map of part of the night sky.¹⁵¹

The Aztecs may have made similar maps of the night sky, but only a fragmentary record of their ideas of the constellations survives. The *Primeros memoriales*, the book compiled by Sahagún and his Aztec informants, pictures constellations on pages that deal with indigenous astrology (fig. 5.49).¹⁵² Other depictions of what seem to be constellations also appear on the edges of the pre-Columbian Aztec Calendar Stone.¹⁵³

The constellation maps seem austere when compared with the orchestral intricacy of celestial mapping that we see in the *Codex Borgia*, one of the pre-Columbian manuscripts from central Mexico. The *Codex Borgia* is one of

151. Freidel, Schele, and Parker, *Maya Cosmos*, 79–82.

152. Sahagún, *Primeros memoriales* (Códice Matritense del Palacio Real del Madrid) (note 116). The constellations are also discussed in Sahagún, *Florentine Codex*, 8:11–15 and 60–71 (bk. 7, chaps. 3–4, and bk. 7, appendix, chaps. 3–4) (note 7).

153. Aveni, *Skywatchers*, 32–34 (note 57).

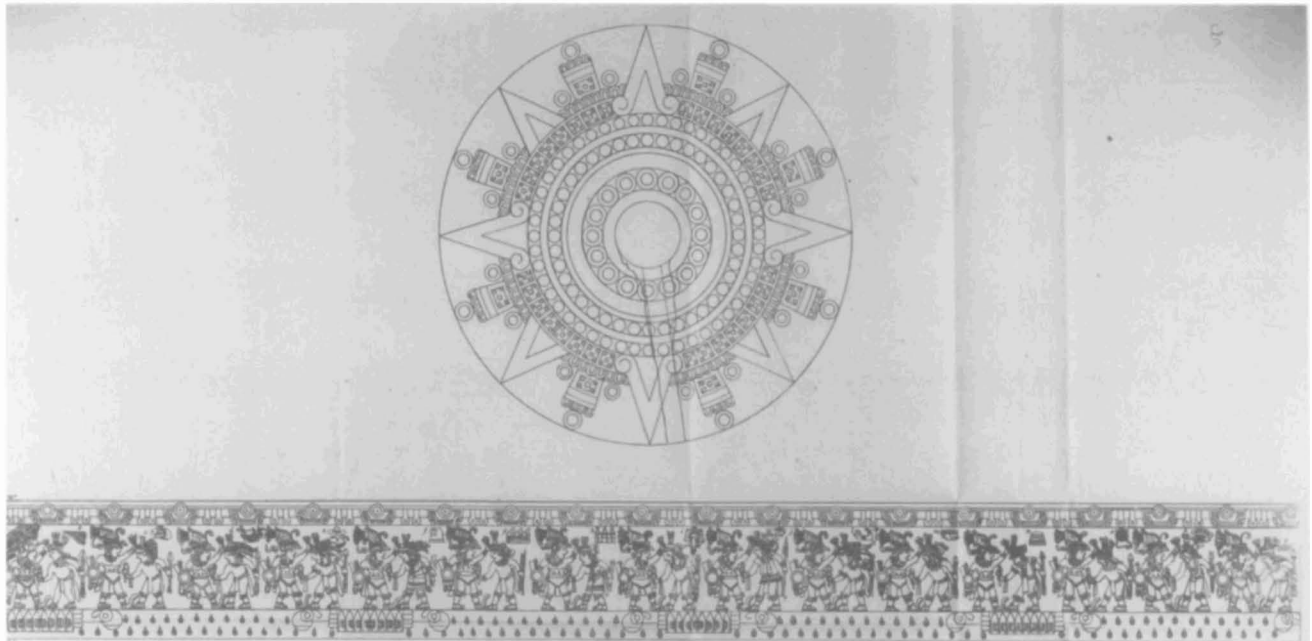


FIG. 5.48. DRAWING OF THE TIZOC STONE. On the top of the stone, a radiant solar disk is incised, and a narrow band representing the sky lines the top edge of the side frieze. Beneath this sky band, fifteen Culhua-Mexica warriors are shown, dressed in elaborate battle costume, each one grasping a hank of his captive enemy's hair. The principal warrior is hieroglyphically named as Tizoc, and he stands with his feet on the earth monster, whose four open mouths punctuate the lower register. The feathers of Tizoc's headdress seem to support the upper sky band. This composition puts Tizoc in the

place of the world tree, keeping earth and sky apart. This powerful image of Tizoc—as conquering hero and *axis mundi*—was pure propaganda. A weak ruler and an ineffectual warrior, he lasted only five years on the throne and was probably assassinated by rivals.

From Manuel Orozco y Berra, “El cuauhxicalli de Tizoc,” *Anales del Museo Nacional de México* 1 (1877): 3–38, esp. fig. 20. Photograph courtesy of Special Collections and Rare Books, Wilson Library, University of Minnesota, Minneapolis.

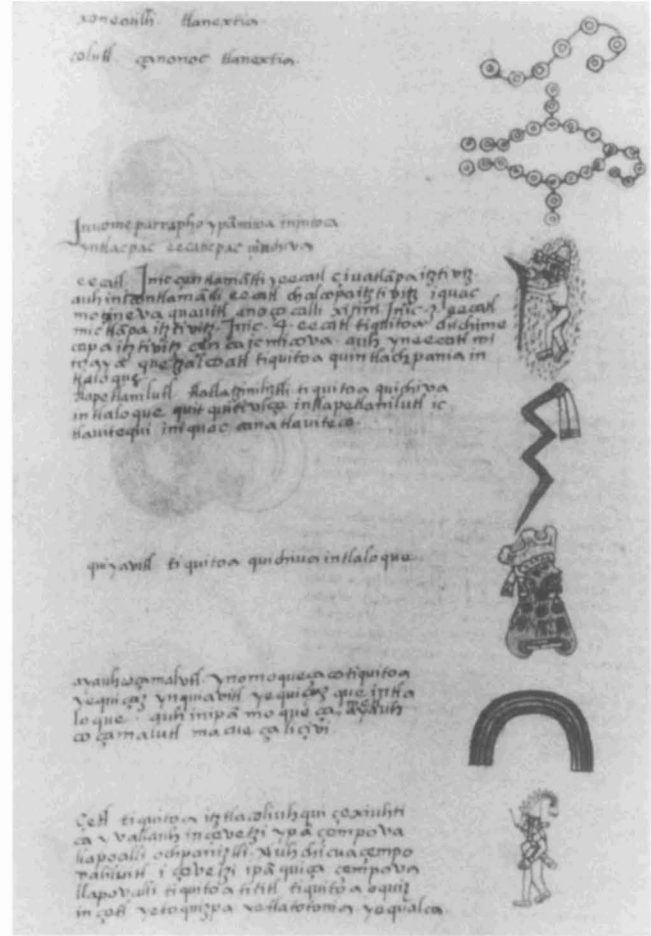
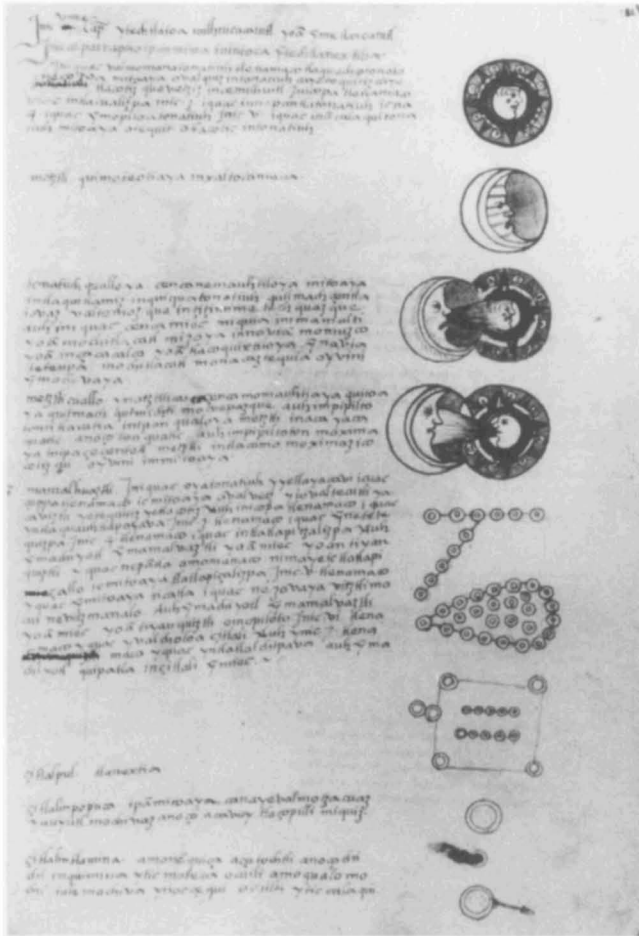


FIG. 5.49. CONSTELLATIONS OF THE PRIMEROS MEMORIALES. A few pages of this postconquest book deal with indigenous astrology; the eight figures shown here (the last six on the recto and first two on the verso) are accompanied by a Nahuatl text that describes them. The first, T-shaped constellation is Mamalhuaztli (the Drill), below it is Tiyanzquitzli (the Marketplace), and below that is Citlaltlactli (Starry Ball Court). The three circular figures below these constellations are Citlapol (Venus), a Citlalinpopuca (a smoking star or comet), and Citlalintlamina (a shooting star). The final two

constellations, on the verso page, are described as Xonecuilli (Staff) and Colutl (Scorpion). Some of these constellations can be anchored to modern ones: Tiyanzquitzli is certainly the Pleiades; Colutl is Scorpio; and Mamalhuaztli may be the Sword of Orion. The Aztecs may have combined pictures of different constellations like these into maps of the night sky as did the Mayas.

Size of each folio: ca. 43 × 23 cm. Copyright © Patrimonio Nacional, Biblioteca del Palacio Real, Madrid (Códice Matritense, fols. 282r–v).

the most beautiful of the extant pre-Hispanic codices; dense with calendrical and divinatory imagery, it is certainly one of the most complex. Eighteen of its pages (29–46) map the first part of a complete cycle of Venus (plate 10).¹⁵⁴ They track Venus as it moved from being the morning star into its period of superior conjunction (when it was invisible, blocked by the sun), then into its appearance as evening star.¹⁵⁵ When Venus rises in the night sky, descends below the horizon, and then rises again, the Codex Borgia pictures it as moving through various celestial levels, like those of the Codex Ríos.

The celestial travels of Venus are shown metaphorically. Although modern scholars cannot yet interpret the meanings of all the figures and activities on these eighteen pages of the Codex Borgia, we understand some of the

basic metaphors used. Venus is pictured as a variety of deities, among them Quetzalcoatl, the wind god Ehecatl-

154. See Selser, *Comentarios al Códice Borgia*, 2:9–61 (note 126). Karl A. Taube discusses one of the scenes on these Codex Borgia pages in “The Teotihuacan Cave of Origin: The Iconography and Architecture of Emergence Mythology in Mesoamerica and the American Southwest,” *Res* 12 (1986): 51–82.

155. I adhere to the interpretation offered by Susan Milbrath, who argues convincingly that the Codex Borgia depicts the morning star–superior conjunction–evening star part of the Venus cycle. She parts company with Eduard Selser, who interprets these pages as the superior conjunction–evening star–inferior conjunction–morning star: Susan Milbrath, “A Seasonal Calendar with Venus Periods in Codex Borgia,” in *The Imagination of Matter: Religion and Ecology in Mesoamerican Traditions*, ed. David Carrasco (Oxford: British Archaeological Reports, 1989), 103–27.

Quetzalcoatl, the monstrous canine Xolotl, and Tlahuizcalpantecuhtli or “Dawn Lord.” When Venus was visible, Mesoamericans held that it was traveling through the sky of the Upperworld. When it was invisible, they believed it was traveling through the sky of the Underworld, or the sky of the nighttime sun.

As with the Codex Fejérváry-Mayer, the eighteen pages of the Codex Borgia are as much maps as they are calendars. In the schema offered by Susan Milbrath, each of these eighteen pages covers one twenty-day period, the Mesoamerican month, using a tableau to show the Venus events of that month. The first ten pages (29–38) represent two hundred days when Venus is visible as morning star. In them, Quetzalcoatl is pictured in regions of the upper sky. On page 39, Quetzalcoatl plunges into the horizon, shown as the gaping maw of an earth monster, to enter the Underworld. This represents Venus’s disappearance from the morning sky as it passes below the horizon, in superior conjunction with the sun. The next four pages show Quetzalcoatl passing through four Underworld layers during the planet’s period of invisibility. On page 44 Venus, resplendent in a suit of hummingbird feathers, rises like a phoenix to become the evening star.¹⁵⁶

The various stations Venus passes through are meant to be understood as the discrete levels of the sky, analogous to the cosmographical map in the Codex Ríos (fig. 5.45). Venus is like an elevator moving through a multistory building, and to show these as horizontal levels, the artist of the Codex Borgia took the unusual step of reorienting this part of the screenfold manuscript. It is read not right to left but up to down. Thus the bottom of page 29 is above the top of page 30, and the whole set of pages can be stretched out into a long vertical column. Most of the pages are framed by a border figure, and Venus is sometimes seen diving through the upper border into the page, or crashing through the lower border out of the page, as it moves through one layer to the next. In short, pages 29–46 of the Codex Borgia are an intricate itinerary map of the travels of Venus through the skies.

But in other codices the movements of Venus and its transformations were recorded in tables, not with maps. Of the four surviving Maya manuscripts, three—the Dresden, the Grolier, and the Paris—include elaborate tables of astrological phenomena, the Dresden Codex being most notable for its extensive tables of the movements of Venus. Many pages of the Dresden Codex, for example, show us dates and auguries associated with Venus, as well as numerical tables that mark periods in its 584-day cycle.¹⁵⁷ Although this tabular accounting allowed Mesoamerican astronomers to closely track Venus, it cannot be considered cartographic. Nonetheless, the intricacy of a map like that of the Codex Borgia makes it probable that a rich tradition of maps that were both celestial and cosmographical did once exist.

CONTINUATIONS OF NATIVE MAPPING AFTER THE CONQUEST

The Spanish conquest hit native Mesoamericans with cataclysmic force, bringing an end to a culturally and politically autonomous Mesoamerica. In the space of a few years, millions of indigenous Americans were forced to reshape their social, political, and religious systems to accommodate Spanish colonial rule. Indigenous cartography was also refashioned. Among all the changes that took place in the lives of Mesoamerican peoples after the conquest, five central ones had a measurable effect on cartography. Three had a great impact on the content of maps, and two affected their format and appearance. The great demographic collapse Mesoamerica suffered during the sixteenth century altered the historical component of its cartographic history. The religious conversion to Catholicism effectively put an end to cosmographical mapping. In contrast, the introduction of a new kind of judicial system enlivened terrestrial mapping, particularly boundary maps. Both the advent of alphabetic literacy and the introduction of new modes of representation dramatically changed the visible way Mesoamericans mapped their world.

DEMOGRAPHIC COLLAPSE AND THE WRITING OF HISTORY

Perhaps only a tenth of all Mesoamericans survived the wars of conquest and the ravaging epidemics of 1520–21, 1545–48, and 1576–81, as well as others in the intervening years.¹⁵⁸ We can only imagine the shattering effect such a holocaust had on the Mesoamerican psyche: within a mere two generations Mesoamericans not only had been defeated and enslaved, they were—inexplicably from their perspective—dying.

We cannot gauge to what degree indigenous cartographic production decreased following the conquest, since the surviving maps date mostly from the postconquest period. But a decrease in the numbers of maps was inevitable, given the wide-scale demographic collapse. Not only was the production of maps affected, so was the subject matter of cartographic histories, the mainstay of the tradition. Cartographic histories would often picture genealogies and activities of ruling elites, but the 1580 map of Amoltepec (fig. 5.25) shows only the current rulers of this Mixtec town sitting within their palace. By

156. Pages 45 and 46 are likewise devoted to Venus as evening star. Milbrath, “Seasonal Calendar.”

157. Aveni describes the content of these pages in *Skywatchers*, 173–99 (note 57). Thompson, *Dresden Codex*, 62–71 (covers Dresden 24, 46–50) (note 5).

158. On the number of epidemics, see Gerhard, *Historical Geography*, 23 (note 2).

1555 Amoltepec had been almost depopulated by disease and migration.¹⁵⁹ The effect of Amoltepec's depopulation seems to present itself on the map: only the contemporary rulers—not the full spectrum of their ancestors—are shown in the center. Among the Mixtecs, the once great lineages were in tatters, and across Mesoamerica the voice of indigenous history fell silent.

RELIGIOUS CONVERSION AND COSMOGRAPHICAL MAPS

In the wake of the Spanish conquerors came Catholic friars, whose mendicant orders had been given the special papal privilege of converting Amerindians. Living in native communities and learning native languages, the friars had daily access to postconquest Mesoamericans and exerted the greatest influence on their lives. They tried to reshape native ideologies to meet Catholic criteria; to this end they zealously burned books and manuscripts and smashed stone statues and tablets. Among the artifacts lost would have been native maps of the cosmos like the one in the Codex Fejérváry-Mayer or the Tizoc Stone; the mendicants found intolerable the images of “pagan” gods and “demonic” ritual they saw in them. Manuscripts devoted to religious matters survived only because of their value as curiosities in the eyes of European collectors; most surviving cosmographical maps, housed within ritual-calendrical manuscripts, are found today in Europe and bear the names of their European collectors (like the Codex Fejérváry-Mayer and the Codex Borgia). Sculpture was either buried or recut to be used in new building projects; the Tizoc Stone was unearthed in 1791, only to face being cut into paving stones before it was rescued.¹⁶⁰

The friars banned and burned native religious books, but then sponsored books that would explain native belief and practice to Europeans. Thus they encouraged the making of some new cosmographical maps and in doing so may have actually fostered a map unknown before the conquest, like that in the Codex Ríos. But on the whole, drained of the vivifying anima of ritual practice, native religious manuscripts ceased to be made, and with them manuscript maps of the native cosmos. Cosmographical maps on other media, like ceramics or stone, were also censored and eventually disappeared.

JUDICIAL SYSTEMS AND TERRITORIAL MAPS

Although some avenues of Mesoamerican cartographic expression closed as a result of the conquest, others opened up. Friars may have suppressed the production and use of cosmographical maps, but they, and Spanish administrators, were concerned about falling population and the shrinking labor pool. They attempted some protection of native resources by encouraging Mesoameri-

cans to make terrestrial maps in the first half-century after the conquest. They advocated the use of maps in courts to prove possession, and sixteenth-century documents are full of references to native individuals or communities presenting *pinturas* (almost certainly maps) to the courts. For instance, the Maya map of Maní was probably made at the behest of Spanish adjudicators who wanted to put an end to the innumerable boundary squabbles among these Mayas.¹⁶¹ The first viceroy of Mexico, Antonio de Mendoza (r. 1535–50), saw that maps were added to the numerous textual documents required in the land grant (*merced*) process, by which the viceroy would allocate lands to inhabitants, usually colonists, to farm or raise livestock. Doubtless Mendoza added the map clause to give native communities an opportunity to prove or disprove the availability of land (figs. 5.50 and 5.51).¹⁶² In addition, when native communities sought protection against encroachment on their territories, they often presented maps as evidence on their side in Spanish-run courts.

Once Mesoamerican territorial maps were accepted in Spanish adjudications, their content shifted; the new Spanish audience and their demands may have unknowingly driven a wedge between the two parts of the once seamless cartographic history. For instance, we saw how with a cartographic history like that of the Lienzo of Zacatepec 1 (fig. 5.13), a community's rights to territory rested on both its possession of territory and the historical claims of its ruling line. But to Spanish officials and adjudicators, possession was nine-tenths of the law. Thus later Mesoamerican artists were likely to emphasize boundaries—to which the Spanish granted full recognition—and deemphasize genealogy. In the 1580 map from the Mixtec town of Amoltepec (fig. 5.25), the emphasis falls on the clearly expressed boundary symbols rather than the lineage of the ruling elite. And the map of Atlatlahuacan (fig. 5.50), an indigenous map made specifically for the viceregal court, shows little more than settlements and boundaries.

It is difficult to measure how successful maps proved in protecting indigenous lands from encroachment, usually by Spaniards, since so many court records that contain maps are incomplete. Moreover, even if a native community could prove its ownership in court, this was no guarantee that the colonial government was able (or willing) to protect these rights on the ground.

159. Gerhard, *Historical Geography*, 277.

160. Marshall Howard Saville, *Tizoc: Great Lord of the Aztecs, 1481–1486*, Contributions from the Museum of the American Indian, Heye Foundation, vol. 7, no. 4 (New York: Museum of the American Indian, Heye Foundation, 1929), 44–45.

161. Roys, *Indian Background*, 178 (note 8); Riese, *Indianische Landrechte*, 175–77 (note 75).

162. *Mercedes* maps are discussed in Mundy, *Mapping of New Spain*, 180–211 (note 81).

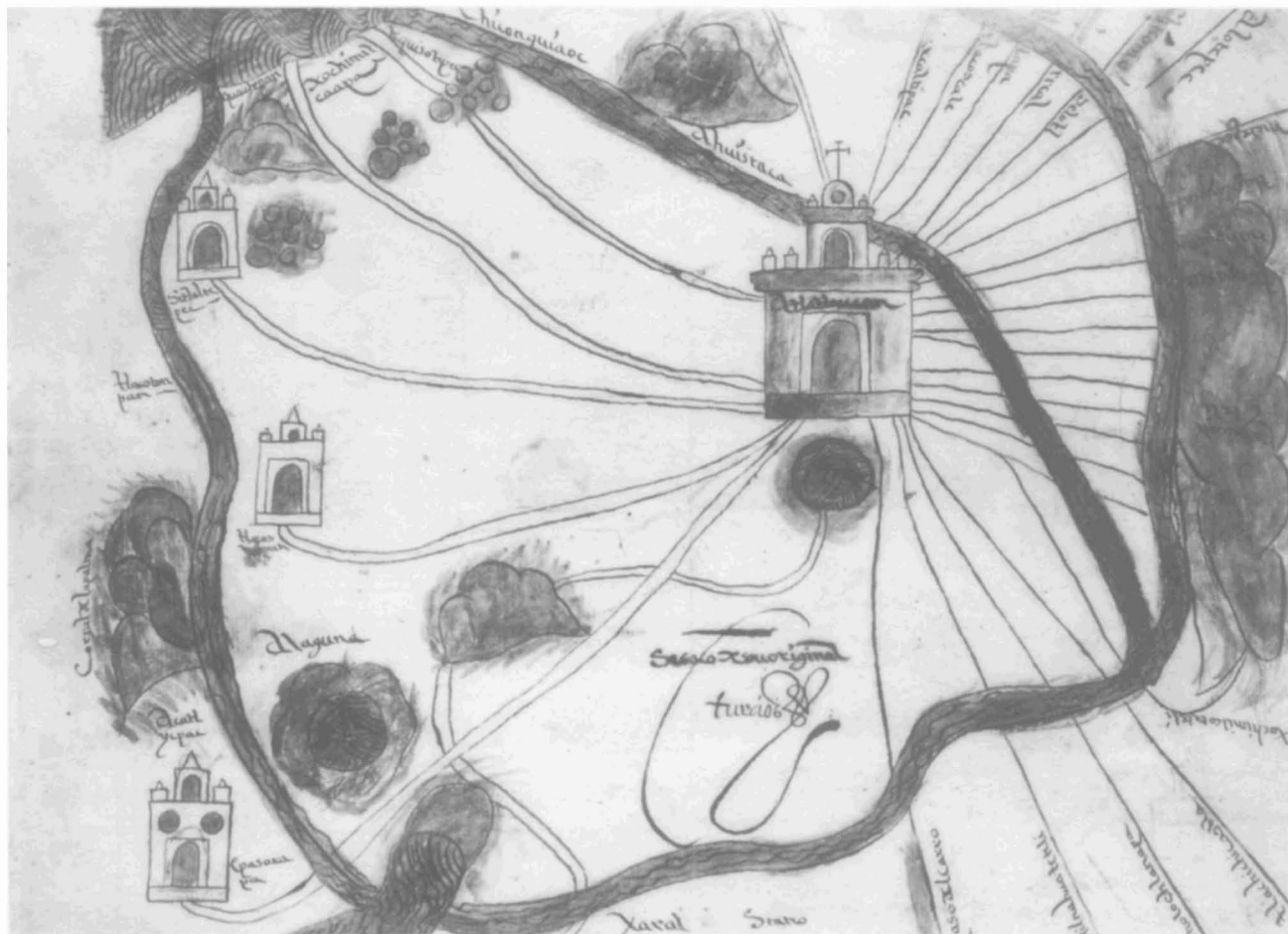


FIG. 5.50. BOUNDARY MAP OF ATLATLAHUACAN, MORELOS. This manuscript map was used to establish and protect the boundaries of the community of Atlatlahuacan in 1539, during the viceroyalty of Antonio de Mendoza. At its center sits the church of Atlatlahuacan, symbolizing the town. Radiating out from the right of the church are single lines, each leading to a boundary of the community. The double lines emanating from the left side of the church symbolize roads, three of them leading to dependencies of Atlatlahuacan, shown by smaller churches. The upper left corner is dominated by hills, and a system of rivers, shown by thick dark bands,

loops through the region. The gloss in the center of the map proclaims it to be a copy, and perhaps the original was an indigenous-style boundary map that would have contained the same information but conveyed it through hieroglyphic place-names and symbols rather than alphabetic script. This map and related documents were used as late as 1853 to establish Atlatlahuacan's claim to surrounding lands.

Size of the original: 25 × 34 cm. Photograph courtesy of the Archivo General de la Nación, Mexico City (Ramo Tierras, vol. 11, pt. 1a, exp. 2; Mapoteca no. 546).

VISUAL CHANGES: ALPHABETIC WRITING AND CARTOGRAPHIC CONVENTIONS

In the material record of Mesoamerican cartography, the Spanish conquest presents us with one inescapable fact: the look of maps changed. A preconquest fifteenth-century map, like the one in the *Codex Nuttall* (fig. 5.26), bears little resemblance to an early seventeenth-century map from the same region. By the end of the sixteenth century, few maps carried on native convention. One reason is that Mesoamericans gradually converted their hieroglyphs into alphabetic writing. The latter was in some respects a more efficient way of communicating, but most important, it was understood by the Spanish ruling

classes. For native maps to have any effect in Spanish-run spheres, such as the courts, they had to be legible to Spaniards. Native elites were quick to learn to write alphabetically. They were initially taught by mendicant friars who in the decades after the conquest taught the children of elites to write and read Spanish, their mother tongues, and sometimes Latin; thus some elites, only a generation or so after the conquest, were both alphabetically literate and bi- or trilingual.

Alphabetic literacy brought with it whole new systems for recording information. Instead of writing words and ideas hieroglyphically and pictorially, Mesoamerican elites could write them alphabetically. Thus the hiero-

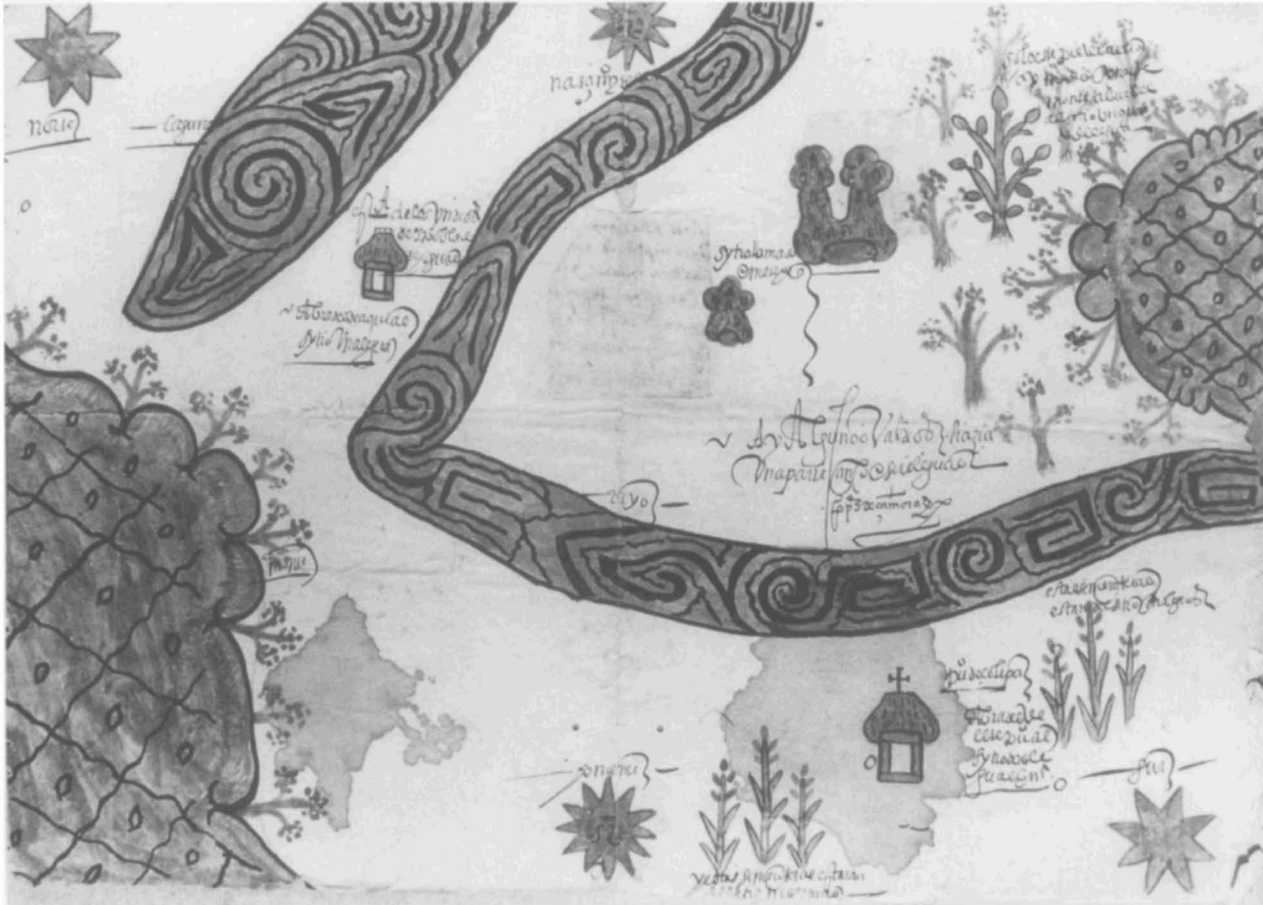


FIG. 5.51. LAND GRANT MAP OF ZOLIPA, VERACRUZ. Made in 1573, this manuscript map shows the dramatic changes and surprising continuities of native mapping in the early colonial period. The native artist continues to weave pre-Hispanic imagery. The domed shape at right is a hill symbol, marked with curlicue protrusions indicating its rockiness. Its surface is scored with a pattern of diamonds and dots representing the skin of the earth monster. The river likewise is filled in with swirls and eddies typical in pre-Hispanic painting. Yet much about the map distinguishes it from pre-Hispanic counterparts. For instance, the hill symbol bristles with naturalistic depictions of plants derived from European images. Most important, the context of this map was unknown before the Spanish conquest. It was made as part of a land grant, and thus

glyphic place-names that grace the 1580 map from Amoltepec were fast becoming anachronistic by the close of the sixteenth century. Rates of change varied from region to region, often depending on the degree of Spanish presence in an area. Native maps came to depend on alphabetic writing, not hieroglyphs, to convey names. For example, the mid-sixteenth-century map from Atlatlahuacan, Morelos, seems to have been derived from a native-style boundary map like the ones described above, where the place-names of boundaries were arranged at the edge of the map. In this postconquest version, made in an area with a strong mendicant and Spanish presence, the boundaries, set on the raylike lines that radiate from

its most important information was aimed at a Spanish audience and written in alphabetic glosses. The map is meant to show that the land requested lay at a required distance from indigenous villages and lands; these crucial bits of information are marked with alphabetically written words. For example, the three plants at the bottom represent a field and are labeled “these fields lie three leagues from the [requested] site.” This legend, like the others, was written by a scribe writing in Spanish, not the indigenous mapmaker, who in essence had to cede control of the meaning of this map.

Size of the original: 31 × 40 cm. Photograph courtesy of the Archivo General de la Nación, Mexico City (Ramo Tierras, vol. 2672, exp. 18, f. 13; Mapoteca no. 1535).

the central church, are all named with alphabetic script, not hieroglyphs.

This new kind of literacy made native maps more intelligible to Spaniards at the expense of the native community. Alphabetic literacy was in the hands of a very few Mesoamerican elites; and as maps depended more and more on script to convey meaning, they moved further from the grasp and intelligibility of most of the communities that once made them.

As important in changing the look of maps were new modes of representation that friars and Spaniards introduced. Simply put, Europeans in the New World favored visual mimesis over the more conceptual renderings that

Mesoamericans once used—the contrast we saw in comparing the Nuremberg map of Tenochtitlan with that in the Codex Mendoza. Under the pressure of Spanish expectation, Mesoamerican cartographic symbols were recast. No longer was the landscape represented through a scrim of hieroglyphic toponyms and abstract signs. In a map made by an indigenous artist about 1555, we see the painter trying to reconcile indigenous and European modes of representation (fig. 5.5). The map is found in the Codex Kingsborough, a book painted in the town of Tepetlaoztoc in the Valley of Mexico detailing the legal complaints of its residents against their Spanish overlord.¹⁶³ It is a beautifully rendered map, showing the area around Tepetlaoztoc, near the place where the Codex Xolotl was painted. Many of the *tepetl* (hill) pictographs in the Kingsborough map have no toponymic function; instead they blend together to create the impression of a range of hills as it appears to the eye. In the map of 1573 from Zolipa, Veracruz, a toponymic hill pictograph sprouts grass and plants (fig. 5.51). However, since indigenous ideology was embedded in symbols like the hill pictograph, some of the indigenous vocabulary on maps may have been resistant to change in the face of new European imagery, which lacked such deep meaning.

Nowhere is the trajectory of indigenous mapping better seen than in the Mapa de Santa Cruz, which shows the confluence of new visual habits, alphabetic writing, and religious instruction, as well as the sundering of traditional history from cartography (plate 11).¹⁶⁴ The map was made by an indigenous artist about the mid-sixteenth century, and it pictures the Valley of Mexico, with Tenochtitlan–Mexico City at its center, covering roughly the same region as the Cortés map of 1524 (fig. 5.7). Its artist certainly had great exposure to European pictorial conventions, including the Cortés map, and was probably trained by Franciscan friars in the monastery at Tlatelolco, the town directly adjacent to Tenochtitlan. Tlatelolco's monastery was a center for instruction in painting, and on this map it appears larger than any other building complex. No longer is Tenochtitlan a formalized set of symbols, as in the Codex Mendoza. Instead, the city and surrounding valley are presented as if glimpsed by a viewer from an oblique viewpoint, high to the west of the valley; this same type of perspective was common to European city plans. Hieroglyphic place-names do appear—over thirty-two can be identified—but they are not the frame giving shape to the map. They are minute, practically lost within a landscape of trees and undulant hills. The artist may have realized that hieroglyphs would appeal to only part of his audience, for most of these toponyms are also transliterated into the Latin alphabet. For many years the map was attributed to Alonso de Santa Cruz (d. 1567), a prominent Spanish cartographer

under Charles V (r. 1517–56) and Philip II (r. 1556–98). However, the artist is now thought to be an indigenous native of the valley, since the hieroglyphic place-names could have been known only by a native.

History is absent on the Mapa de Santa Cruz. Or perhaps the traditional Mesoamerican history of genealogy and conquest has been replaced by another kind of history. This landscape is filled with horseback riders, cargo carriers, and fishermen that, at first glance, could be inspired by the genre figures that graced the famous European city maps published by Georg Braun and Frans Hogenberg. However, the figures on the Mapa de Santa Cruz are historically specific, revealing the conditions of native life in New Spain of the 1550s. Although many residents peacefully fish and net birds, others strain under heavy loads on their backs, cowering under the upraised whips and staffs of overseeing Spaniards.

RATES OF CHANGE: THE RELACIONES GEOGRÁFICAS

The changes outlined above happened at different paces throughout the country. Native maps changed first in and around the Valley of Mexico, where the largest Spanish population was drawn to settle in their new capital built on the ruins of Tenochtitlan. Here native maps reflected changes in the surrounding world, as Aztecs and other indigenous residents were converted to Catholicism and gathered together in planned communities. Native artists were quick to adopt pictures of churches as symbols for settlements, and they often emphasized the gridiron layout that colonists branded on their towns.

Outside the valley, changes in native mapping were slower for two reasons. First, the indigenous population had less profound contact with European settlers and less exposure to their mapping traditions. Second, indigenous maps probably were used in indigenous contexts—meant to be seen by community members rather than presented to Spanish judges.

The changes and continuities of the native mapping traditions after the Conquest are metered in the maps of the Relaciones geográficas, a group of maps that can be considered a horizon marker. These maps were painted in response to a printed questionnaire sent out at the end of the 1570s by the government of Philip II. Between 1579 and 1584, the questionnaire elicited responses from all parts of Mesoamerica, as local officials—both Spanish and

163. Francisco del Paso y Troncoso, ed., *Códice Kingsborough: Memorial de los Indios de Tepetlaoztoc . . .*, facsimile ed. (Madrid: Fototopia de Hauser y Menet, 1912).

164. Albert B. Elsasser, ed., *The Alonso de Santa Cruz Map of Mexico City and Environs, Dating from 1550* (Berkeley, Calif.: Lowie Museum of Anthropology, 1974), and Sigvald Linné, *El Valle y la Ciudad de México en 1550* (Stockholm: Statens Etnografiska Museum, 1948).

indigenous—in cities, towns, and villages wrote describing and picturing the world around them. From the *gobierno* of New Spain, the colonial jurisdiction covering much of Mesoamerica, sixty-nine maps are known today, most painted by indigenous artists. This corpus of maps is unique and is most valuable for showing the differing rates of change in native mapping.¹⁶⁵

One of the maps is the Mapa de Teozacoalco, discussed above (fig. 5.23), whose circular form and genealogical emphasis tie it to an enduring Mixtec mapping and manuscript tradition. Even though Teozacoalco was a small and almost wholly indigenous town, remote from Spanish spheres of influence, its Mixtec artist had come in contact with European imagery and adapted it to his map. Towns are marked by Christian churches set in a colorful landscape probably derived from European prints, since nothing similar exists within the native tradition. Another map from the corpus shows similar changes (fig. 5.52). It was made in Tetlitzaca, to the northeast of the Valley of Mexico in the modern state of Hidalgo.¹⁶⁶ The artist, who had probably been trained to write and paint in a nearby Franciscan monastery, appealed to both his local native audience and to the faraway Spanish one with a mix of European and native symbols and conventions.

The maps of the Relaciones geográficas may be the last great florescence of indigenous cartography. As the sixteenth century neared its end, the initial generosity Spanish colonists had shown toward indigenous forms of expression—among them territorial maps—wore thin. The close of the century was a time of pessimism for colonists: the native population (and the labor force) had reached its nadir, the once expansive colonial economy was beginning to plateau, and the millennial project of conversion had foundered. Whereas Viceroy Mendoza, in the late 1530s and 1540s, had embraced native maps as a means of indigenous redress, sixty years later one of his successors complained bitterly about the Pandora's box the Spaniards had opened when they allowed Amerindians legal voice. The marqués de Montesclaros (r. 1603–7) wrote in 1607 that even if he were to grant Spaniards lands as far away as Florida, natives in Mexico City would contest these grants as if the land abutted the walls of their houses.¹⁶⁷ It comes as no surprise that by Montesclaros's time, documents written in Spanish prevailed over native pictorials. Native leaders quickly felt the changing winds and, for example, tried to cement their hold on community lands by having them recorded in a written viceregal *merced* (land grant).¹⁶⁸ Over the course of the centuries, native communities were afflicted with periodic attempts by the Spanish colonial regimes to “regularize” titles to the land, or to standardize the documents needed for proof of possession. As a result, many native works, especially maps, were converted into al-

phabetic documents, written in Spanish and stamped with official seals.¹⁶⁹

CONTINUATIONS TODAY

Despite the arid legacy of conquest, the main branch of Mesoamerican cartography still flowers today: cartographic histories have had an enduring presence in Mesoamerica, especially outside the Valley of Mexico.¹⁷⁰ Some communities have held on to cartographic histories painted in the sixteenth century, and they are still read and reinterpreted. Over the centuries, the legal currency of these *mapas* and *lienzos* (as they are frequently called) as proof of territorial possession has been devalued by Spanish-language documents; nonetheless, many communities have carefully kept them. They cannot be dislodged. If the endurance of *lienzos* and *mapas* cannot be explained solely by their role as legal documents, what does explain their continued presence? They appear to have an important ideological role beyond their value as land documents. Since many include a historical narrative that is kept alive through an oral tradition, these *lienzos* and *mapas* state collective identity by recording the ties between members of the community: a common history and a common territory. Their importance is continually reaffirmed by community ceremony, when the maps—usually in the care of community leaders—are put on display.

While some towns have *lienzos* or *mapas* dating back

165. The maps from New Spain (excluding the Yucatan) and Guatemala are published in *Relaciones geográficas del siglo XVI*, 10 vols., ed. René Acuña (Mexico City: Universidad Nacional Autónoma de México, Instituto de Investigaciones Antropológicas, 1982–88), and have been cataloged by Robertson, “Pinturas (Maps) of the Relaciones Geográficas” (note 81). They are studied in depth in Mundy, *Mapping of New Spain* (note 81).

166. The map is cataloged by Robertson, “Pinturas (Maps) of the Relaciones Geográficas,” 273 (no. 67).

167. *Instrucciones que los vireyes de Nueva España dejaron a sus sucesores*, 2 vols. (Mexico City: Imprenta de Ignacio Escalante, 1873), 1:94.

168. Gibson, *Aztecs under Spanish Rule*, 265 (note 61).

169. Maps painted by natives under Spanish rule have allowed new insight into the colonial moment. See Serge Gruzinski, “Colonial Indian Maps in Sixteenth-Century Mexico,” *Res* 13 (1987): 46–61, and Walter D. Mignolo, “Colonial Situations, Geographical Discourses and Territorial Representations: Toward a Diatopical Understanding of Colonial Semiosis,” *Dispositio* 14 (1989): 93–140.

170. For a description of the colonial *lienzos* and reproductions, see Marion Oettinger, *Lienzos coloniales: Una exposición de pinturas de terrenos comunales de México (siglos XVII–XIX)* (Mexico City: Universidad Nacional Autónoma de México, Instituto de Investigaciones Antropológicas, 1983). For an account of *lienzos* from Mazatec speakers in Oaxaca, see Howard Francis Cline, “Colonial Mazatec Lienzos and Communities,” in *Ancient Oaxaca: Discoveries in Mexican Archeology and History*, ed. John Paddock (Stanford: Stanford University Press, 1966), 270–97.

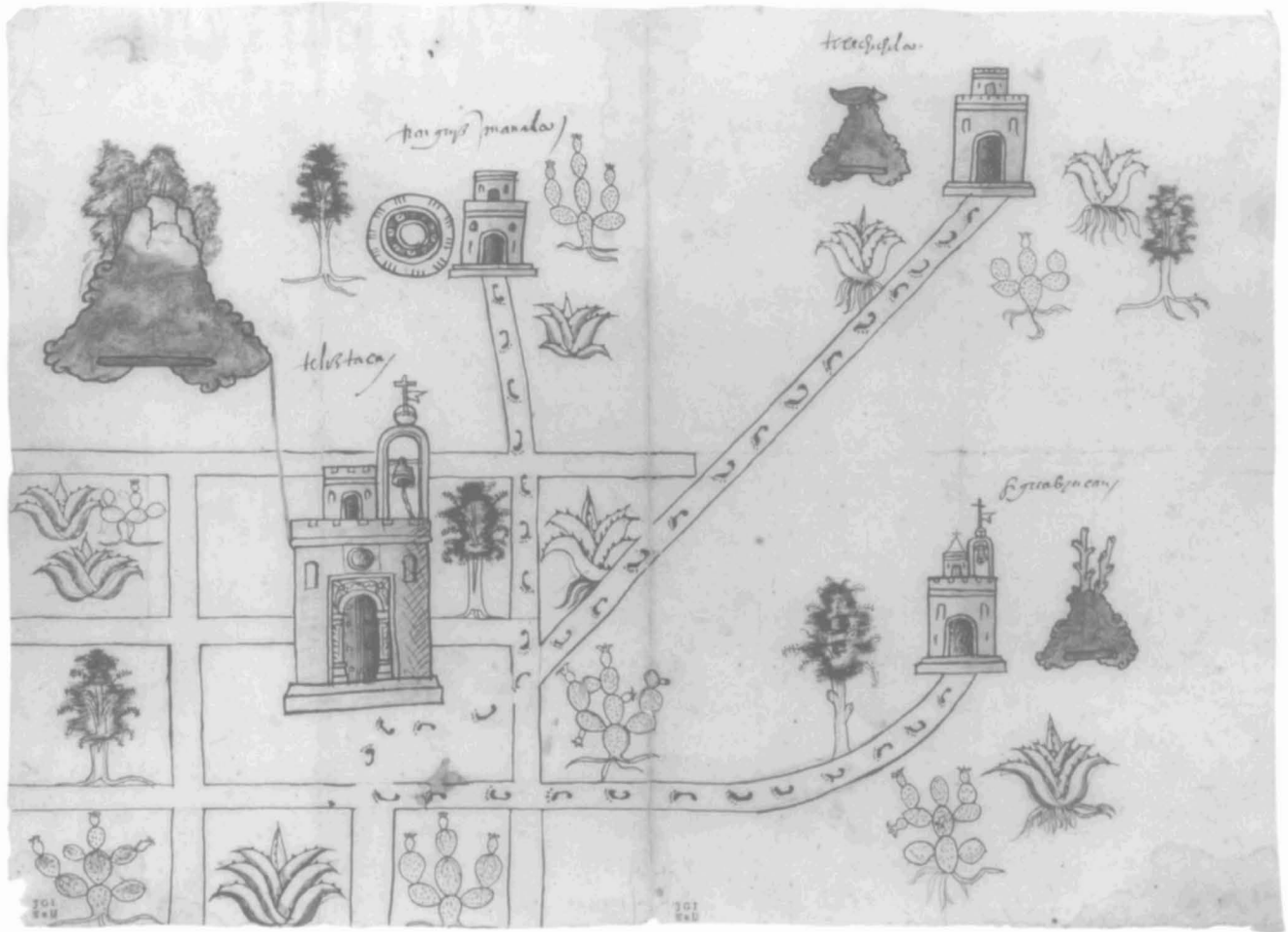


FIG. 5.52. RELACION GEOGRAFICA MAP OF TETLIZTACA, 1580. This elegant manuscript map on European paper was painted in response to a request from the Spanish king, and it combines both indigenous and European elements. Four stylized churches mark the main settlements, the largest being that of Tetlitzaca at the lower left. Each village is named twice, with alphabetic script and a hieroglyphic place-name. Tetlitzaca means "Place of the White Rocks," and its place-name appears above and to the left of the town, a hill glyph with a white craggy top. Above and to the right, Tianguismanalco, "Place of the Market," is shown with the disk-shaped symbol for market. Tepechichilco, "Red Hill," is shown with a red chile on a hill. Cihuayuca, "Place of Wom-

to the sixteenth century, other towns have copied and updated their *lienzos* over the course of the centuries, and in doing this they have shifted their content to reflect current ideas about territory and history. The Lienzo of Petlacala—from a remote Nahuatl-speaking town in the modern state of Guerrero—is known today from the most recent of a series of copies, this one done in the 1950s (plate 12).¹⁷¹ It combines a narrative of a migration of the town founders around its borders, written alphabetically in Nahuatl, parallel to the one the Culhua-Mexicas recorded in hieroglyphs and pictures in the Mapa de Sigüenza and the Codex Boturini (figs. 5.29 and 5.31).

hood," is shown as a hill symbol with shoots of palm, *zo-yatl*, perhaps meant as a homophone for *cihuatl*. The main roadways are marked with neat footprints, following native convention, and they all head from the subordinate towns to Tetlitzaca. Most of the trees and plants are shown with their roots as well as trunks, stems, and leaves, also attributable to native convention. The grid that orders Tetlitzaca is certainly an imported element, imposed on native towns as they were moved and reordered by mendicant friars in the great sixteenth-century programs of conversion.

Size of the original: 31 × 43.5 cm. Photograph courtesy of the Nettie Lee Benson Latin American Collection, University of Texas, Austin (JGI xxv-12).

Also in this border is a map of the community boundaries much like the frame of boundary pictographs in the His-

171. The Lienzo of Petlacala is one of the few *lienzos* whose modern use is documented. For a longer analysis and description, see Marion Oettinger and Fernando Horcasitas, *The Lienzo of Petlacala: A Pictorial Document from Guerrero, Mexico*, Transactions of the American Philosophical Society, n.s. 72, pt. 7 (Philadelphia: American Philosophical Society, 1982). A group of *lienzos* from the neighboring region of Tlapa are the subject of a study by Joaquín Galarza, *Lienzos de Chiepetlan: Manuscrits pictographiques et manuscrits en caractères latins de San Miquel Chiepetlan, Guerrero, Mexique* (Mexico City: Mission Archéologique et Ethnologique Française au Mexique, 1972).

toria tolteca-chichimeca (fig. 5.15). The Petlacala boundaries, however, are named not with hieroglyphs but in alphabetic script and reflect the extent of Petlacala's territory in 1807. In the center of the Petlacala *lienzo*, the town's founders receive their rights to territory directly from the hand of the Spanish king Charles V. Clearly, this event never transpired. It is illustrated with a visual anachronism, because the king of Spain at the time of conquest is dressed in eighteenth-century clothing, probably reflecting the fashions at the time of one of the *lienzo*'s new editions. Although the king may be anachronistic, however, the *lienzo* is not, for it is still read by community leaders, reinterpreted, and celebrated within the community—Petlacala's link with the pre-Hispanic past is yet unbroken.

CONCLUSION

From the definition used in these volumes, it is clear that Mesoamericans made maps as we understand them. It is

also clear that both explicitly and implicitly, Mesoamericans understood their role as mapmakers. Their maps suggest that our definition is somewhat inadequate; it does not express a key criterion of the Mesoamerican map, which is the union of space and time, whether the unceasing march of days or the cycles of human history.

The integrity of Mesoamerican mapping was ruptured by the Spanish conquest, and Spanish colonization led the development of cartography in the New World onto a new path, channeling it closer to European norms. But Mesoamerican cartography was not wholly uprooted. The dual European and Amerindian legacy of Mexico and Central America means that the descendants of Mesoamericans make survey-based, topographical maps of every square foot of their countries at the same time as they make cartographic histories drawn from pre-conquest antecedents. The combination results in a present-day cartographic tradition of remarkable richness and diversity.

APPENDIX 5.1 CENSUS OF IMPORTANT MESOAMERICAN MAPS
(GROUPED BY MAP TYPE)

Name and Where Held	Place Represented	Provenance and Date	Dimensions (cm) (h × w)
CARTOGRAPHIC HISTORIES			
1. Codex Nuttall, pp. 19, 22, 36; British Museum, Museum of Mankind, London (Add. MS. 39671)	Tilantongo-Mitlantongo region (p. 19), Tilantongo region (p. 22), Apoala Valley (p. 36)	Mixteca Alta; pre-1520	Screenfold of 47 leaves, each ca. 19 × 25.5
2. Codex Xolotl, p. 1; Bibliothèque Nationale, Paris (1-10)	Valley of Mexico and environs	Texcoco, Valley of Mexico; ca. 1542	ca. 42 × 48
3. Historia tolteca-chichimeca, Mapa Pintado, fols. 30v-31r, 32v-33r, 35v-36r; Bibliothèque Nationale, Paris (46-58)	Mapa Pintado: boundaries of the lands of the Totomihuacan and Cuauhtinchan: Totomihuaca and its territories (fols. 30v-31r); Cuauhtinchan and its territories (fols. 32v-33r); founding of Cuauhtinchan (fols. 35v-36r)	Cuauhtinchan, Puebla, ca. 1547-60	52 leaves, each 30 × 22
4. Lienzo of Zacatepec 1; Museo Nacional de Antropología, Mexico City (35-63)	Zacatepec and environs	Zacatepec, Oaxaca; ca. 1540-60	325 × 225
5. Lienzo of Zacatepec 2 (1893 copy); original unknown, copy in Municipal Archive of Zacatepec	Zacatepec and environs	Zacatepec, Oaxaca; 1893 tracing of a late 16th-century original	300 × 245
6. Map of Maní (copy of 1596); Latin American Library, Tulane University, New Orleans	Maní, Yucatan, and environs	Maní, Yucatan; 1596 copy of 1557 original	Size of original unknown
7. Mapa de Metlatoyuca; British Museum, Museum of Mankind, London (Add. MS. 30,088)	Metlatoyuca? and environs	Metlatoyuca, Puebla? Coixtlahuaca, Oaxaca? 16th century	180 × 105
8. Relación geográfica map of Teozacoalco; Nettie Lee Benson Latin American Collection, University of Texas at Austin	Teozacoalco, Oaxaca, and environs	Teozacoalco, Oaxaca; 1580	142 × 177
9. Relación geográfica map of Amoltepec; Nettie Lee Benson Latin American Collection, University of Texas at Austin	Amoltepec, Oaxaca, and environs	Amoltepec, Oaxaca; 1580	86 × 92
10. Mapa de Sigüenza; Museo Nacional de Antropología, Mexico City (35-14)	Valley of Mexico and unidentified regions	Valley of Mexico; late 16th- or early 17th-century copy	54.5 × 77.5
11. Codex Boturini; Museo Nacional de Antropología, Mexico City (35-38)	Valley of Mexico and unidentified environs	Valley of Mexico; early 16th century	screenfold of 21½ leaves, 19.8 × 549

Language	Medium	Purpose and Description	Published Accounts
Mixtec	Painted gesso on hide	Manuscript tells histories of Mixtec ruling elites into the 12th century; map pages relate to larger historical narrative	Nuttall, <i>Codex Nuttall</i>
Nahuatl	Painted <i>amatl</i> paper	History of the Acolhua conquerer Xolotl and his family	Dibble, <i>Códice Xolotl</i>
Nahuatl	Ink and paint on European paper	History of the Nahua groups that migrated to Cuauhtinchan; covers from 12th through mid-16th century. The Mapa Pintado is bound with the Historia tolteca-chichimeca but seems to predate the rest of the manuscript and be the source, in part, for the boundary maps found on fols. 30v–31r, 32v–33r, and 35v–36r.	Kirchhoff, Odena Güema, and Reyes García, <i>Historia tolteca-chichimeca</i>
Mixtec	Ink on cloth	Boundary map of the territory belonging to Zacatepec; includes genealogy of its ruling family	Smith, <i>Picture Writing</i> , 264–90
Mixtec	Ink on cloth	Boundary map of the territories of Zacatepec, a later and more Europeanized version of Lienzo of Zacatepec 1	Smith, <i>Picture Writing</i> , 298–306
Maya	Ink on European paper	Accompanied a land treaty negotiated between leaders of Maní and their neighbors	Roys, <i>Indian Background</i>
Nahuatl? Otomí? Totonac? Tepehua? Chocho?	Ink on cloth	Map of rivers, roads, and temples shows genealogical relationships between the seventy-nine people pictured	Guzmán, “Art of Map-Making”
Mixtec	Ink and pigment on 23 sheets of European paper	Large circular boundary map painted in response to a questionnaire from the Spanish government	Caso, “Mapa de Tezoacoalco”
Mixtec	Ink and pigment on 6 sheets of European paper	Circular boundary map painted in response to a questionnaire from the Spanish government	Mundy, <i>Mapping of New Spain</i> , pl. 6 and fig. 51 (p. 133); <i>Relaciones geográficas del siglo XVI</i> , vol. 3, <i>Antequera</i> , facing 150
Nahuatl	Ink and pigment on <i>amatl</i> paper	Chronicles the peregrination of the Culhua-Mexicas into the Valley of Mexico and the founding of Tenochtitlan in 1325	Glass, <i>Catálogo de la colección de códices</i> , 54–55; Ruiz Naufal et al., <i>El territorio mexicano</i>
Nahuatl	Ink on <i>amatl</i> paper	Itinerary map of the Culhua-Mexicas’ peregrination from the mythical Aztlan into the Valley of Mexico. Does not correlate closely with Mapa de Sigüenza	<i>Antigüedades de México</i> , 2:7–29

APPENDIX 5.1 (*continued*)

Name and Where Held	Place Represented	Provenance and Date	Dimensions (cm) (h × w)
CARTOGRAPHIC HISTORIES (<i>cont.</i>)			
12. Codex Kingsborough, fol. 209r; British Museum, Museum of Mankind (Add. MS. 13964)	Tepetlaoztoc and environs	Tepetlaoztoc, Valley of Mexico; ca. 1555	29.8 × 21.5
CUAUHTINCHAN GROUP (see Yoneda, <i>Mapas de Cuauhtinchan</i> , and Reyes García, <i>Cuauhtinchan del siglo XII al XVI</i>)			
13. Mapa de Cuauhtinchan 1; Bibliothèque Nationale, Paris (375)	Cuauhtinchan and environs	Cuauhtinchan, Puebla; 16th century	113 × 167
14. Mapa de Cuauhtinchan 2; private collection	Left half: migration route to and from mythical Chicomoztoc to Cholula, Puebla; right half: Cuauhtinchan-Tecali-Tepeaca region	Cuauhtinchan, Puebla; 16th century	109 × 204
15. Mapa de Cuauhtinchan 3; Museo Nacional de Antropología, Mexico (35-70)	Cholula-Cuauhtinchan, Puebla region	Cuauhtinchan, Puebla; 16th century	92 × 112
16. Mapa de Cuauhtinchan 4; Museo Nacional de Antropología, Mexico (35-31)	Region of Puebla and Tlaxcala comprising Tlaxcala, Puebla, Tepeaca, and Tecamachalco	Cuauhtinchan, Puebla; ca. 1563	113 × 158
COIXTLAHUACA GROUP (see Caso, <i>Reyes y reinos de la Mixteca</i> , 1:118–36)			
17. Lienzo of Ihuitlan; Brooklyn Museum, New York	Ihuitlan (Plumas), Oaxaca, and environs	Ihuitlan (Plumas), Oaxaca; 16th century	244 × 152
18. Lienzo of Tlapiltepec (aka Lienzo Antonio de León); Royal Ontario Museum, Toronto	Tlapiltepec, Coixtlahuaca Valley, Oaxaca; Tehuacán, Puebla	Tlapiltepec, Oaxaca; 16th century	432 × 165
19. Lienzo of Coixtlahuaca 1 (aka Codex Ixtlan); Museo Nacional de Antropología, Mexico (35-113)	Coixtlahuaca and environs	Coixtlahuaca, Oaxaca; 16th century	425 × 300
20. Lienzo of Coixtlahuaca 2 (aka Seler 2); Museum für Völkerkunde, Berlin	Coixtlahuaca region	Coixtlahuaca region; 16th century	375 × 425
21. Lienzo of Tequixtepec 1; Tequixtepec, Oaxaca	Tequixtepec, Oaxaca, and Coixtlahuaca region	Tequixtepec, Oaxaca; 16th century	305 × 248
22. Lienzo of Tequixtepec 2; Tequixtepec, Oaxaca	Tequixtepec, Oaxaca, and Coixtlahuaca region	Tequixtepec, Oaxaca; 16th century	285 × 70
23. Codex Meixueiro (aka Lienzo A, known only through tracing by Nicolás León); copy at Tulane University, Latin American Library	Coixtlahuaca region	Coixtlahuaca region; original probably 16th century	Original unknown; copy: 380 × 360
24. Lienzo of Tulancingo 1; Municipal Archive, Tulancingo	Tulancingo and environs	Tulancingo; 16th century	ca. 115 × 145

Language	Medium	Purpose and Description	Published Accounts
Nahuatl	Ink and pigment on European paper	Made as part of a complaint by Tepetlaoztoc residents against their Spanish overlord; the map oscillates between Mesoamerican and European conventions	Paso y Troncoso, <i>Códice Kingsborough</i>
Nahuatl	Ink and pigment on native paper	Shows conquests of Chichimec groups coming into Cuauhtinchan region	Yoneda, <i>Mapas de Cuauhtinchan</i>
Nahuatl	Ink and pigment on native paper	Shows the migration of some Nahuatl speakers into the Puebla region; left half shows migrations to and from mythical point of origin, Chicomoztoc	Yoneda, <i>Mapas de Cuauhtinchan</i>
Nahuatl	Ink and pigment on <i>amatl</i> paper	Shows migrations between Huexotzinco and Tepeaca	Yoneda, <i>Mapas de Cuauhtinchan</i>
Nahuatl	Ink and pigment on <i>amatl</i> paper	Shows gridiron town plans; most Europeanized of the Cuauhtinchan group	Yoneda, <i>Mapas de Cuauhtinchan</i>
Nahuatl on map; Ihuatlan was Chocho speaking	Ink and pigment on cloth	Shows genealogies of ruling lines from Ihuatlan and other sites pictured on map, including ones also covered in other <i>lienzos</i> of the Coixtlahuaca group	Caso, <i>Lienzos mixtecos</i> , 237–74
Nahuatl glosses on <i>lienzo</i> ; Chocho-Popoloca region	Ink on cloth	<i>Lienzo</i> shows migrations from the mythical Chicomoztoc into Coixtlahuaca Valley; genealogies of ruling lines are shown	Caso, <i>Lienzos mixtecos</i> , 237–74
Chocho-Popoloca	Ink on cloth		<i>Codex Ixtlan</i> , and Glass and Robertson, “Census,” fig. 30
Chocho-Popoloca	Ink on cloth	Probably the earliest <i>lienzo</i> in the Coixtlahuaca group	Unpublished
Chocho-Popoloca	Ink and pigment on cloth	Shows boundary markers along frame and contains genealogies of ruling lineages; bottom section of <i>lienzo</i> shows founding couple at cave, possibly Chicomoztoc, and their descendants	Parmenter, <i>Four Lienzos</i> , 45–63
Chocho-Popoloca	Ink and pigment on cloth	Content mostly genealogical	Parmenter, <i>Four Lienzos</i> , 45–63
Chocho-Popoloca	Unknown	Boundary map, with glyph of Coixtlahuaca in the center, scenes of battles and confrontations mix with ruler genealogies	<i>Codex Meixuero</i> , and Glass and Robertson, “Census,” fig. 44
Chocho	Ink and pigment on cloth	Shows the territories of Tulancingo, limned with boundary markers, as well as a list, perhaps genealogical, of ten ruling couples; Rincón-Mautner also publishes another later <i>lienzo</i> of 1753, largely European style, which he calls Lienzo of Tulancingo 2	Rincón-Mautner, “History of San Miguel Tulancingo”

APPENDIX 5.1 (*continued*)

Name and Where Held	Place Represented	Provenance and Date	Dimensions (cm) (h × w)
COIXTLAHUACA GROUP (<i>cont.</i>)			
25. Lienzo de Santa María Nativitas; Santa María Nativitas	Santa María Nativitas, Oaxaca, and environs	Santa María Nativitas; 16th century	173 × 175
CADASTRAL MAPS			
26. Plano en papel de maguey; Museo Nacional de Antropología, Mexico City (35-3)	Part of Valley of Mexico settlements, possibly Azcapotzalco region	Valley of Mexico, possibly Azcapotzalco region; 16th century	238 × 168
27. Humboldt Fragment 2; Staatsbibliothek zu Berlin-Preussischer Kulturbesitz (MS. Amer. 1)	Unknown fields in the Valley of Mexico	Valley of Mexico; after 1565	68 × 40
CITY MAPS			
28. Codex Mendoza, fol. 2r; Bodleian Library, Oxford (MS. Arch, Seld. A. 1, fol. 2r)	Tenochtitlan	Tenochtitlan; ca. 1541	32.7 × 22.9
29. Primeros memoriales, fol. 269r; Palacio Real, Madrid (Códice Matriense, MS. 3280)	Central temple precinct of Tenochtitlan	Tepeapulco, Hidalgo; ca. 1558-61	21.5 × 45
30. Historia tolteca-chichimeca, fols. 9v-10r, 26v-27r; Bibliothèque Nationale, Paris (46-58)	Fols. 9v-10r: Cholula and composite parts; fols. 26v-27r: temples within the ceremonial precinct of Cholula	Cuauhtinchan, Puebla; ca. 1547-60	52 leaves, each 30 × 22
MAPS FOR WAR			
31. Florentine Codex, bk. 8, chap. 17; Biblioteca Medicea Laurenziana, Florence (Palat. Col. 218-20)	Unknown	Tlaltelolco and Tenochtitlan; ca. 1570	ca. 9 × 12
PROPERTY MAPS			
32. Don Miguel Damian's properties; Newberry Library, Chicago (Ayer Collection, 1270)	Fields and houses in Xochimilco region	Xochimilco, Valley of Mexico; 1576	38.5 × 39.3
33. Oztoticpac lands map; Library of Congress, Washington, D.C.	Fields and property in Texcoco region	Texcoco, Mexico; ca. 1540	75 × 84
COSMOGRAPHICAL MANUSCRIPT MAPS			
34. Codex Fejérváry-Mayer, p. 2; Merseyside County Museum, Liverpool (12014 Mayer)		Unknown; ca. 1400-1520	Screenfold of 23 leaves, each page between 16.2 × 17.2 and 17.5 × 17.5
35. Aubin MS. no. 20; Bibliothèque Nationale, Paris (20)		Mixtec region; pre-1520	51 × 91
36. Codex Borgia, pp. 29-46; Biblioteca Apostolica Vaticana, Rome		Unknown; pre-1520	Screenfold of 39 leaves, each 27 × 26.5

Language	Medium	Purpose and Description	Published Accounts
Chocho-Popoluca	Ink on cloth	Boundary map of Santa María Nativitas showing genealogies of ruling families	Dahlgren de Jordán, <i>La Mixteca</i> , 366–70, and Glass, “Survey,” fig. 48
Nahuatl	Ink and pigment on <i>amatl</i> paper	Allowed ward leaders to keep track of occupants of land plots; later amended with list of Tenochtitlan’s leaders to be used in a lawsuit	Díaz del Castillo, <i>Conquest of New Spain</i> , 3:3–25 and maps
Nahuatl	Ink on <i>amatl</i> paper	Shows long rectangular fields with the glyphic names of their owners, among whom is Motecuhzoma Xocoyotzin, the Aztec ruler at contact	Seler, “Picture Writings of Alexander von Humboldt”
Nahuatl	Ink and pigment on European paper	Shows the Culhua-Mexica capital at its founding in 1325 and events of subsequent years	Berdan and Anawalt, <i>Codex Mendoza</i>
Nahuatl	Ink and pigment on European paper	The only known map of the central ceremonial precinct of the Culhua-Mexicas, site razed in the wars of Spanish conquest	Sahagún, <i>Primeros memoriales</i>
Nahuatl	Ink and paint on European paper	History of the Nahua groups that migrated to Cuauhtinchan; covers 12th to mid-16th century	Kirchhoff, Odena Güema, and Reyes García, <i>Historia tolteca-chichimeca</i>
Nahuatl, Spanish, and some Latin	Ink and pigment on European paper	Rare colonial depiction of how maps were used in pre-Hispanic times; shows a map being used to plan an attack by Aztec warriors	Sahagún, <i>Códice Florentino</i>
Nahuatl	On native paper	Accompanied a lawsuit over lands in Xochimilco; shows individual plots belonging to Don Miguel without reference to their overall spatial arrangements	Glass and Robertson, “Census,” 79
Nahuatl	Ink and pigment on native paper	Maps some properties and orchards whose ownership was disputed after death of Don Carlos Chichimecotl, a Texcoco noble, executed by Inquisition in 1539	Cline, “Oztoticpac Lands Map”
	Black ink and colored pigment on sized hide	Shows layout of four world trees surrounded by day count of 260 days in shape of Maltese cross	<i>Codex Fejérváry-Mayer</i>
Mixtec	Black ink and colored pigments on sized hide	Four place signs surrounding a circular cartouche relate both to the four cardinal directions and to four places within the Mixtec region	Lehmann, “Las cinco mujeres del oeste muertas”
Unknown	Black ink and colored pigments on sized hide	Shows the cosmic layers during part of the Venus cycle	<i>Codex Borgia</i>

APPENDIX 5.1 (*continued*)

Name and Where Held	Place Represented	Provenance and Date	Dimensions (cm) (h × w)
COSMOGRAPHICAL MANUSCRIPT MAPS (<i>cont.</i>)			
37. Codex Ríos, fols. 1v–2r; Biblioteca Apostolica Vaticana, Rome (Cod. Vat. 3738)		Rome, Italy? 1566–89	Bound book of 101 leaves, 46 × 29
38. Codex Madrid, fols. 76–77; Museo de América, Madrid		Maya region; mid- to late 15th century	Screenfold of 56 leaves, each ca. 22.6 × 12.2
COSMOGRAPHICAL MAPS IN NONMANUSCRIPT MEDIA			
39. Stela 5, Izapa; in situ Izapa, Chiapas, Mexico		Izapa, Mexico; 300 B.C.–A.D. 1	2.55 × 1.60 m
40. Maya tripod plate; private collection		Unknown; A.D. 600–800	Diameter: ca. 31
41. Sarcophagus lid of Pacal; in situ, Palenque, Mexico		Palenque; ca. A.D. 683	372 × 217
42. Tizoc Stone; Museo Nacional de Antropología, Mexico City		Tenochtitlan; ca. 1481–86	Height: 90; di- ameter: 270
43. Río Azul, tomb 12; in situ, Río Azul, Petén, Guatemala		Río Azul; ca. 450	n/a
CELESTIAL MAPS			
44. Primeros memoriales, fol. 282r–v; Palacio Real, Madrid (Códice Matritense, MS. 3280)		Tepeapulco, Hidalgo; ca. 1558–61	21.5 × 45
45. Calendar Stone; Museo Nacional de Antropología, Mexico City		Tenochtitlan; ca. 1502–19	Diameter: 3.5 m
46. Bonampak, room 2, north wall car- touches; in situ, Bonampak, Chiapas, Mexico		Bonampak, Mexico; ca. A.D. 792	n/a

Sources: *Antigüedades de México*, 4 vols. (Mexico City: Secretaría de Hacienda y Crédito Público, 1964–67); Anthony F. Aveni, *Skywatchers of Ancient Mexico* (Austin: University of Texas Press, 1980); Frances Berdan and Patricia Rieff Anawalt, eds., *The Codex Mendoza*, 4 vols. (Berkeley: University of California Press, 1992); Alfonso Caso, “El Mapa de Teozacoalco,” *Cuadernos Americanos* 47, no. 5 (1949): 145–81; idem, *Los lienzos mixtecos de Ihuítlan y Antonio de León* (Mexico City: Instituto Nacional de Antropología e Historia, 1961); idem, *Reyes y reinos de la Mixteca*, 2 vols. (Mexico City: Fondo de Cultura Económica, 1977–79); Howard Francis Cline, “The Oztoticpac Lands Map of Texcoco, 1540,” *Quarterly Journal of the Library of Congress*, 1966, 77–115, reprinted in *A La Carte: Selected Papers on Maps and Atlases*, comp. Walter W. Ristow (Washington, D.C.: Library of Congress, 1972), 5–33; *Codex Borgia: Biblioteca Apostolica Vaticana (Messicano Riserva 28)* (Graz: Akademische Druck- u. Verlagsanstalt, 1976); *Codex Fejérváry-Mayer: M 12014 City of Liverpool Museums* (Graz: Akademische Druck- u. Verlagsanstalt, 1971); *Codex Ixtlan*, facsimile ed., Maya Society Publications 3 (Baltimore: Johns Hopkins University Press, 1931); *Codex Meixuero*, facsimile ed., Maya Society Publications 4 (Baltimore: Johns Hopkins University Press, 1931); *Codex Tro-Cortesianus (Codex Madrid)* (Graz: Akademische Druck- u. Verlagsanstalt, 1967); Barbro Dahlgren de Jordán, *La Mixteca: Su cultura e historia prehispánicas* (Mexico City: Imprenta Universitaria, 1954); Bernal Díaz del Castillo, *The True History of the Conquest of New Spain*, 5 vols., ed. Genaro García, trans. Alfred Percival Maudslay, Hakluyt Society Publications, ser. 2, vols. 23, 24, 25, 30, and 40 (London: Hakluyt Society, 1908–16); Charles E. Dibble, ed., *Códice Xolotl*, 2d ed., 2 vols. (Mexico City: Instituto de Investigaciones Históricas, Universidad Nacional Autónoma de México, 1980); John B. Glass, *Catálogo de la colección de códices* (Mexico City: Museo Nacional de Antropología e Instituto Nacional de Antropología e Historia, 1964); idem, “A Survey of Native Middle American Pictorial Manuscripts,” in *Handbook of Middle American Indians*, vol. 14, ed. Howard Francis Cline (Austin: University of Texas Press, 1975), 3–80; John B. Glass with Donald Robertson, “A Census of Native Middle American Pictorial Manuscripts,” in *Handbook of Middle American Indians*, vol. 14, ed. Howard Francis Cline (Austin: University of Texas Press, 1975), 81–252; Ian Graham, “Looters Rob Graves and History,” *National Geographic* 169 (1986): 452–60; Eulalia Guzmán, “The Art of Map-Making among the Ancient Mexicans,” *Imago Mundi* 3 (1939): 1–6; Paul Kirchhoff, Lina Odena Güema, and Luis Reyes García, eds. and trans., *Historia tolteca-chichimeca* (Mexico City: Instituto Nacional de Antropología e Historia, 1976); Walter Lehmann, “Las cinco mujeres del oeste muertas en el parto y los cinco dioses del sur en la mitología mexicana,” *Traducciones*

Language	Medium	Purpose and Description	Published Accounts
Italian with some Nahuatl	Colored inks on European paper	Shows the 21 layers of the cosmos; Italian copy of probably indigenous prototype, meant to explain pre-Hispanic beliefs to European friars	Pasztory, <i>Aztec Art</i> , color pls. 8 and 9
Maya	Black ink and colored pigment on sized <i>amatl</i> paper	Shows hieroglyphs for four cardinal directions within 260-day count in shape of Maltese cross	<i>Codex Tro-Cortesianus (Codex Madrid)</i>
Unknown	Stone sculpture	Early representation of cosmic levels, showing primordial sea, world tree, and sky band	Norman, <i>Izapa Sculpture</i> , pt. 2, 165–236
Maya	Painted ceramic	Shows three cosmic layers, with celestial monster representing sky above and maw of Underworld below	Schele and Miller, <i>Blood of Kings</i> , 310–12, pls. 122 and 122c
Maya	Carved limestone	Shows Pacal, ruler of Palenque, in center of cosmic layers	Schele and Miller, <i>Blood of Kings</i> , pl. 111a
Nahuatl	Stone carved in bas-relief	Meant to commemorate conquests of Aztec emperor Tizoc, this stone shows him as <i>axis mundi</i> within cosmogram	Pasztory, <i>Aztec Art</i> , pls. 90–92. Drawing and photo in Townsend, <i>State and Cosmos</i> , fig. 20
Maya	Painted wall plaster	Glyphs within tomb walls mark cardinal directions	Stuart, “Paintings of Tomb 12,” and Graham, “Looters Rob Graves,” 456
Nahuatl	Ink and pigment on European paper	Shows arrangement of different groups of stars into constellations	Sahagún, <i>Primeros memoriales</i>
Nahuatl	Carved bas-relief stone	Edge of circular stone has some pecked designs that seem to show certain constellations	Aveni, <i>Skywatchers of Ancient Mexico</i> , 33
Maya	Painted wall stucco or plaster	Four cartouches seem to represent arrangement of Gemini, Mars, Saturn, and Orion’s Belt on night of 2 August 792	Miller, <i>Murals of Bonampak</i>

Mesoamericanistas 1 (1966): 147–75; Mary Ellen Miller, *The Murals of Bonampak* (Princeton: Princeton University Press, 1986); Barbara E. Mundy, *The Mapping of New Spain: Indigenous Cartography and the Maps of the Relaciones Geográficas* (Chicago: University of Chicago Press, 1996); V. Garth Norman, *Izapa Sculpture*, 2 pts., Papers of the New World Archaeological Foundation 30 (Provo: New World Archaeological Foundation, 1973–76); Zelia Nuttall, ed., *The Codex Nuttall: A Picture Manuscript from Ancient Mexico* (New York: Dover, 1975); Ross Parmenter, *Four Lienzos of the Coixtlahuaca Valley*, Studies in Pre-Columbian Art and Archaeology 26 (Washington, D.C.: Dumbarton Oaks, 1982); Francisco del Paso y Troncoso, ed. *Códice Kingsborough: Memorial de los Indios de Tepetlaoztoc . . .*, facsimile ed. (Madrid: Fototipia de Hauser y Menet, 1912); Esther Pasztory, *Aztec Art* (New York: Harry N. Abrams, 1983); *Relaciones geográficas del siglo XVI*, 10 vols., ed. René Acuña (Mexico City: Universidad Nacional Autónoma de México, Instituto de Investigaciones Antropológicas, 1982–88); Luis Reyes García, *Cauhtinchan del siglo XII al XVI: Formación y desarrollo histórico de un señorío prehispánico* (Wiesbaden: Franz Steiner, 1977); Carlos Rincón-Mautner, “A Reconstruction of the History of San Miguel Tulancingo, Coixtlahuaca, Mexico, from Indigenous Painted Sources,” *Texas Notes on Precolumbian Art, Writing, and Culture*, no. 64 (1994): 1–18; Ralph Loveland Roys, *The Indian Background of Colonial Yucatan* (Washington, D.C.: Carnegie Institution, 1943); Víctor M. Ruiz Naufal et al., *El territorio mexicano*, 2 vols. and plates (Mexico City: Instituto Mexicano del Seguro Social, 1982); Bernardino de Sahagún, *Códice Florentino: El manuscrito 218–220 de la colección Palatino de la Biblioteca Medicea Laurenziana*, facsimile ed., 3 vols. (Florence: Gunti Barbéra and Archivo General de la Nación, 1979); idem, *Primeros memoriales*, facsimile ed. (Norman: University of Oklahoma Press, 1993); Linda Schele and Mary Ellen Miller, *The Blood of Kings: Dynasty and Ritual in Maya Art* (New York: George Braziller, 1986); Eduard Seler, “The Mexican Picture Writings of Alexander von Humboldt in the Royal Library at Berlin,” *Smithsonian Institution, Bureau of American Ethnology Bulletin* 28 (1904): 123–229; Mary Elizabeth Smith, *Picture Writing from Ancient Southern Mexico: Mixtec Place Signs and Maps* (Norman: University of Oklahoma Press, 1973); David Stuart, “The Paintings of Tomb 12, Rio Azul,” in *Rio Azul Reports 3, The 1985 Season/Proyecto Rio Azul, Informe Tres: 1985*, ed. R. E. W. Adams (San Antonio: University of Texas, 1987), 161–67; Richard Fraser Townsend, *State and Cosmos in the Art of Tenochtitlan*, Studies in Pre-Columbian Art and Archaeology 20 (Washington, D.C.: Dumbarton Oaks, 1979); and Keiko Yoneda, *Los mapas de Cauhtinchan y la historia cartográfica prehispánica*, 2d ed. (Mexico City: Centro de Investigaciones y Estudios Superiores en Antropología Social, 1991).

APPENDIX 5.2 LANDSCAPE PAINTING IN PRE-COLUMBIAN MESOAMERICA

Site	Culture	Date	Medium	Subject
Teotihuacan ^a				
Tepantitla palace complex, lower frieze	Teotihuacan	A.D. 600–750	Painted mural	People frolicking around mountains; perhaps an afterworld paradise
Temple of Agriculture (known through copy)	Teotihuacan	A.D. 200–400	Painted mural	Offerings being made to mountains or deities
Chichén Itzá ^b				
Temple of the Warriors	Maya	ca. 12th century	Painted mural	Seacoast village, land village
Temple of the Jaguars (murals 1, 2, 3, 4, 7, 8)	Maya	ca. 12th century	Painted murals	Battle scenes, terrestrial forests, hills, villages

^aKathleen Berrin, ed., *Feathered Serpents and Flowering Trees: Reconstructing the Murals of Teotihuacan* (San Francisco: Fine Arts Museums of San Francisco, 1988); Kathleen Berrin and Esther Pasztory, eds., *Teotihuacan: Art from the City of the Gods*, exhibition catalog (New York: Thames and Hudson, 1993); Manuel Gamio, *La población del valle de Teotihuacán*, 2 vols. in 3 (Mexico City: Dirección de Talleres Gráficos, 1922); George Kubler, *The Art and Architecture of Ancient America: The Mexican, Maya and Andean Peoples*, 3d ed. (New York: Penguin, 1984), 65–68; Arthur G. Miller, *The Mural Painting of Teotihuacán* (Washington, D.C.: Dumbarton Oaks, 1973); Esther Pasztory, *The Murals of Tepantitla, Teotihuacan* (New York: Garland, 1976); Agustín Villagra Caletí, “Mural Painting in Central Mexico,” in *Handbook of Middle American Indians*, vol. 10, ed. Gordon F. Ekholm and Ignacio Bernal (Austin: University of Texas Press, 1971), 135–56.

^bA. Breton, “The Wall Paintings at Chichen Itza,” in *Congrès International de Américanistes, XV^e session*, 2 vols. (Quebec, 1907), 2:165–69; idem, “The Ancient Frescos at Chichen Itza,” in *Proceedings of the British Association for the Advancement of Science* (Portsmouth, 1911), section H; Marvin Cohodas, *The Great Ball Court at Chichen Itza, Yucatan, Mexico* (New York: Garland, 1978), esp. 63 and figs. 42–49; Paul Gendrop, “Las representaciones arquitectónicas en las pinturas mayas,” in *Las representaciones de arquitectura en la arqueología de América*, ed. Daniel Schávelzon (Mexico City: Universidad Nacional Autónoma de México, 1982–), 1:191–210; Kubler, *Art and Architecture*, 315–19.