Ancient Mesoamerica, **12** (2001), 127–147
Copyright © 2001 Cambridge University Press. Printed in the U.S.A.

THE *MAPA DE OTUMBA*

New hypotheses

Jean-François Genotte
Université de Paris I Panthéon-Sorbonne, Via di Trasone, 60, 00199 Rome, Italy

Abstract

The *Mapa de Otumba*, a sixteenth-century document (1550–1575) currently archived in the Biblioteca Nacional de Antropología e Historia of the Museo Nacional de Antropología in Mexico, represents a small portion of the pre-Conquest *altepetl* of Otompan and its Early Colonial-period administrative successors, the *parroquia* and *corregimiento* of Otumba. The exact circumstances under which the map was executed, its original purpose, and any associated textual documents are unknown. The paper on which the map is executed (*amate*) and the style in which it was drawn clearly show pre-Conquest paper and the hand of a *tlacuilo* (scribe) influenced by post-Conquest style, script, and changes in sociopolitical and religious organization. Analysis of the elements of the document reveal its temporal and spatial setting; it also throws light on the changes in indigenous sociopolitical and religious organization during the first half-century of the Early Colonial period.

The *Mapa de Otumba* is the oldest known traditional pictorial document that represents a section of the Otumba region (Figures 1 and 2) (Charlton et al. 2000; Mooser 1968:36). I proposed an analysis of this document to determine its precise location in the Otumba region and to complement a series of archaeological investigations carried out by Thomas Charlton and Deborah Nichols in that region. My goal was to investigate the potential of a study of this document to enrich current archaeological and historical knowledge of Otumba and surrounding sites (see also Códice Chimalpopoca 1945:63; Davies 1973:57; Diccionario Porrúa 1986:2162; Gibson 1964:10; Hassig 1988:136–139; Ixtlilxóchitl 1965:1:167–168, 2:82–83; Offner 1979:231–242). The goal of this paper is to provide a recent and complete iconographic study and interpretation of the map.

The article is divided into two sections. First, I deal with the formal characteristics of the map, including the names by which it is known; the dating of the document; the materials of which it is made; its treatment, folds, and state of preservation; and its history. This is a summary description of the document. Second, I analyze the thematic contents of the map. After briefly presenting the method of analysis, I discuss the following results: style, notes in Roman script, geographic orientation, physiography and hydrography, and sociopolitical, territorial, and religious organization. Finally, I discuss the conclusions that stem from this analysis.

AN INTRODUCTION TO THE DOCUMENT

The document is known as the *Mapa de Otumba* and as the *Mapa de Tlaquiltenanco*, two toponyms present on the map (Caso 1979; Glass 1964:128, 1975; Glass and Robertson 1975:178; Mena 1923:55). The more common name is the *Mapa de Otumba* because of the several religious buildings depicted; the most prominent is the church–monastery complex of Santa María Concepción de Otumba (Figures 2 and 3).

Numerous historical, ethnohistorical, and archaeological sources indicate that the document dates after 1555 and before 1572 (Genotte 1994:19–26).

The document was executed on *amate* paper, made of the fibers of the mulberry tree and two species of fig trees (*Ficus involuta* and *Ficus petiolaris*) (Duverger 1983:339; Galarza 1982:17; Lenz 1950; Von Hagen 1948). It measures 1.04 × .61 m, according to Mena (1923:55), or 1.06 × .615 m, according to Alfonso Caso (1979:1) and Glass (1964:128). Joaquín Galarza, who examined the original, informed me that it measures more or less 1.05–1.06 × .6–.615 m. The map is framed by a black line that serves as a geographical border. All designs are represented by black outlines, with no colors added. The annotations in Nahuatl and Spanish, accompanying some toponymic glyphs and buildings, are also executed in black ink.

Five conjoined pieces of paper of varying dimensions make up the document. The left portion is made up of two narrow bands measuring 70 × 19 cm and 36 × 17 cm, with the longer sides placed vertically. The three other pieces, which make up the right section, have their longer sides placed horizontally. Those three pieces measure 39 × 44 cm, 39.5 × 44 cm, and 26 × 43 cm. The front side (*recto*) of the page presents an extremely smooth surface, on which the artist drew the pictographic elements and wrote the Roman letters. The reverse side (*verso*) had been covered with a whitish substance, the nature of which I was not able to determine and which has almost disappeared.

The upper-left, upper-right, and lower-left corners, as well as the central part of the front side, are marked by dark (formerly black) zones.These black stains could be from older, now obliterated, pictographs. In such a case, the *Mapa de Otumba* would have been based on an effaced and reused document. However, as Mena states (1923:55), the dark and light areas could also correspond to water and lime stains. Codices of *papel de amate* are known to have been covered with a layer of lime.

https://doi.org/10.1017/S0956536101121073 Published online by Cambridge University Press

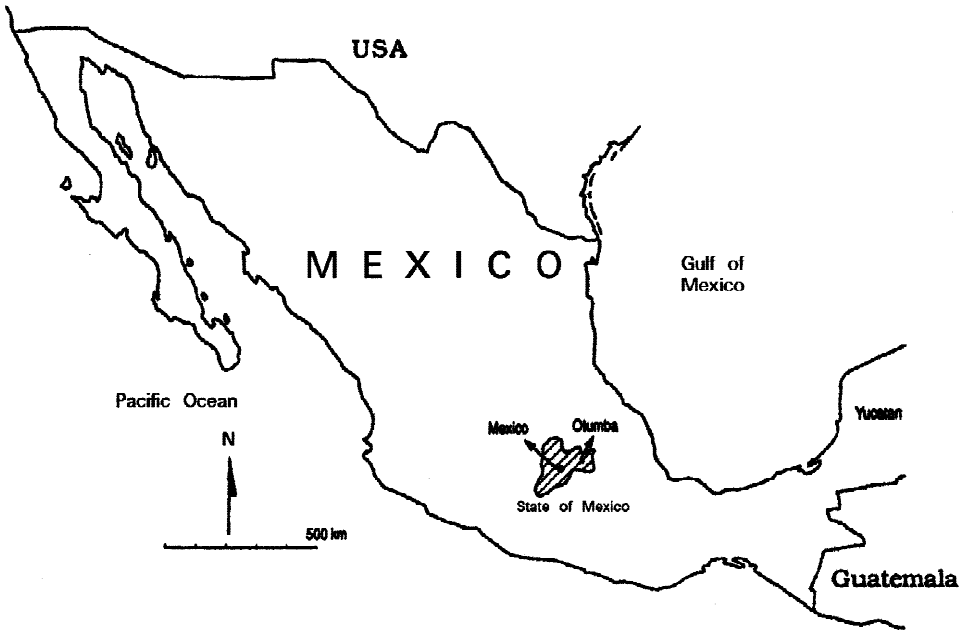


Figure 1. Map of Mexico with the State of Mexico and the federal district indicated by hatching. (Drawing by J. F. Genotte)

A gridlike pattern of dark linear marks indicates that the document was folded into 16 sections, each forming a 26.5 × 15 cm rectangle. These were the dimensions of the final "packet" into which the map was folded for safekeeping. Presumably this packet would have been placed in a box made of material such as basketry, ceramic, or stone. The document was well preserved. There are no holes, and the borders have only a few cracks (notably in the upper-right corner). The pictographs are legible, with one exception (N1). The details of the toponymic glyphs and the buildings are clean, and the annotations are relatively clear.

The document represents places in the Otumba region (Figure 2). The black frame is divided into several parts by horizontal and vertical lines drawn in black ink. Two drainages traverse the map vertically, finally converging at a place called Tlaquiltenanco. In the lower left of the map is a large church identified as Santa María Concepción de Otumba. In other parts of the document, additional churches appear: San Salvador Quauhtlantzinco (bottom right), San Martín Teocalli (middle, at left), and San Miguel Axoloapa (top right). Under the church Santa María Concepción de Otumba (Figure 1) there is an angled path or road with an annotation and a bridge. Another path or road cuts diagonally through the center of the map leading to the church of San Miguel Axoloapa across a second bridge over the left-hand watercourse. Numerous small houses are dispersed throughout the map, some bearing the names of people. There are also many toponymic glyphs, all with annotations in Roman script. Four circles, varying between 2 cm and 3 cm in diameter, are also represented on the document. Circles D1 and S1 have a diameter of 3 cm, circle P1 has a diameter of 2.5 cm, and circle H1 has a diameter of 2 cm (Figures 2 and 4).

On the back side (*verso*) are three stamps from the Biblioteca Nacional de México, but there is limited evidence of the document's having been inventoried. One stamp from the Museo Nacional de México is marked in ink with the number 35–75 (see Glass 1964:128, Illustration 80). The *Mapa de Otumba* would not have belonged to the Boturini collection formed in Mexico in 1736–1743, although it appears that it might have been included later among the remnants of that collection. According to the three stamps affixed to the back of the document, it is possible that it was placed in the Biblioteca Nacional de México in 1826. Only the 1917–1918 inventory from the Archivo General de la Nación (AGN) clearly mentions its presence. In 1935, the document was transferred to the Museo Nacional de Antropología de México.

Today, the document is preserved in the Biblioteca Nacional de Antropología e Historia of the Museo Nacional de Antropología de México, filed under inventory number 35–75 in the John B. Glass catalogue (1964) and under number 242 in the corpus made by Glass and Robertson (1975:178). Two poor photographs of the map have been published, one by Glass (1964:128, Illustration 80).

The bibliography on the *Mapa de Otumba* is very sparse. There are two paleographies, one by Mena (1923:55, 69) and one by Caso (1979), which was not published and was prepared much earlier than its compilation. In addition, there are two inventories, one by Glass (1964:128) and another by Glass and Robertson (1975:178), in which information about the map is succinctly presented. Aside from the work of Genotte (1994, 1998), no other complete study of this document has been published to date.

METHOD OF ANALYSIS

The method that I employed was defined by Galarza (1962:15–19) and includes a detailed and thorough analysis of all the pictographic and textual elements of the document, my intent being to divide them into their component parts, to interpret them, and to determine their meaning. All of the graphic and written elements that appear on the manuscript have direct or indirect significance. Each is important to the study and understanding of the document as a whole. All of the pictographic elements contribute to communicating the concepts put forward by the *tlacuilo*. The pictographs are "conduits" through which the thematic contents are communicated.

https://doi.org/10.1017/S0956536101121073 Published online by Cambridge University Press

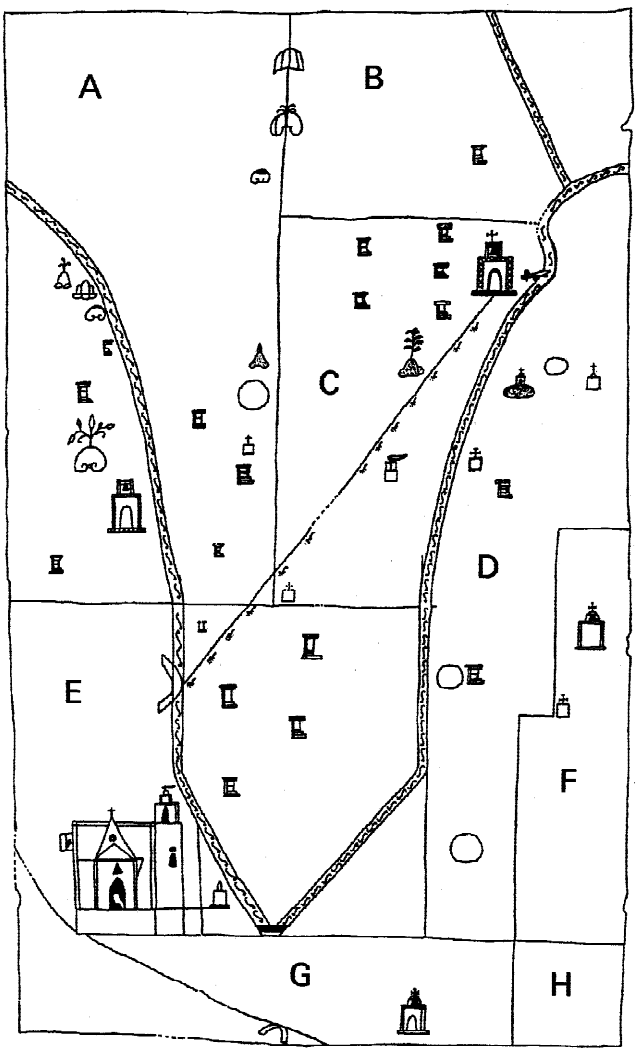


Figure 2. *Mapa de Otumba*. (Drawing by J. F. Genotte)

To evaluate the contents of the document, I analyzed all of its pictographs, first individually and then in groups, to establish potential linkages among them. The drawings occur in small groups. I designated each of these groups using an upper-case letter and each pictograph within a group using an Arabic numeral (Figure 4). The notes, in Spanish or Nahuatl and written in Roman script, were analyzed and designated in an identical fashion. I also consulted recent works focusing on graphic representations during the Early Colonial period, such as Gruzinski (1992), Mundy (1996), and Boone (2000).

ANALYSIS OF THE DOCUMENT

Style

As a whole, the document gives the impression of an open, uncluttered space. The drawings are not too numerous, and each representation is well separated from the others. The style of the *Mapa de Otumba* can be defined through analyses of several iconographic elements. These elements are the toponymic glyphs, the buildings, the watercourses, and the paths or roads. Of the nine toponymic glyphs, five appear to correspond to the traditional indigenous pictographic convention for *tepetl* (hill), in the shape of a sugarloaf (Figure 5). However, the drawing for a hill does not correspond to the pure pre-Hispanic style; rather, it represents a variant probably prepared by a Spanish-influenced *tlacuilo*. The glyphs representing the hills Alhuexoyo (C1), Tecuauhtemalco (C2), and Tepan (E6) do not follow the pre-Hispanic style because they differ from the signs known from the *Codex Mendoza* and tend to be more realistic in representation. The toponymic glyphs Ahuatepec (F2) and Tepan (E6), with trees, do not correspond to pre-Hispanic convention as defined by vegetation depicted in the *Codex Mendoza* (Berdan and Anawalt 1992; all references in this paper to the *Codex Mendosa* refer to this edition). In that style, trees and bushes are represented as one vertical trunk with two almost horizontal branches, all three terminated by groups of leaves. In the *Mapa de Otumba*, the number of branches and leaves is larger.

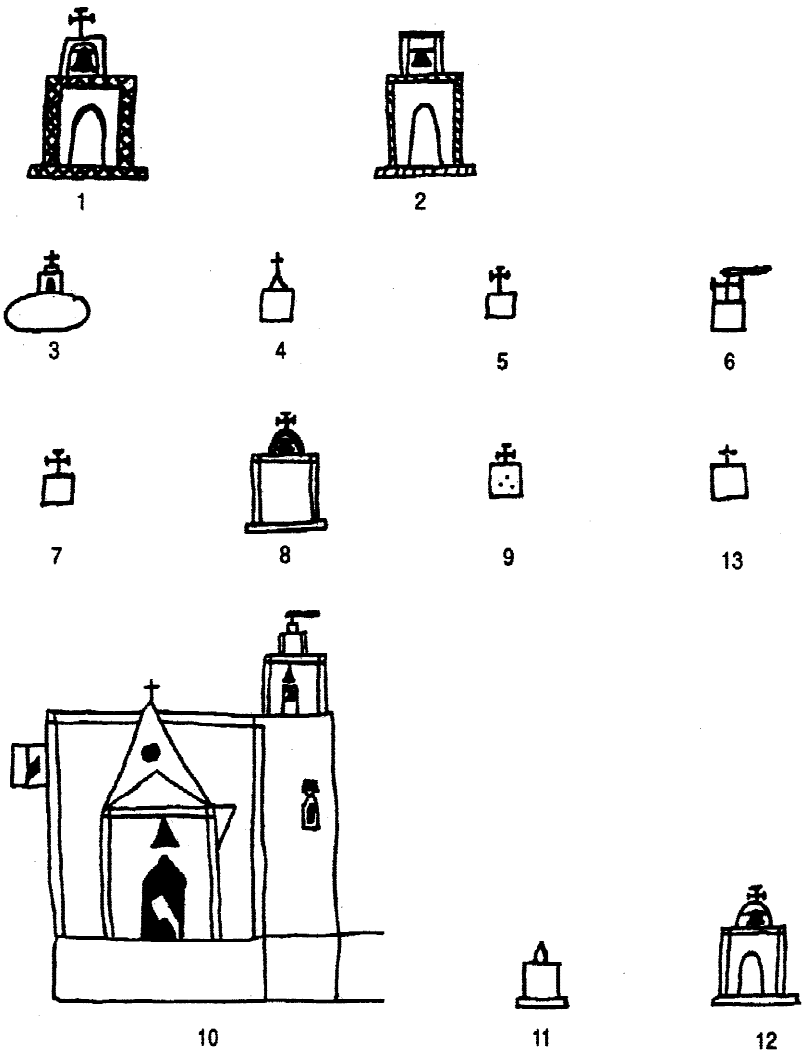
In the *Codex Mendoza*, the glyph Ahuatepec (Folio 21v) consists of a tree with three branches growing in the middle of a green hill, with water instead of flowers flowing in an arc from the leaves. In the *Mapa de Otumba*, a tree also grows in the middle of a hill; the tree maintains a tripartite structure but with more leaves and without a "water" element. Another example from the *Codex Mendoza* is the glyph Alhuexoyocan (Folio 26r), a tree growing in a whirlpool of water. Both the tree and the water are represented in the traditional style. The tree has a tripartite structure, and the extremities of the whirlpool end in snail shells and conch shells (discs, symbols of fertility). In the *Mapa de Otumba*, the tree glyph has a tripartite structure, but it emerges from a hill, not a whirlpool.

The religious buildings are all represented by frontal views. This depiction does not necessarily indicate a retention of the pre-Hispanic style (Figure 3). The civil structures (Figure 6) are represented in a lateral elevation, the most widespread mode of architectural representation in pre-Hispanic manuscripts. The civil structures, however, are represented by a variant of the *calli* (house) sign, possibly of post-Conquest origin, as I will demonstrate later. No building is represented in European perspective. The watercourses that descend from the upper-right and upper-left corners of the map join in a place named Tlaquiltenanco (W1) (Figures 2 and 4). At first glance, their depiction does not seem to follow the traditional native pictographic conventions in which water is represented by a turquoise blue flow whose edges are embellished with circular and oval elements such as mollusk and conch shells, symbols of fertility (Boone 2000; *Codex Mendoza* 1992:Folios 2r, 5v, 6r, 7v, 8r, 10r, 11v, 13r, 17v, 20v, 21v; Mundy 1996).

In the *Mapa de Otumba*, the water is represented with linear borders. However, a representation of this type can be found in pre-Hispanic contexts as a variant of the representation of water in the interior of an irrigation canal seen in a vertical cross-section. In this instance, the *tlacuilo* deliberately did not depict mollusk or conch shells on the banks of the watercourses, which were rendered as straight lines (*Codex Mendoza* 1992:Folios 2v, 4v, 6r, 7v, 8r, 10v, 16v; Galarza 1983a, 1983b). In the *Mapa de Otumba*, the water between the two edges of the watercourses is not represented with spirals, as in the pre-Hispanic style; rather, it is represented as a succession of separate motifs, each in the form of an *S*. The difference undoubtedly reflects the post-Conquest influences in the character of the *tlacuilo*'s drawings (see also Boone 2000:50; Gruzinski 1992:194–196; Mundy 1996:98).

The representation of the two paths or roads in the map appear to have changed from the pre-Hispanic style. According to this style, routes are represented via a succession of footprints be-

https://doi.org/10.1017/S0956536101121073 Published online by Cambridge University Press



Representations of religious structures in order of geographic location (E1–T1)

1. St Miquel (San Miguel) Axoloapa Otumpatalal (E7)
2. St (San) Martin Teocalli (F3)
3. San Ju.o (Juan) Chi (H1)
4. San grauiel (Gabriel) Tepoliuhca (H2)
5. Tocoma (I1)
6. Tezcatzinco (J1)
7. Tlahiusco (K1)
8. St. lorenso (San Lorenzo) (Q1)
9. Otumba tepampa (Q2)
10. Stª Mª Consepsio de Otuba (Santa María Concepción de Otumba) (R1)
11. S. (San) Francisco (R2)
12. St (San) Salvador Quauhtlazinco (T1)
13. Unknown (N1)

Catholic sanctuaries

1. San Miguel Axoloapan (E7)
2. San Martín Teocalli (F3)
3. San Juan Chi (H1)
4. San Gabriel Tepoliuhca (H2) (?)
8. San Lorenzo Teshianco (Q1)
10. Santa María Concepción de Otumba (R1)
11. San Francisco (R2)
12. San Salvador Quauhtlazinco (T1)

Principal land-boundary markers

4. San Gabriel Tepoliuhca (H2) (?)
5. Tocoma (I1)
6. Tezcatzinco (J1)
7. Tlahuisco (K1)
9. Otumba Tepanpa (Q2)
13. Unknown (N1)

Figure 3. Depictions of 13 religious structures from the *Mapa de Otumba*.

tween two more or less parallel lines (Boone 2000; *Códice Boturini* 1975:Plates 1–20; *Codex Mendoza* 1992:Folios 61r, 64r, 66r, 69r; Mundy 1996). The route situated in the lower-left corner of the map falls completely outside the pre-Hispanic convention of using footprints to represent route and movement: It is represented by a single, continuous black line. The second route, which crosses diagonally through the center of the map, is marked by both footprints and a continuous black line. It is thus at an intermediate stage of representation between the indigenous and European traditions. In this map, space is represented in a pre-Hispanic manner—that is, in a single plane as viewed from above without the soil lines and spatial depth of the European style.

After studying these five elements I conclude that the map was drawn by a *tlacuilo* trained in the tradition of pre-Hispanic codex painting but also influenced to some extent by Hispanic or Western artistic traditions (for more information, see Gruzinski 1992; Boone 2000; Mundy 1996).

Annotations in the Roman Alphabet

The *Mapa de Otumba* is a mixed pictographic manuscript—that is, a codex to which someone has added glosses in Roman script following the execution of the pictographs. The annotations are very short, rarely exceeding one or two words and generally linked to names of places or people. The annotations occur in 38 different places and are written in Nahuatl or in Spanish (Table 1). The majority of these annotations indicate the names of people or places or are descriptive locators. The places are associated with the nine toponymic glyphs (1, 2, 3, 5, 6, 7, 9, 15, 18) and with the twenty-four structures, either churches (16, 19, 21–24, 31–34) or houses (*calli*) (4, 22, 24, 29). The ten names of people (8, 10–14, 17, 26–28) are all associated with civil structures (houses). In two cases, the name of the owner is connected with a Nahuatl word that indicates a precise descriptive locator (8) and a precise place (26). In two other cases, churches carry a Spanish name with no association with a place (20, 30). People and churches are designated in Spanish terms, while the descriptive locators and place names are in Nahuatl.

Annotation 36 indicates the presence of a bridge or an arch (U1) crossing a watercourse (Figures 2 and 4). It has been called the *puente de los prigos*, according to Mena (1923:55), or the *puente lesquigos*, according to Caso (1979), although neither of these makes sense. I propose *puente de los trigos*, signifying "bridge of wheat," because it could have been a route used to transport

https://doi.org/10.1017/S0956536101121073 Published online by Cambridge University Press

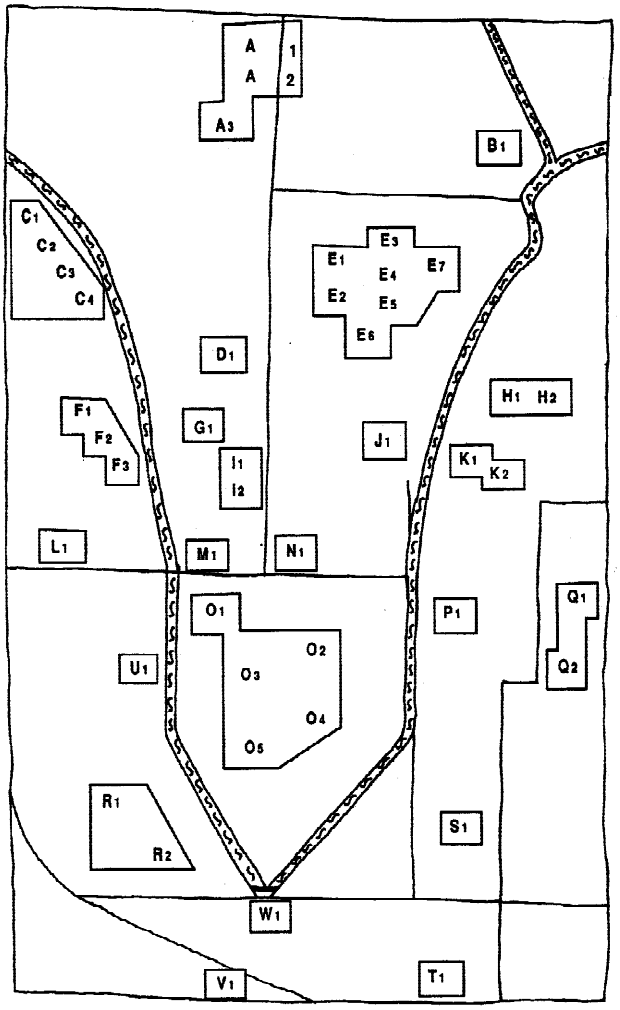


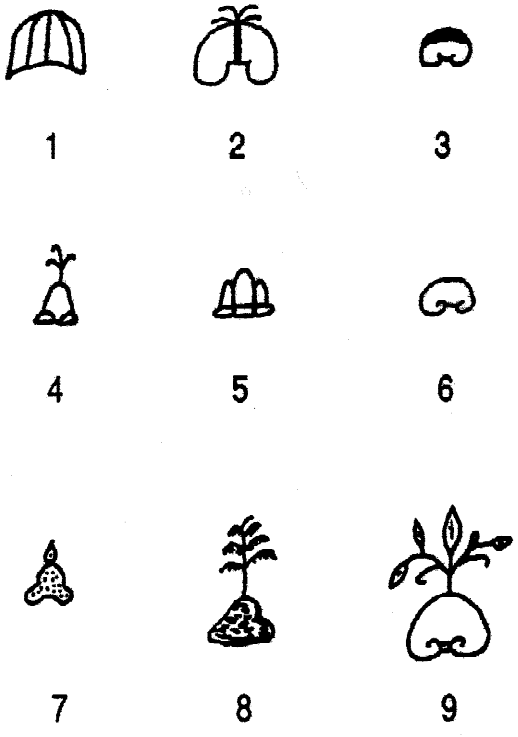
Figure 4. General plan of the map with the pictographs grouped by letters and numbers (A–W).

wheat. The second-to-last annotation (37), which reads *puente* (V1), is associated with a similar drawing. A route, the *camino real* (see later), seems to pass alongside the bridge. The bridge was probably built to cross over the *barranca*, or seasonal watercourse, that continued from the junction of the two watercourses at Tlaquiltenanco (W1).

Two of the 38 annotations are longer than the others. The first of these, number 16—San Miguel Axoloapa–Otumpatlali (E7)—is associated with a church situated near the watercourse and, by extension, with five houses. Each house bears the name of its owner: Sacarias de San Miguel, Francisco de la Cruz, Gaspar Titi, don Lorenzo, and don Miguel Axoloapa. Axoloapa, from *axolo(tl)* (salamander) and *-pa(n)* (on, at), signifies "place of the salamander." The name of the watercourse is symbolized by the glyph of an *axolotl* drawn on the watercourse adjacent to the church (Figures 2 and 4). Because of this glyph, Caso (1979) also thinks that the watercourse is called *rio ajolotes*. According to Charlton (personal communication 1999), this watercourse is known locally today as the Barranca de Santa Barbara. Another Nahuatl word accompanies the name of the church: *otumpatlali*. *Otumpatlali*, from *otompa(n)* (Otumba) and *tlalli* (dependency, land, property), signifies that San Miguel Axoloapa was a "property" or "dependency" of Otumba.

The second of these annotations, number 37—*huei ontlihuitz caxtila* (V1)—referring to a black line (route) passing before the church of Santa María Concepción de Otumba (R1) could be translated as "main road that comes from Castile," "main road by which one comes from Castile," or even "main road for those of Castile." This road is undoubtedly the *camino real* that passed by Otumba at that time. The presence of this road explains in part Father Tembleque's decison to construct the famous aqueduct that supplied water to the travelers who were going to Mexico or to Veracruz, as well as to the residents of the town of Otumba (Archivo General de la Nación 1702:Folio 66r; Gibson 1964:360–361; Musset 1991:138).

The other annotations, most of which are associated with toponyms or with descriptive locators, provide additional information that is useful in a study of the map (Figure 5, Table 1). The toponyms and descriptive locators—such as *Ahuatepec*, *Alhuexoyo-* (*can*), *Contolo*, *Nopalcalco*, *Quauhtlazinco*, and *Tlatenco* ("at the edge of something")—may provide us with information on the flora,



Key

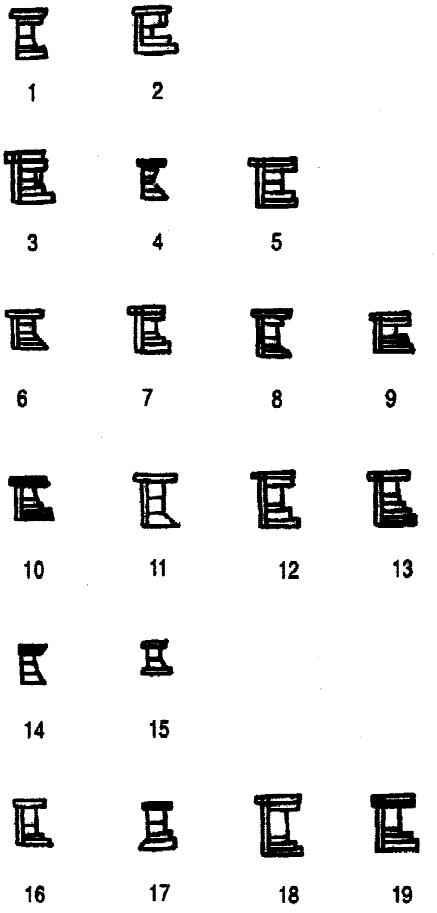
Toponymic elements

Toponymic glyphs with the Nahuatl names translated into Roman characters

1. Posuhtecalil (?) (A1)
2. Cotonio (A2)
3. Tzictepetl (A3)
4. Alhuexoyo (C1)
5. Tecuauhtemalco (C2)
6. Xixipetzo(C3)
7. Tlatenco Xocoypotepec (D1)
8. Tepam (E6)
9. Ahuatepec (F2)

Figure 5. Topographic glyphs from the *Mapa de Otumba*.

https://doi.org/10.1017/S0956536101121073 Published online by Cambridge University Press



Key
Civil structures
Representations of houses (calli) associated with their Nahuatl toponyms translated into Roman characters
1. Quanmilpa (B1)
2. Tocoma (I1)
3. Tlahuisco (K1)
4. Nopalcalco (M1)
5. Tlamimiloipa (P1)
Representations of houses (calli) associated with the names of proprietors
6. Sacarias de St (San) Miguel (E1)
7. Fran.co (Francisco) de la Cruz (E2)
8. Gaspar titi (E3)
9. Don Lorenzo (E4)
10. Don Matheo de St tiago (Santiago) (E5)
11. Bartasal Ximines (F1)
12. D. (Don) Gaspar Ramires (O3)
13. D. (Doña) Julia Sanches (O5)
Representation of houses (calli) associated with the Nahuatl toponyms and the names of the Spanish proprietors (in Roman characters)
14. Marcos de San Pedro–Cihuatecpa (C4)
15. D. Fran.co (Don Francisco) Ridriquez–Xaxalpa (O1)
Representations of houses (calli) with no particular identification
16. ? (L1)
17. ? (G1)
18. ? (O2)
19. ? (O4)

Figure 6. Depictions of 19 houses (*calli*) from the *Mapa de Otumba*.

fauna, geology, hydrography, and human and religious characteristics of the Otumba region during pre-Hispanic times (Table 5). *Xocoyoltepec* give us a beautiful view of the flora of the Otumba region: oaks, river willows, palm trees, *nopalli*, woods or thicket, and wild sorrel. *Axoloapa* shows the presence of *axolotl* (salamander) and possibly provides the name of the adjacent *barranca*. *Alhuexoyocan* ("place filled with river willows") and *Tlaquiltenanco* ("place of the dam") indicate that the region of Otumba possessed a network of watercourses. The religious pre-Hispanic element is represented by the term *Teocalli* (god house, temple), while *Otumba*, *Otumba tenanpa* ("near/at the walls of Otumba"), *Otumpatlali* ("Otumba land"), and *Xacalco* ("the place of the hut/*jacal*") represent inhabited places. Two other toponyms or descriptive locators, *Tlictepec* and *Xaxalpa*, inform us about the geology of the Otumba region, which includes obsidian: *Tlictepec* signifies "black hill" and, by extension, obsidian and sand. There is an obsidian source at the foot of Cerro Soltepec about 5 km from Otumba (Charlton and Spence 1983:39–50; Sanders et al. 1979:Map 25).

Orientation

The topographic elements are made up of nine place-name glyphs and fourteen Nahuatl toponyms in Roman letters. Some other pictographs are also associated with the latter toponyms (Table 1). To determine the orientation of the document, I examined a variety of data. First, I looked at the annotation (V1) (Figure 4) that accompanies the footpath on the map: *huei ontlihuitz caxtila*. If this led directly to Castile, it might provide one way to orient the document. However, I think that the annotation simply designated one end of the route, not a specific direction. Second, I examined the toponym *Tlahuisco* (K1) (Figure 4)—from *tlauiz* (*calli*) (light, dawn, daybreak) and *-co* (locative)—which could signify "at the light" and, by extension, the east. As this toponym is situated along the right side of the map, it would correspond to the east. However, the toponym refers to a place located to the southeast of Otumba (see later).

Third, and most important, I examined the orientation of the religious buildings. Normally (but not always in New Spain, where there are many exceptions), Catholic churches were oriented on an east–west axis, the facade facing west and the apse in the east, following the Medieval ideal. Of the thirteen Catholic religious complexes on the *Mapa de Otumba* (Figures 2 and 3), five are represented frontally: the principal church of Otumba (R1) and the secondary churches (*visitas*) of San Miguel Axoloapa (E7), San Martín Teocali (F3), and San Salvador Quauhtlazinco (T1), as well as the small chapel of San Juan Chi (H1). The facades of five of the religious edifices present on the map are directed toward the bottom of the map. Consequently, if the facades of the Catholic buildings faced west, then it would seem that this part of the map corresponds to the west (Figure 7).

https://doi.org/10.1017/S0956536101121073 Published online by Cambridge University Press

Table I. Notes: Classification for small groups (letters and numbers)

	Pictograph	Versions		
		Mena (1923)	Caso (1979)	Galarza and Genotte (1994)
1	A1	*pinaztecatl*	*posuhtecali*	p^{0}. *auztecal*^{0}.
2	A2	*cotoule*	*Çotonio*	*Çotonlo*
3	A3	*tlictepec*	*tzictepetl*	*tlictepec*
4	B1	*quaninilpa*	*quanmilpa*	*quanmilpa*
5	C1	*alhuexoyo*	*alhuexoyo*	*alhuexoyo*
6	C2	*taquautemalco*	*tecuauhtemalco*	*tequauhtemalco*
7	C3	*xixipetzo*	*xixipetzo*	*xixipeltzo*
8	C4	marcos de S p^{e} *chihuatepa*	marcos de S̄ p^{0}. *çihuatecpa*	marcos. de. S. P^{0} *Cihuatecpa*
9	D1	*tlatencoxoco yoltepec*	*tlatenco xocoyoltepec*	*tlatenco xocoyoltepec*
10	E1	Sacarias de St Miguel	Sacarias de St Miguel	Sacarias. de. S. Miguel
11	E2	Fran^{co} de la cruz	fran^{co} de la cruz	Fran^{co}. de la Cruz
12	E3	Gaspar *titico*	gaspar *titi*	Gaspar *titico*
13	E4	Tonlorenzo	Don Lorenzo	Don. Lorenzo
14	E5	Ton matheo de St tiago	Don Matheo de St tiago	Don. Matheo de S. tiago
15	E6	*te.pan*	*tepan*	*tepan*
16	E7	San Miguel *Axoloapa–chun patlali*	St Miguel *axoloapa–otumpatlali*	S. Miguel *Axoloapan–Otunpatlali*
17	F1	partasarximenes	bartasal ximenes	Bartasal Ximenes
18	F2	*Ahuatepec*	*Ahuatepec*	*Ahuatepec*
19	F3	S^{t} Martín *teocanti*	S^{t} Martin *teocauli*	S^{t} Martín. *toecanli*
20	H1	San ju^{a} *chi*	San Ju^{0}. *chi*	San Ju^{0}. *Chi*
21	H2	San graviel *tepeliusca*	San grauiel *tepoliuhca*	S. Grauiel *tepoluizca*
22	I2	*ticoma*	*tocoma*	*Ticoma*
23	J1	*Tezcatzinco*	*tezcatzinco*	*Tetzcatzinco*
24	K1	*tlahuiaco*	*tlahuisco*	*tlahuisco*
25	M1	*nopalcalco*	*Nopalcalco*	*Nopalcalco*
26	O1	T. fran^{co} Rodrigues–*xaxalpa*	D. fran^{co}. Rodríguez–*xaxalpa*	D. fran^{co}. Rodríguez–*xaxalpa*
27	O3	T. Gaspar Ramires	D. Gaspar Ramires	D. Gaspar Ramires
28	O5	D. Juia Sanches	D. Julia Sanches	D. Julia Sanches
29	P1	*tiamimilolpa*	*tiamimilolpa*	*tiamimilolpa*
30	Q1	S^{t} Lorenzo	S^{t} lorenso	S. Lorenso
31	Q2	*Otumba tepanpa*	*Otumba tepampa*	Otumba *tepampa*
32	R1	Sta M^{a} conceptio de *Otuba*	Sta M^{a} Consepsio de *Otuba*	Sta M^{a} Consepsio de *Otumba*
33	R2	San Fransisco	S. Fransisco	S. Fran^{co}.
34	S1	*xacalco*	*Xacalco*	*Xacalco*
35	T1	S^{t} salbador *quauhtlantzinco*	S^{t}. Salvador *quauhtlazinco*	S^{t}. Salvador *quauhtlazinco*
36	U1	puente de los prigos	puente lesquigos	puente los trigos
37	V1	*puente huel on tli huitz Caxtila*	*puente huei ontlihuitz caxtila*	puente *huei. ontli. huitzcaxtitla*
38	W1	*tlaquiltenanco*	*tlaquiltenanco*	*tlaquiltenanco*

The present location of certain villages of the Otumba region (Lorenzo 1968:Figure 2; *Carta de México* 1988:201) as well as that of some sites of the Colonial period (San Miguel Axoloapa, San Juan Chi, and San Gabriel Tepoliuhca) (Charlton 1979:22, Figure 1), support this orientation of the document. A map from 1741 (Archivo General de la Nación 1702:Folio 66r; Charlton 1969:289, 291, Figures 1, 2; Genotte 1994:133, Figure 22, 1998:227, Figure 7) that depicts the towns and territorial limits of a region southeast of Otumba contains many toponyms that are also represented on the *Mapa de Otumba* (Axoloapan, San Gabriel Tepolican, Tlamimilolpan, San Lorenzo, Xacalco, and Quautlansingo). A comparison of the orientation of the map from 1741, on which directions are noted, and of the location of its toponyms, with the directions and locations established for the *Mapa de Otumba*, confirms the orientation proposed.

Geography

With the aid of present-day maps as well as ethnohistorical sources, I have demonstrated that the *Mapa de Otumba* represents a small region in the present-day State of Mexico. Certain names present on the document are known from historical sources, although more than half do not appear on current maps (Figure 7). When the old toponymic data are added to a current map of the region, it is not possible to correlate all with contemporary occupation. According to Caso (1979:6), nine places on the map have been continuously occupied: Otumba (R1), San Salvador Quauhtlazinco (T1), Xaxalpa (01) (possibly present-day Jalapa in the district of Otumba), San Martín Teconi (F3), Ahuatepec (F2), Cotollo (A2) (perhaps present-day Palma in the same district), Tlamimilolpa (P1), San Miguel Axoloapa (E7), and Tepan (E6).

https://doi.org/10.1017/S0956536101121073 Published online by Cambridge University Press

Table 2. Civil structures and their names

Mapa de Otumba		Ethnohistoric and Geographic Sources					
Number of houses	Place	*Códice Franciscano 1570* (after J. García Icazbalceta 1941:12)	P.N.E., *Descripción del Arzobispado de México 1571* (after Paso y Troncoso 1905:82–83)	*Congegación 1603* (after Chávez Orozco 1934; AGN 1603:I:exp. 48, Folios 30v–34v)	Gibson (1964:437)	Charlton (1979:22, Figure 1; 24, Figure 2)	Charlton (1991:228–229, Figure 10.2)
1 (C4)	*Çihuatecpa*		Sant Bartolome	San Bartolomé *Sihuatecpan* (II)			
5 (E1–E5)	San Miguel *Axoloapan*			San Miguel *Axolopan* (IV)		*Axaloapan*	San Miguel *Axoloapan*
1 (F2)	*Ahuatepec*		Sant Martyn	San Martín *Aguatepeque* (IV)	*Ahuatepec*		
5 (O1–O5)	*Otumba*	*Otumba*	*Otumba*	*Otumba*	*Otumba*	*Otumba*	*Otumba*
1 (M1)	*Nopalcalco*		Sant Bonifacio	San Bonifacio Nepoalco (II) Santa María *Nopaltepeque* (III) San Joaquín *Nopaltepec* (I)		*Nopaltepec*	San Joaquín *Nopaltepec*
1 (P1)	*Tlamimilolpa*			San María *Jalmimilolpa* (III) *Tlamimilolpa*	*Xamililpa* (?)	*Tlamimilolpa*	*Tlamimilolpa*
1 (B1)	*Quanmilpa*						
1 (I1)	*Tocoma*						
1 (K2)	*Tlahuisco*						
2 (G1, L1)	Unknown						

To locate other toponyms from the *Mapa de Otumba* on a current map, I used a map by Lorenzo (1968:Figure 2, Map 1:133,000); a map from a Mexican atlas (*Carta de México* 1988:201, Map 1:250,000), two maps made by Charlton (1979:22, Figure 1; 1991:228–229, Figure 10.2); and one by Otis Charlton et al. (1993:150, Figure 2). These maps, especially that from 1979 (Map 1:66,000), are detailed. Using these maps, I was able to locate ten present-day toponyms also located on the *Mapa de Otumba* (Figures 8 and 9): Otumba (R1), San Salvador Quauhtlazinco (T1), San Miguel Axoloapan (E7), San Juan Chi (H1), San Gabriel Tepoliuhca (H2), Tepan (E6), Ahuatepec (F2), Tlamimilolpa (P1), San Lorenzo (Q1), and Cihuatecpa (C4). The orientation of these toponyms is identical, with the exception of Ahuatepec, to the orientation given in the *Mapa de Otumba*. The document obviously represents a region situated southeast of the town of Otumba.

In numerous pre-Hispanic manuscripts, topographic elements are drawn according to the orientation of the map and make use of a scale of relative distances. This is due to the requirements of the picture-writing narrative of the traditional *tlacuilo*. Thus, certain geographical data do not correspond directly to reality as defined by their location in real space. When we compare the distances worked out between Otumba and the places identified on today's maps with the approximate distances on the *Mapa de Otumba*, we find that they do not reflect actual measured distances as found on European maps.

The problem of distance in certain manuscripts of the Colonial tradition is equally complex. For example, in the *Descripción del Arzobispado de México* (1571), a manuscript in the Archivo General de Indias, Seville, that lists 29 dependencies (*sujetos*) of the *cabecera* (head town) of Otumba, the distances between the town and dependencies vary from a quarter-league (about 1 km) to three leagues (about 13 km). The standard measure of distance was the *legua de Castile* (5,572 m) (Acuña 1985:369). In general, the distances between Otumba and its 29 dependencies are short: Six *sujetos* are situated at a quarter-league and nine *sujetos* are situated at a half-league from Otumba. When we compare the distances between Otumba and 13 dependencies recorded on an actual map (Charlton 1991:228, Figure 10.2) and on the list of 1571, none coincide. Three hypotheses are proposed: (1) the data used in the documents were unreliable or not verified; (2) errors entered into the transcribing of the data; or (3) some sites were relocated over the course of centuries while keeping their Spanish or Nahuatl names. The possibility also exists that the length of the league used varied, with the league in the 1571 document being longer than that used in the other maps. Yet it is necessary to remember that sixteenth-century measurements were very approximate and frequently estimated using unreliable methods, such as the distance of the shot of an arquebus.

I will now deal with the problem of the surface area represented by the *Mapa de Otumba*. Two points indicate that this document

https://doi.org/10.1017/S0956536101121073 Published online by Cambridge University Press

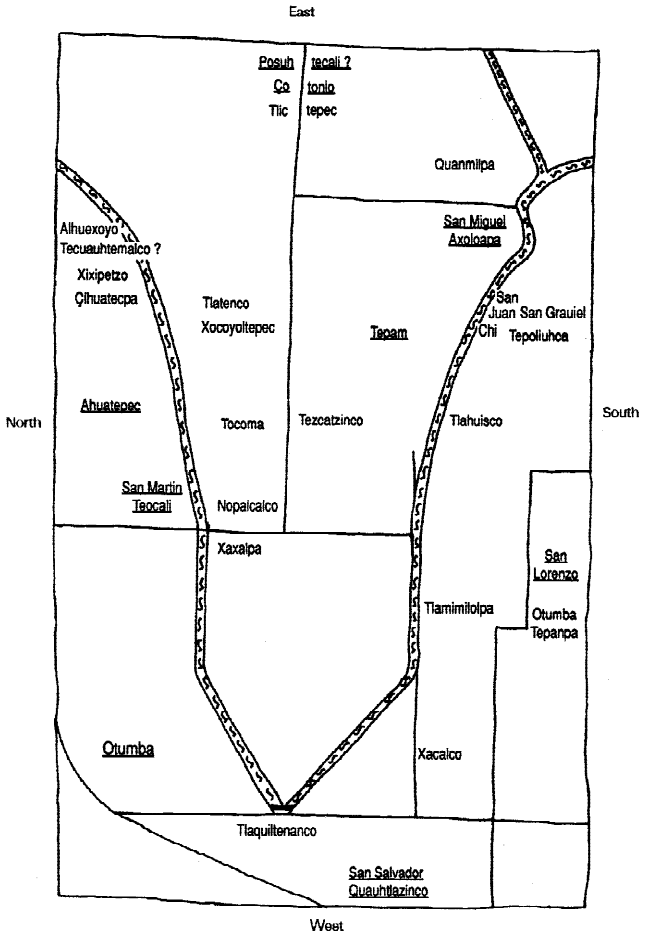


Figure 7. Plan indicating the place names or descriptive locators identified in the *Mapa de Otumba*. The underlined names are the most important in the document.

does not represent a vast region. First, the sites of Axapusco and Oxtoticpac, dating to the pre-Hispanic period (Charlton 1979:22, Figure 1; *Diccionario Porrúa* 1986:2162), have kept their Nahuatl names to the present. Of the various recorded dependencies of Otumba (6 mentioned by Gibson [1964:437], 20 cited in the *Códice Franciscano* [1941:12], and 29 cited by Paso y Troncoso [1905:82–83]), two, Axapusco and Oxtoticpac, appear to have been the most important. Even if they were dependencies (*sujetos*) of Otumba, both were held in *encomienda* separately from Otumba (Gerhard 1986:214; Gibson 1964:413–414, 422–423). When we locate these two entities on a present-day map, approximately 2 km separate Axapusco and Otumba (Lorenzo 1968:Figure 2), and about 8 km separate Oxtoticpac and Otumba (Charlton 1991:228, Figure 10.2; Lorenzo 1968:Figure 2). Because these settlements have been occupied continuously and were of some importance in the Colonial period, I conclude that their absence from the *Mapa de Otumba* indicates a regional zone that did not reach to either community (Figure 7).

The second line of evidence that suggests restricted coverage by the map within the present-day State of Mexico is based on the location of San Miguel Axoloapan (E7). On Charlton's map (1979:22, Figure 1), the straight-line distance between the churches of Santa María Concepción de Otumba (R1) and San Miguel Axoloapan (E7) traverses almost the entire surface of the map, at a distance of about 6 km. That map represents part of the occupation of the Otumba region between 1400 and 1650. Of the 10 toponyms present on the *Mapa de Otumba* that also exist on a modern map (Figures 8 and 9), three are particularly interesting because they are situated at the outer limits of the document in each cardinal direction. These are San Salvador Quauhtlazinco (T1) (western extremity), Cihuatecpan (C4) (northern extremity), and San Gabriel Tepoliuhca (H2) (southern extremity). The eastern extremity is represented by Posuhtecalli, but I was unable to locate this toponym on a current map. These locations indicate that the map covers a square measuring approximately 8 km on each side, with a resulting surface area of approximately 64 km^2, a relatively small region within the State of Mexico.

Hydrography

The document contains two hydrographic elements: the watercourses and the series of four circles scattered about the map (Figure 2). In regard to the watercourses, as noted earlier, similar representations are found during the pre-Hispanic period for water used in irrigation canals. The two watercourses join and are blocked below the junction by what is depicted as a rectangular wall.

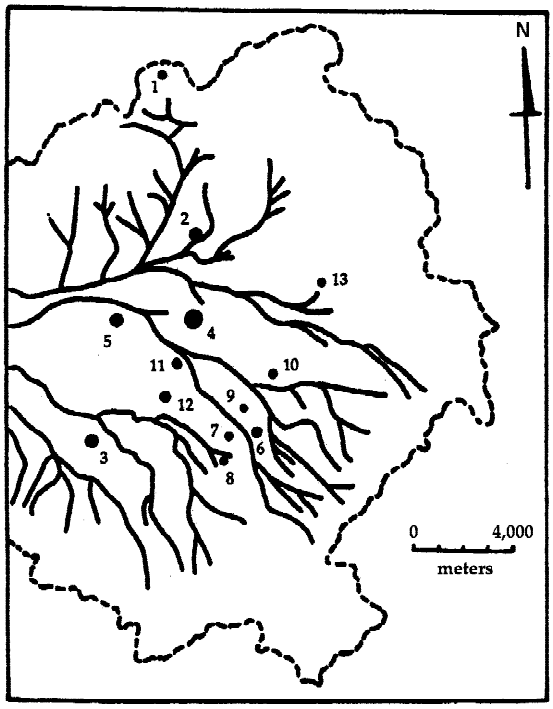
The water from the flow could have been distributed in a network of irrigation canals in the vicinity of Otumba. The Otumba area is semiarid and receives an average of 500–600 mm of rainfall per year (García 1968:21–22, Map 8; Lorenzo 1968:58; Stretta and Mosiño 1963:40–48, Figure 4). Maize agriculture is more reliable with irrigation (Lorenzo 1968). From an archaeological point of view, Charlton's excavations in 1977 and during the 1988–1989 field season uncovered irrigation features that included sections of an irrigation system, including one large canal, a distribution take-off, and a field surface with furrows, all dating from the Postclassic period (A.D. 900–1500). In addition, another canal with Terminal Formative-period ceramics (150 B.C.–A.D. 150) was found (Charlton 1989:29; Roitel 1992:36; Sanders et al. 1979:267–268).

The idea of diverting water from drainages to a network of irrigation canals is appealing but incompletely supported. The *tlacuilo* does not depict a network of redistribution canals. It is possible that the two seasonal watercourses were blocked by a dam but lacked a canal system to distribute the water. The position of the spirals in the water flow indicates movement from east to west (Galarza, personal communication 1994; Musset 1991:52). I propose that the watercourses are in part natural and in part canalized. The lower or western parts of the watercourses are depicted with straight edges, which might indicate that water is flowing in a canal. At times, these watercourses are used as natural borders between two properties (see the discussion of territorial and legal organization later in this article).

The two watercourses correlate with the north and south branches of the Barranca del Muerto noted by Charlton (1979:22, Figure 1). The southern branch is known as the Barranca de Santa Barbara; the northern branch as the Barranca de Cuauhtengo. The northern branch on the *Mapa de Otumba* lacks the secondary branch present on Charlton's map that passes to the north of San Miguel Axoloapan. Two major *barrancas* of the Otumba region—the Barranca de los Estetes and the Barranca Huixcoloco (Niederberger Betton 1987:Figure 15)—are situated, respectively, to the north and to the south of the system depicted on the *Mapa de Otumba*.

A small dam is depicted on the *Mapa de Otumba* at the junction of the two watercourses; the dam carries the toponym *Tlaquil-*

https://doi.org/10.1017/S0956536101121073 Published online by Cambridge University Press



Key

Map based on several sources:

–Map of the eastern part of the Teotihuacan Valley showing the communities and the lands at the end of the eighteenth century (after Charlton 1991b:228–229, Figure 10.2).

–Archaeological map showing the occupation of the southern region of Otumba from the Late Aztec and early Colonial periods (1400–1650) (after Charlton 1979:22, Figure 1).

–Archaeological map showing the location sof the surface surveys done in 1988 in the Otumba region by Charlton (after Otis Charlton et al. 1993:150, Figure 2).

Important sites included inthe cabecera of Otumba but missing from the map:

1. San Francisco Aztacameca (or Santo Domingo Estacameca)
2. San Esteban Axapusco
3. San Nicolás Oxtotipac

Present-day toponyms on the Mapa de Otumba:

4. Otumba
5. San Salvador Cuauhtlazingo
6. San Miguel Axoloapan
7. Chi (San Juan Chi)
8. Tepolican (San Grauiel Tepoliuhca)
9. (Los Reyes) Tecpan (Tepan)
10. San Miguel Aguatepec (Ahuatepec)
11. Tlamimiloipa
12. San Lorenzo (Teshlanco)
13. Cihuatecpa (Çihuatecpa)

Figure 8. Locations of particular place names from the *Mapa de Otumba* noted on a modern map. (Map based on Lorenzo 1968:54, Figure 2; drawing by J. F. Genotte.)

tenanco, from *tlaquil*(*li*) (roughcast, plaster, sculpted), *-tenamitl* (wall), and *-co* (locative), which means "the place of the plastered wall." Niederberger Betton (1987:95) has described small dikes or earthen embankments constructed to retain and divert water flow. Bataillon (1967:150, 155) notes that such dams could retain enough water to cover several hectares and thus would be of value in traditional agriculture. Such a system may have been supplemented during the rainy season by small basins, or *jagüeyes*, which, when placed along a drainage, were used sequentially.

Excavations carried out by Charlton in 1977 and 1988–1989 at Otumba (Charlton et al. 2000:Figure 3) found a collection of water-rolled obsidian fragments in canal deposits (Trench N4-8) that had been transported by water, indicating that the water came from a deep *barranca* situated southeast of the site. The canal was used in the Mazapan (A.D. 900–1000), Late Aztec (A.D. 1400–1520), and Early Colonial periods (A.D. 1521–1620) (Charlton 1990:201–202, 209). The obsidian had to have come from the northern watercourse, which originates within the Otumba obsidian source area and still carries cobbles (T. Charlton, personal communication 1999).

Another pertinent source is the 1741 document, which shows two watercourses, one on the south flowing from the site of Axoloapan to the west, joining with another *barranca* flowing from the north near Xacalco and the *camino real* (Archivo General de la Nación Tierras 1702: Folio 66; Genotte 1998:227, Figure 7). The hydrography depicted is almost identical to that in the *Mapa de Otumba*; it lacks, however, any representation of a dam.

Thus, I think that the *Mapa de Otumba* represents two partially canalized *barrancas* that flowed from east to west. These seasonal drainages were dammed at Tlaquiltenanco (at the bottom of the map), just below their junction, so that during the rainy season, water could be diverted for irrigation or stored in basins (see later) to be used as drinking water during the dry season. The bridge over which the *camino real* passes probably crossed the single bed of the joined watercourses below the dam. The 1741 document does not show the dam, suggesting that the *barrancas* flowed without restrictions at that time.

The second hydrographic element represented on the map consists of the four circles. The Nahuatl names associated with these circles are of no help in determining their function. The Otumba area is outside the natural-spring zone around San Juan Teotihuacan (Gamio 1922:II:87; Niederberger Betton 1987:57; Sanders 1976:103, 105, 111), and it is unlikely that such water sources would be represented. However, because the Otumba area is in a dry region of the basin, these circles may represent artificial reservoirs (Gibson 1964:347). In rural zones, small dams allow part of the seasonal rainfall and runoff in the drainages to be stored for use in the dry season (Musset 1991:106). According to Alain Musset (1988), the water stored in cisterns and *jagüeyes* in Otumba was generally sufficient to meet the needs of animals and people. Despite the construction of the aqueduct by the Franciscan friar Fray Francisco de Tembleque, which had a terminus in Otumba, cisterns and *jagüeyes* were remained in use 300 years later, in the mid-nineteenth century (Musset 1988). One can still see the large *jagüeyes* and *aljibes* (masonry-walled reservoirs) that supplied the town of Otumba with water.

Thus, the four circles on the document are most likely basins or *jagüeye* that held runoff rainwater. This is confirmed by Thomas H. Charlton, Christian Duverger, and Joaquín Galarza (personal communications 1994), as well as by the 1741 document, which depicts several identical circles associated with the comment *xaguei seco*, or dry *jagüey*. One circle on the *Mapa de Otumba*, associ-

https://doi.org/10.1017/S0956536101121073 Published online by Cambridge University Press

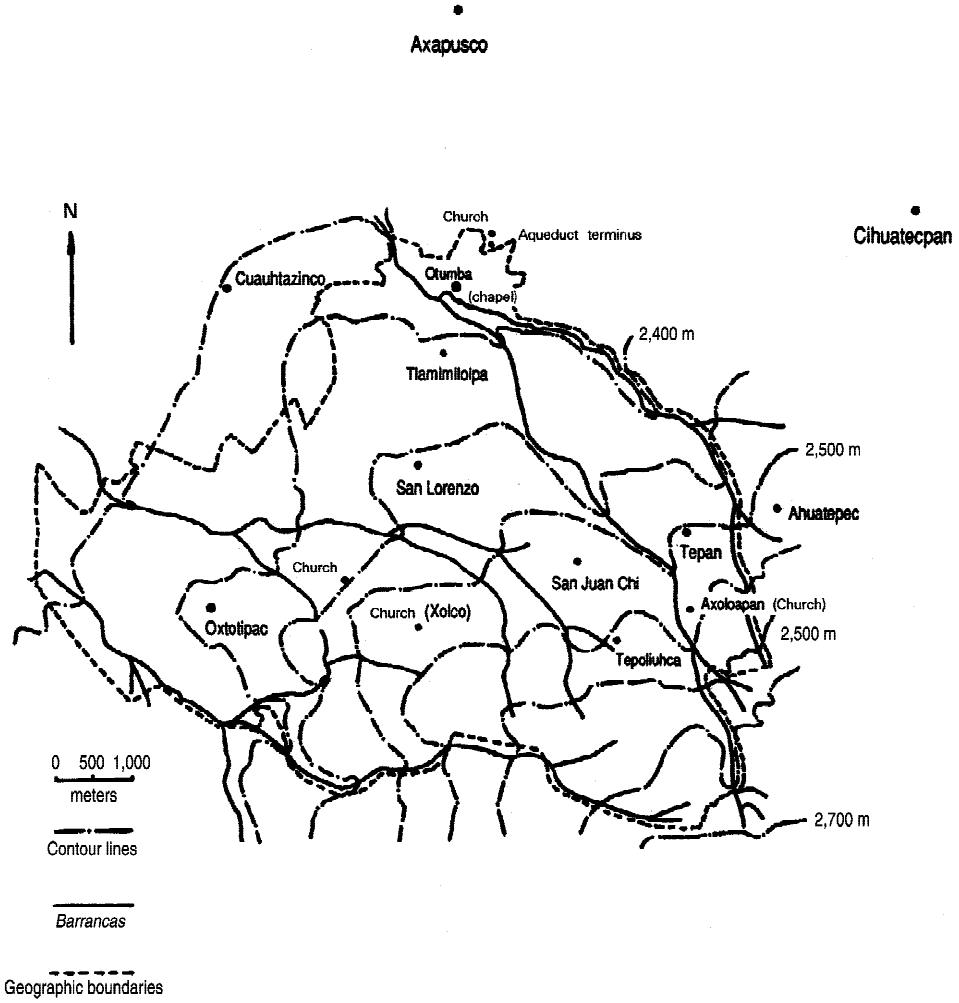


Figure 9. Locations of some of the place names on the *Mapa de Otumba* shown on a modern map. (Figure based on Charlton 1979:22, Figure 1; map drawn starting with the same data as those used in Figure 8.)

ated with the descriptive locator *Xacalco*, is identical to a circle in the 1741 document (Archivo General de la Nación 1702:Folio 66; Genotte 1998:227, Figure 7).

Sociopolitical Organization on the Map

In 1519, the central Mexican landscape was dotted with sociopolitical units known as *altepetl*. These varied in size from city-states with many square kilometers of land to communities with only a few thousand square yards (Lockhart 1992:14). The *altepetl* was a territory ruled by a dynastic ruler, called *tlatoani* (pl. *Tlatoque*), and formed by two or more subdistricts, called *calpolli* (pl. *calpultin*). Each *tlaxilacalli* or *calpolli* had its own leader, the *teuctlatoani* or *teuctocaitl*. The *tlatoani* was drawn from an individual *calpolli*, the highest ranking, for which he also served as *teuctlatoani* as well as being general ruler of *altepetl*. The *calpolli* were divided into wards (no indigenous term emerges) formed of 20, 40, 80, or more households. Each ward had a leader who was responsible for land allocation and tax collection (Lockhart 1992:14–18). The Spaniards, who misunderstood the nature of the *altepetl*, called the concentrated group of inner *calpolli* the *cabecera* (head town) and the outlying *calpolli sujetos* (subjects) (Cline 1972:24; Gibson 1964:33–34; Lockhart 1992:20).

The sociopolitical organization represented on the map must be understood within the context of the *altepetl* as modified in the Colonial period. According to James Lockhart (1992:29), the central Mexican *altepetl* survived into post-Conquest times and formed the basis for all of the most important institutions affecting the lives of indigenous people outside the Spanish-dominated urban centers. A simple *altepetl* could expect first to become an *encomienda*, then also a parish; it would then acquire a Spanish-style municipal organization. According to Lockhart (1992:46), in no small number of cases in post-Conquest times, an entire *altepetl* became a *corregimiento*, the whole continuing to function as a municipal unit.

Otumba, along with Teotihuacan, had been a dependency of the imperial *altepetl* of Tezcoco. The two city-states had existed as administrative districts at least as early as the time of Tezcocan imperial dominance (Gerhard 1986:213–214; Gibson 1964:11–12, 18, 90; Lockhart 1992:30, 46). Although a dependency of the vast *altepetl* of Tezcoco, Otumba was also an *altepetl*, ruling a smaller territory. We know that the *altepetl* of Otumba became an *encomienda* of Hernan Cortés from 1521 to 1528. In 1531, Otumba became a *corregimiento*. By 1640, the Spanish *corregidor* who resided at Otumba was usually called *alcalde mayor* (Gerhard 1972:70, 93, 1986:214; Gibson 1964:27, 43, 422). Thus, the post-

https://doi.org/10.1017/S0956536101121073 Published online by Cambridge University Press

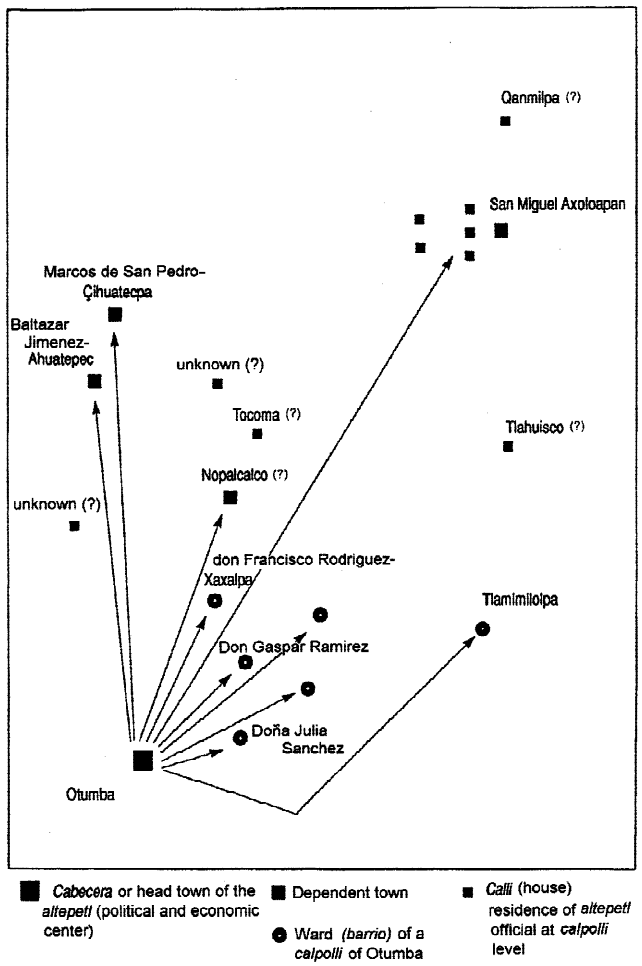


Figure 10. Plan of *altepetl* sociopolitical and territorial organization, according to the *Mapa de Otumba.*

Conquest sociopolitical-reorganization process described by Lockhart can be applied to the *altepetl* of Otumba. From the pre-Conquest *altepetl*, Otumba became, in post-Conquest times, a Spanish *encomienda*, then a *corregimiento*, without losing its ancient sociopolitical status.

Considering Otumba as the head town of the *altepetl* of the same name, I propose that the city became a *cabecera* in post-Conquest times (Archivo General de la Nación 1603:Folios 30v–x–34v; Chávez Orozco 1934; *Códice Franciscano* 1941 [1570]:12; Gibson 1964:60–61, 103, 106–107, 437; Paso y Troncoso 1905:82–83). In 1570 and in 1603, Otumba is mentioned as a *cabecera*. Thus, Otumba was the head town of the *altepetl* and became the *cabecera* of the Spanish territorial entity probably in 1531, when a *corregimiento* was created on its lands. Its importance as a pre-Hispanic sociopolitical center allowed Otumba to rise to this rank in the Colonial-period political and administrative hierarchy. The institution of the Spanish *cabecera* became fundamental for Colonial-period sociopolitical and economic organization (Gibson 1964:33).

Nineteen civil buildings are represented on the map (Figures 2, 4 and 6). Five are associated with a descriptive locator or a toponym transliterated in Nahuatl: Quanmilpa (B1), Tocoma (I1), Tlahuisco (K2), Nopalcalco (M1), and Tlamimilolpa (P1). Ten other buildings have Spanish names (C4, E1–E5, F1, O1, O3, O5), which almost certainly are the names of the buildings' owners. Two of these buildings are associated with a Nahuatl descriptive locator: Cihuatecpa- Marcos de San Pedro (C4) and don Francisco Rodriguez-Xaxalpa (O1). The last four buildings have no additional description (L1, G1, O2, O4).

The representations of these buildings adhere closely to pre-Hispanic architectural style. Elevations were from the side or front, depending on the element being depicted. Donald Robertson (1959:86) refers to the frontal view of the building on a small platform with only one upright and the lintel visible as a "T" elevation. The *calli* (house) sign is represented by a variant. Mena (1923:55) interprets these buildings as religious, identifying them as *teocalli* (sacred structures). Caso (1979:1–6) suggests that these were houses (*casas*) with names associated with their owners. Glass (1964:128) concurs, proposing that they are small houses represented by using a variation of the *calli* sign.

Although the majority of the 19 buildings show a base constructed of many layers—expected in the case of temples (truncated pyramids), which, in the pre-Hispanic style, are characterized by four principal elements: the base, the platforms, the slope, and the stairs (Galarza 1982:39–41)—they correspond to house representations (*calli*) in the *altiplano*. The house is a flat roof supported by wooden beams, with an entrance between two wooden uprights and under a lintel supported by the door posts. Such houses are represented in a combined lateral and frontal view in the *Codex Mendoza*.

The association of Spanish names (possibly the names of the owners) with 10 of the buildings also supports such an identification. The use of pre-Hispanic architectural glyphs continued during the sixteenth century, especially in areas peripheral to Mexico City and other centers where the conquerors and the colonists were concentrated. Pre-Hispanic-style vernacular architecture survived at Otumba and other peripheral regions for centuries (Galarza, personal communication 1994).

A comparison of the sizes of the building representations reveals hardly any difference among them (Figure 6), with a total range in height of 1 cm (O1) to 2.5 cm (O2). Eleven such buildings measure between 1.5 cm and 1.8 cm (B1, I1, M1, P1, E1-E5, L1, G1), and four measure about 2 cm in height (F1, O3–O5). In the case of houses this small, variation in size does not seem significant. It is not possible to define a hierarchy according to size among the houses, and had the *tlacuilo* wanted to do so, he would have accentuated the differences in size among the buildings, as he did for the religious buildings. For those buildings, a hierarchy can be delineated (see the discussion of Christian religious organization later in this article).

An examination of building placement brings forth several important observations (Figures 2 and 4). First, two groups of structures (E1–E5, O1–O5) are associated with a church and a territorial entity (maybe a *calpolli*) delimited by internal divisions (black lines) on the map. Second, two other houses (I1, K2) are each probably associated with a religious building. Third, of the seven remaining houses, two are isolated and associated with a Nahuatl descriptive locator, Quanmilpa (B1) and Tlamimilolpa (P1), whereas all of the five remaining structures can be linked to one of two churches, forming two groups: houses (C4, F1, and L1) with church (F3), and houses (G1, M1) probably with church (I1). Upon initial examination, the houses (*calli*) shown on the map, depending on their locations and whether they isolated or in a group, appear to be associated with a church (some near; others

https://doi.org/10.1017/S0956536101121073 Published online by Cambridge University Press

farther away) and, perhaps, also with a territorial entity (*tlaxilacalli*, *calpolli*, or *barrio*).

Having established the sociopolitical status of Otumba, I will now evaluate the status of the 19 civil buildings represented on the map within that context. An *altepetl* was subdivided into territorial units called *calpolli* or *tlaxilacalli*. Each such subdistrict was divided into wardlike entities, each comprising approximately 10 households. In the early Colonial period, the Spanish *cabecera–sujeto* organization was adapted to the *altepetl* present during the Aztec period (Gibson 1964:34; Lockhart 1992:12–20). The head town or principal center of an *altepetl* was called the *cabecera*, and all its entities were called, without consideration of importance, *sujetos*. The term *sujeto*, or subject (of an *altepetl*), was inappropriately applied by the Spaniards, as the *altepetl* was divided into numerous ranked territorial units.

Several ethnohistorical sources provide information about the number and names of dependencies (*sujetos*) of the *cabecera* of Otumba. According to Gibson (1964:437), Otumba had six dependencies; the *Códice Franciscano* (1941 [1570]:12) states that it had 20. The latter document gives no names; it also states that Axapusco had one dependency (Zaguala) and that Oxtoticpac had three. Axapusco and Oxtoticpac, dependencies of Otumba, had a complex and distinctive status. According to Gibson (1964:437), the *Códice Franciscano* (1941 [1570]:12), and the *Descripción del Arzobispado de México* (Paso y Troncoso 1905:82–83), Axapusco and Oxtoticpac were *sujetos* of Otumba, although from the start of the Colonial period their *sujeto* status was contested (Gibson 1964:43). It would seem that Axapusco was a civil and religious dependency until 1565, and Oxtoticpac was a civil and religious dependency until 1570. By 1545, Oxtoticpac had its own *corregidor*. However, in the 1550s the *corregidor* of Otumba was in charge of Axapusco and Oxtoticpac. From the 1570s, both became *cabeceras*. Moreover, it appears that from this time on, Axapusco and Oxtoticpac were no longer civil dependencies of Otumba, although they continued to be religious dependencies (*visitas*) of the church of the Otumba monastery. According to Gerhard (1986:214), in the 1530s, Axapusco and Oxtoticpac were separated from the *cabecera* of Otumba and became individual *encomiendas*. Axapusco maintained this status until 1603, when it was placed under Crown authority. By contrast, the *encomienda* of Oxtoticpac survived until the 1680s; in 1688, some parts of its territory reverted to the Crown.

According to the *Códice Franciscano* of 1570, Otumba possessed 26 *sujetos*; according to the census of the *Arzobispado de México* of 1571 (Paso y Troncoso 1905:82–83), Otumba had 29 dependencies, nine of which had Nahuatl names; and according to the *Congregación* orders of 1603 (Archivo General de la Nación 1603:Folios 30v–34v; Chávez Orozco 1934), 60 place names are found in the Otumba region. The *Congregación* orders of 1603 establish four congregations: Otumba (I), Cuauhtlazinco-Oxtoticpac (II), Axapusco-Tlamapa (III), and Ahuatepec-Titzayuca (IV). Of the 12 dependencies of Otumba, only one appears on the map: San Gabriel Tepolican (H2). Other toponyms represented on the map are included with the three other congregations.

Table 2 lists the 19 civil buildings on the map, together with their toponyms, and correlates them with ethnohistorical and geographical sources. Six place names can be identified in the sources cited. Fourteen of the 19 houses are associated with six place names. There is one house each for Cihuatecpa (C4), Ahuatepec (F1), Nopalcalco (M1), and Tlamimilolpa (P1); five houses for San Miguel Axoloapan (E1–E5); four houses (O2–O5) for Otumba (R1), and perhaps a fifth (O1) associated with a descriptive locator (Xaxalpa) very close to Otumba. Three other place names—Quanmilpa (B1), Tocoma (I1), and Tlahuisco (K2)—are each associated with a building, but none of these could be identified with a toponym in the sources. Two isolated buildings (G1 and L1) lack a place association and could not be identified.

One question to be addressed is the possibility that these structures present sociopolitical and economic information instead of simply representing habitations. The *calli* (house) signs sometimes indicate economic organization in a pre-Hispanic-style codex. According to Galarza (1982:40), in Nahuatl manuscripts such as the *Codex Mendoza* (Part 2) and the *Matrícula de Tributos* (1980), whose contents are essentially economic, the *tlacuilo* provided information on the geographical distribution of certain civil servants who collected tributes. Their presence was indicated by a glyph that transcribed phonetically the first syllable of the title in Nahuatl: *calpixqui*, from *calli* (house) and *-pixqui* (guard). One finds this placed next to a place-name glyph, and it indicates the presence of the civil servant *calpixqui* or tax collector in the village.

In the *Mapa de Otumba*, the *calli* signs are associated with Nahuatl toponyms or descriptive locators or with names of people in Spanish, in Roman script (Figure 10). The traditional glyphic character of these names has disappeared. The structures associated with these personages interest us because the people could be the *calpixque*.

Personal names are present in five different communities. Each name is associated with a *calli* sign: one at Cihuatecpa (C4); five at San Miguel Axoloapan (E1–E5); one close to Ahuatepec (F1); one at Xaxalpa, close to Otumba (O1); and two at Otumba (O3, O5). However, the presence of several identified people at Otumba and at San Miguel Axoloapan is perplexing, because only a single *calpixqui* usually would reside in a town. Nevertheless, these two settlements were large centers, and it is thus possible that there was a tax collector in each neighborhood. The *Congregaciónes* undertaken by the Spanish from the start of the Colonial period resulted in small native communities' being relocated within or adjacent to larger centers. The other *calli* signs—those not accompanied by the people's names—could be simple residences (Table 3).

However, I am not convinced that all the *calli* signs with personal names represented *calpixque*. It is possible that some *calli* represented the houses of the *calpolli* leaders, while the others were residences of the ward leaders, who, like the *calpixque*, were responsible for land allocation and tax collection. Another possibility is that some *calli* were not the houses of the ward leaders but, rather, residences of the *tepixque*, a minor supervisory official of an *altepetl* at the *calpolli* level (Lockhart 1992:610).

In addition to the toponymic and distributional data, the various black lines on the map may have served to delineate territorially based sociopolitical units derived from Otumba's pre-Hispanic *altepetl* organization.

The document is divided by horizontal and vertical black lines into eight parts (A–H) (Figure 2). Of the eight units so defined, four (A, C, D, E) include an important church and several civil structures (Figures 2, 3, and 6). These are the churches of San Martín Teocalli (A), San Miguel Axoloapan (C), San Juan Chi (D), and Santa María Concepción de Otumba (E). Unit D also incorporates a more modest place of worship, San Gabriel Tepoliuhca. Units F and G have important churches (San Lorenzo Teshianco and San Salvador Quauhtlazinco) but lack representations of houses. The seventh territorial unit (B) is composed only of a civil building associated with Quanmilpa (B1), while the last (H) is empty.

https://doi.org/10.1017/S0956536101121073 Published online by Cambridge University Press

Table 3. Religious structures and their names

Mapa de Otumba		Ethnohistoric and Geographic Sources				
Number of Religious Structures	Place	*Códice Franciscano 1570* (after J. García Icazbalceta 1941:12)	P.N.E., *Descripción del Arzobispado de México 1571* (from Paso y Troncoso 1905a:82–83)	*Congregación 1603* (after Chávez Orozco 1934; AGN 1603:I:exp. 48, Folios 30v–34v)	Charlton (1979:22, Figure 1)	Charlton (1991b: 228–229 Figure 10.2)
1 (T1)	St Salvador *Quauhtlazinco*		Sant Salvador *(Cuauhtlantzinco)*	San Salvador *Cuauhtlacingo* (II)		San Salvador *Cuauhtlacingo*
1 (E7)	San Miguel *Axoloapan*			San Miguel *Axoloapan* (IV)	*Axoloapan*	San Miguel *Axoloapan*
1 (Q1)	St. Lorenzo		Sant Lorenço	San Lorenco *Teshianco* (II)	*Teshianco*	San Lorenzo
1 (F3)	San Martin *Teocalli*		Sant Martyn	San Martin *Aguatepeque* (IV) (?)		
1 (H1)	San Ju o *Chi*		San Joan	San Juan *Loquiap* (I) (?)	*Chi*	
1 (H2)	San Grauiel *Tepoliuhca*			San Gabriel *Tepolican* (I)	*Tepolican*	
1 (I1)	*Tocoma*					
1 (J1)	*Tezcatzinco*					
1 (K1)	*Tlahuisco*					
1 (Q2)	*Otumba Tepampa*					
2 (R1, R2)	*Otumba* (Santa María Concepción church and San Francisco chapel)		*Otumba* (Concepción de Nuestra Señora)	*Otumba*	*Otumba*	Sta María Concepción *Otumba*
1	Unknown	*Otumba*				

The boundaries may be arbitrary, but in some cases they may be linked to natural elements, such as hills and rivers (Figures 2 and 5, Table 4). I propose that these units represent the smaller territorial units within the *altepetl* of Otumba called *calpolli*. Each unit in principle was composed of a territory with at least one main religious building and one important civil structure. The religious or civil building might be absent if a bounded unit had a strong connection with an immediate neighbor. Of the eight territorial units on the map, six have churches, and four have several civil buildings. The two other units—B, with only one house, and H, with no structures (Figure 2, Table 4)—are exceptions. Their relative lack of structures could be explained by their peripheral location on the document.They may be depicted only partially, with their civil and religious structures lying outside the area covered by the map. It is also possible that the *calli* sign in Unit B indicates a linkage to the neighboring territory of San Miguel Axoloapan (C). Units F and G each have only a church, and their civil structures might also have been located outside the limits of the area depicted on the map, as these two units are two narrow bands bordering the edge (Figure 2).

With the sole exceptions of Units B and H, the data suggest a territorial structure that corresponds closely to that known for a *calpolli* . Six of eight the units (A, C, D, E, F, G) could represent *calpolli* of the *altepetl* of Otumba. According to other documents, San Martín Teocalli (A), San Miguel Axoloapan (C), San Juan Chi (D), San Lorenzo (F), and San Salvador Quauhtlazinco (G), at least, were civil or religious dependencies (*sujetos*) of Otumba. Two are clearly marked as being linked with Otumba. The annotation of San Miguel Axoloapan (E7) is accompanied by a Nahuatl word: *Otumpatlali* (see Table 1), which indicates a dependency of Otumba. The territory of San Lorenzo (F) includes an important church and a small chapel, which is associated with the term *Otumba tenanpa* (see Table 1), also suggesting a close connection with Otumba.

It is difficult, if not impossible, to identify the names on the document with officeholders in the *altepetl* and its subdivisions without other documentary data. Although the Nahuatl *tlatoani* and the Spanish *corregidor* (Figures 2 and 4) were located at Otumba, it is not possible to identify don Francisco Rodriguez and don Gaspar Ramires, owners of the *calli* O1 and O3, with the

https://doi.org/10.1017/S0956536101121073 Published online by Cambridge University Press

Table 4. Territorial units or *calpolli* and their elements (civil and religious)

Territorial Units in the *Mapa de Otumba*		Religious Structures			Civil Structures		
Entities	Principal Place	Number	Names of Structures	Place	Number	Names of Owners	Place
A	San Martín *Teocalli*	2	San Martín *Teocalli* (F3)	Near *Ahuatepec* (F2) (?)	6	?	*Çihuatecpa* (C4)
			?	*Tocoma* (I1)		Baltazar Ximenes (F1)	Near *Ahuatepec (?)*
						?	(L1)?
						?	(G1)?
						?	*Tocoma* (I2)
						?	*Nopalcalco* (M1)
B	*Quanmilpa*		?	?	1	?	*Quanmilpa* (B1)
C	San Miguel *Axoloapan*	2 or 3	San Miguel	*Axoloapan* (E7)	5	Sacarias de San Miguel	*Axoloapan* (E1)
			?	*Tezcatzinco* (J1)		Francisco de la Cruz	*Axoloapan* (E2)
			?	?		Gaspar Titico	*Axoloapan* (E3)
						Don Lorenzo	*Axoloapan* (E4)
						Don Matheo de Santiago	*Axoloapan* (E5)
D	San Juan *Chi*	3	San Juan	*Chi* (H1)	2	?	*Tlahuisco* (K1)
			San Graukiel	*Tepoliuhca* (H2)		?	*Tlamimilolpa* (P1)
				T!ahiusco (K1)			
E	Santa María Concepción de *Otumba*	2	Santa María Concepción	*Otumba* (R1)	5	Don Francisco Rodriguez	*Xaxalpa* (O1)
			San Francisco	*Otumba* (R2)			*Otumba* (O2)
						Don Gaspar Ramires	*Otumba* (O3)
							Otumba (O4)
						Doña Julia Sanches	*Otumba* (O5)
F	San Lorenzo	2	San Lorenzo	*(Teshianco)* (Q1)			
			?	*Otumba Tepampa* (Q2)			
G	San Salvador *Quauhtlazinco*	1	San Salvador	*Quauhtlazinco* (T1)			
H	unoccupied						

holders of those positions. Doña Julia Sanches, owner of *calli* O5, is even more of an enigma. Although she could be a Nahua noblewoman with *calpolli* or *altepetl* responsibilities, the term *doña* was not used frequently among Nahuas (Lockhart 1992:125–126). Doña Julia Sanches might even be a Spanishwoman at Otumba. Some *calpolli*, such as A, C, and D, were definitely subdistricts of the Otumba *altepetl*. Because they have few civil or religious buildings (B, one *calli*; F and G, sanctuaries; see Figures 2 and 4), Units B, F, and G are problematic and not included further in this discussion.

Unit C is spatially linked to the *calpolli* of Otumba (E). All of the *calli* signs are concentrated near the church. The *calpolli* A and D, however, seem to be more rural than urban because their houses are widespread through the territorial units (Figures 2 and 4). Each of the five *calli* signs in Unit C is connected to the name of its owner. All the owners have Spanish names, but only two carry the honorific "don": don Lorenzo (E4) and don Matheo de Santiago (E5). Although it is tempting to identify these men as holding *calpolli* or *altepetl* leadership positions, that cannot be supported without additional data. This is also true for the remaining owners: Zacarias de San Miguel (E1), Francisco de la Cruz (E2), and Gaspar Titico (E3).

The structure of *calpolli* A is peculiar (Figures 2 and 4). Only two of the six *calli* (house) signs have associated Spanish names: Baltasar Jimenes (F1) and Marcos de San Pedro (C4). The buildings L1 and G1 lack Nahuatl place names and Spanish names of owners and cannot be identified. Two other *calli* signs are Nahuatl glosses that could suggest special functions and craft activities. The building M1, associated with the word *Nopalcalco* ("house where the Nopalli are stored"; see Table 2), would represent a storage building linked to some harvest activities. The association of building I2 with craft activities depends on my reinterpretation of the gloss *Tocoma* or *Ticoma* as *Tecoma*. I propose that the association of *Tecoma(tl)* (indigenous jar, deep cup of various materials for beverages) denotes a house where eating utensils were kept or a place where such items were produced.

The Nahuatl word *Cihuatecpa* (C4), associated with the *calli* of Marcos de San Pedro, is interesting as it could signify "woman's palace." It would indicate that the house of Marcos de San Pedro was built near, or on, a pre-Conquest building where a noblewoman (*cihuapilli*) was based. She may have been a local women's leader or *cihuatepixqui* (female person in charge of people), a lower-level female official charged with keeping order among the women of a certain group and having special responsibility for organizing or regulating women's activities (Lockhart 1992:44, 608).

The territorial Unit D was probably a *calpolli* of the Otumba *altepetl*. The two *calli* signs are associated with two Nahuatl place

https://doi.org/10.1017/S0956536101121073 Published online by Cambridge University Press

names: Tlahuisco (K2) and Tlamimilolpa (P1). Tlamimilolpa was and still is a *barrio* of Otumba (T. Charlton, personal communication 2000).

Christian Religious Organization

According to several scholars (Cline 1972:27; Gibson 1964:101–102, 120; Lockhart 1992:206–210; Sanders et al. 1970:392–393), the creation of parishes began as early as the 1520s, with the assignment of most portions of the Nahua-occupied territories to an eclesiastical jurisdiction by the 1540s.

Despite numerous variations, parish functions were usually included in the early *encomiendas* and based on a single pre-Conquest *altepetl*. The original parishes were under the control of one of three monastic orders: Franciscan, Dominican, or Augustinian. Otumba was under the Franciscans. The friars tended to run the parishes autonomously as organizations that were separate administratively from both the *encomienda* and the *altepetl*. The monastery churches were often built near the old, main *altepetl* temple, sometimes on the same site (Charlton 1973:16–26). Because one church, however large, was not enough to serve an entire *altepetl* district, secondary churches or chapels without resident priests, but visited regularly by clergy from the main church, were soon created (as *visitas*). Lockhart (1992:532–533, Note 5) is not sure when the term *"visita"* came to be applied to the town or church rather than to the ecclesiastical tour, its original meaning.

The process of parish formation (Lockhart 1992) can be applied clearly to the case of Otumba. As noted earlier, Otumba was the head town (*cabecera*) of an *altepetl*, an *encomienda* until 1528, and a *corregimiento* from 1531 to 1640. Because the first Franciscan residence at Otumba dates between 1524 and 1527, it is evident that the friars created an Indian parish (*doctrina*) based on an existing *altepetl* and *encomienda*. The monastery church of Santa María Concepción became the clerical residence of the parish. The secondary churches (*visitas*) were erected in the various subdistricts (*calpolli*) of the *altepetl*.

According to the *Códice Franciscano* (1941 [1570]:12), Otumba, elevated to the rank of *doctrina*, had 20 dependencies or *iglezuelas*; Axapusco had one (Zaguala); and Oxtoticpac had three. Axapusco and Oxtoticpac each had one parish church, but these churches were considered dependent on the principal parish church of Otumba.

The map of Otumba depicts 13 religious structures distributed throughout the area and separated from one another (Figures 2–4). Four of these are associated with toponyms or descriptive locators in Nahuatl transliterated into Roman script: *Tocoma* (5) (I1), *Tezcatzinco* (6) (J1), *Tlahuisco* (7) (K1), and *Otumba tepampa* (9) (Q2). Eight buildings bear the name of saints associated with a Nahuatl toponym (1 [E7], 2 [F3], 3 [H1], 4 [H2], 8 [Q1], 10 [R1], 11 [R2], 12 [T1]), while the last building (N1) lacks an annotation. One descriptive locator, *San Martín teocalli*, confirms that churches were often constructed on or near Aztec temples. *Teocalli* (temple) comes from *teotl* (god, deity, divinity, holy thing) and *calli* (house, building).

All of these structures conform to the depictions of Spanish religious architectural style in New Spain (Figure 3). The principal structures (1, 2, 8, 10, 12) are represented as a rectangular facade placed on a square and surmounted by a bell tower and a cross (1, 8, 12). In general, the bell is visible in an open housing. This type of bell tower resembles a belfrey wall or an *espadaña* (Galarza 1982:59) used in the earliest European religious architecture in New Spain. On the map, the *espadañas* are depicted as rounded on the top. The other buildings (3, 9, 11, 13) are generally represented by a small square surmounted by a cross. It is possible that they represent places of open-air worship or are land-boundary markers (see later). The traditional representation of religious sanctuaries (truncated pyramidal base topped by a pre-Columbian temple seen in profile) was no longer used, and thus the *tlacuilo* has documented the change in religion. A small religious structure, called San Francisco (11 [R2], 12 [T1]), is linked to the church of Santa María Concepción de Otumba. Although this may be an "open-chapel," which Robert Ricard (1933:200) describes as small and located under the same portico as the Franciscan convent of Otumba, it is more likely the present-day chapel with an original sixteenth-century facade located in the cemetery to the south (T. Charlton, personal communication 1999).

According to several sources, the church of Santa María Concepción de Otumba and the other religious buildings present on this map belonged to the Franciscan order (Charlton 1980:204; *Códice Franciscano* 1941 [1570]:12; Gibson 1964:103, 106–107; Gillet 1929:1033; Mendieta et al. 1947:184; Motolinia 1985: II:c.1:221–222; Diccionario Porrúa 1986:2162; Ricard 1933:81–82, 84, 95, 176, 210; Romero de Terreros 1925:140; Vetancurt 1971 [1697–1698], IV, t.5:119–120). The Franciscans evangelized the region of Otumba after 1524 (Diccionario Porrúa 1986:2162) and completed the construction of their first residence at Otumba in 1527. Four or five friars, including a lay brother (perhaps a native), lived in the Franciscan monastery in the 1560s (*Códice Franciscano* 1941 [1570]:12; Gibson 1964:103; López de Velasco 1894:193; Paso y Troncoso 1905a:82).

A comparison of the size or dimensions of the religious buildings as depicted on the map (Figure 3) shows considerable variation. I propose that the differences in the sizes of the sanctuaries do not result from chance but from the desire of the *tlacuilo* to show the relative importance of each sanctuary. The largest of these is the church of Santa María Concepción de Otumba, whose depiction is 11 cm in height, underlining the church's importance within the religious organization shown on the map. There are four midsize churches (1, 2, 8, 12); they are two to two-and-a-half times smaller than the principal church. These four churches are also situated on parts of the map aligned with the principal church: At the lower right is San Salvador Quauhtlazinco (T1), which is 4.6 cm in height; at the center right is San Lorenzo (Q1), which is 4.8 cm in height; at the upper right is San Miguel Axoloapa (E7), which is 6.2 cm in height; and at the center left is San Martín Teocalli (F3), which is 5.4 cm in height. The remaining eight buildings (3–7, 9, 11, 13) are two to two-and-a-half times smaller than the four preceding structures and are clustered at the center of the map. Their dimensions in height are: 1.7 cm (H1); 1.9 cm (N1); 2 cm (I1); 2.1 cm (K1); 2.2 cm (Q2); 2.4 cm (J1); and 2.5 cm (H2).

Based on these dimensions and locations, a hierarchy of religious buildings appears very clear at first glance. The church of Santa María Concepción de Otumba dominates the four medium-sized sanctuaries and those still smaller. This idea is confirmed through an examination of the process of parish creation in indigenous Nahua areas. Based on the process of creating parishes in New Spain during the sixteenth century, and the hierarchical perspective indicated by the size of the churches, the religious structures on the *Mapa de Otumba* would seem to be related to the administrative and hierarchical organization of the church in the Otumba region. The monastery church of Santa María Con-

https://doi.org/10.1017/S0956536101121073 Published online by Cambridge University Press

cepción de Otumba was the religious center of this region, and its influence extended to the 11 *visitas* distributed across the map.

Were these 11 structures all *visitas* of Otumba? In order to address this question, I compiled a table comparing the *visitas* cited in different religious and civil ethnohistorical sources (Table 3). Three of the four midsize churches—San Martín Teocalli (F3), San Lorenzo (Q1), and San Salvador Quauhtlazinco (T1)—have counterparts in the 1571 and 1603 documents. In the 1603 document, the indigenous names of San Lorenzo and San Martín are Teshianco and Aguatepeque (Ahuatepec). San Lorenzo is also present on the three maps by Charlton (1969, 1979 [1400–1650], 1991 [1750–1800]) covering the periods 1400–1650 and 1750–1800. San Salvador is present on the 1991 map. The fourth church, San Miguel Axoloapan (E7), is cited in the 1603 document and on the three Charlton maps. Two smaller religious buildings are also present in the sources: San Juan Chi (H1), cited on the list of 1571 and on one of Charlton's maps (1979), and San Gabriel Tepoliuhca (H2), which appears in the 1603 document and on two of Charlton's maps (1969, 1979). The five other structures are not mentioned.

According to Galarza (personal communication 1994), these latter structures (small squares surmounted by a cross) could represent land-boundary markers (*moxoneras*), not Catholic church sanctuaries. First, these buildings are not included as churches or chapels in religious and geographical sources. Moreover, they are associated only with Nahuatl toponyms. In addition to an Aztec name, the others are designed by names of Catholic saints. Second, their form (a small square surmounted by a cross) and the absence of a representation of a door within the square appears to indicate that they do not represent actual buildings. However, this description does not exclude the religious structure of San Gabriel Tepoliuhca (H2), whose architectural form is very similar to that of the five small structures, with the exception of a small triangle (a roof?) that raises the cross above the top of the square. Although this construction is situated 1 km, more or less, from the small church of San Juan Chi (H1) (Charlton 1979:22, Figure 1), it is mentioned in the sources as a church and bears the name of a saint associated with a Nahuatl toponym. The 11 religious edifices thus would not be all *visitas* of the monastery church of Otumba. Only the four midsize churches (San Salvador, San Miguel, San Lorenzo, San Martín); the small church of San Juan Chi; and perhaps the church of San Gabriel Tepoliuhca would be *visitas* of the principal church of the monastery of Otumba (Figure 11). The five other structures would then represent land-boundary markers (*moxoneras*) or open chapels or platforms used as places of worship and maybe for rural processions (Kubler 1948:314–341; Lockhart 1992:420; and McAndrew 1964:Chapter 6).

Thus, the religious organization depicted on the *Mapa de Otumba* appears to be clear. The church of Santa María Concepción (R1) and the chapel of San Francisco (R2) formed the Franciscan monastery complex of Otumba, built at the headquarters of the homonymous *altepetl*. Because the monastery-church complex was not large enough to serve the entire *altepetl* district of Otumba, secondary churches or chapels (*visitas*) were erected in the various *calpolli* (subdistricts of the *altepetl*). These are represented on the map by the four midsize churches (E7, F3, Q1, T1) and by the small church of San Juan Chi (H1), one for each *calpolli* (A, C, D, F, G). The small buildings then would represent small open chapels or open-air platforms for worship. According toGalarza (personal communication 1994), some open-air places of worship, like those represented on the *Mapa de Otumba*, are found in the region of Tultitlan in the State of Mexico.

SUMMARY AND CONCLUSIONS

The *Mapa de Otumba* (Figure 2) presents aspects of sociopolitical, religious, legal, and territorial organization in the early Colonial period. The geographical contents delimit the region and locate its boundaries by depicting the hydrography and traditional topography (toponymic glyphs and toponyms) of the area of interest. The document depicts a restricted area of approximately 64 km^2 within the present-day State of Mexico southeast of Otumba. The distances among the sites represented on the map are not actual or absolute. The topographical elements of the document were drawn according to the orientation and scale of relative distances, based not on a knowledge of native cartography but on the needs of the picture-writing practiced by the traditional *tlacuilo*.

Once I established the geographical focus of the account, I examined three thematic issues: sociopolitical, territorial, and religious organization. I conclude that the map represents the territory of the *altepetl* of Otumba during the third quarter of the sixteenth century and, probably, most of the area included in the Spanish *corregimiento*. The eight territorial units (A–H)—and six of them (A–G), in particular—could be subdistricts of the *altepetl* that are better known as *calpolli* or *tlaxilacalli*. The distribution of the civil and religious structures on the document, along with the horizontal and vertical black lines that divide the document into

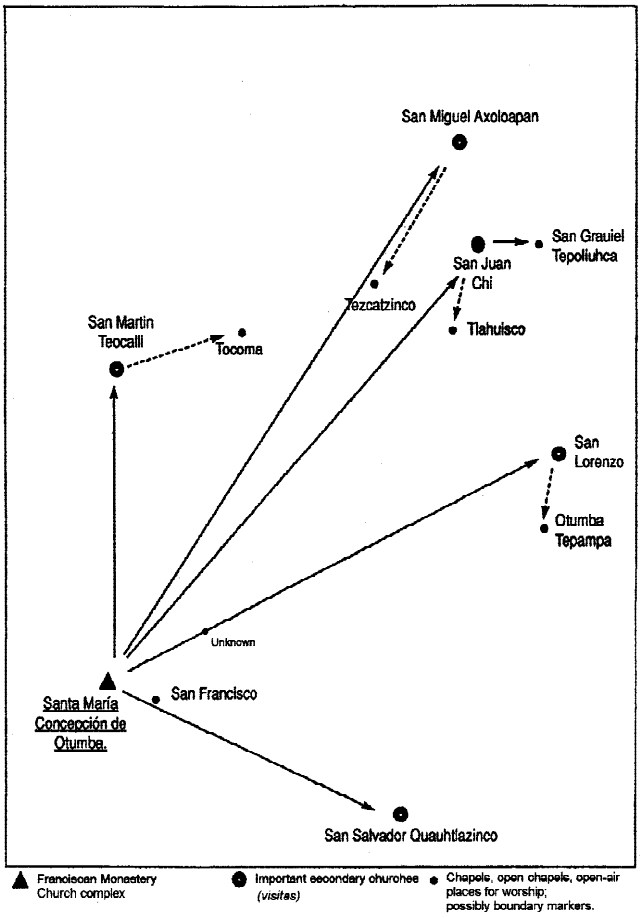


Figure 11. Proposed plan demonstrating the religious organization of the parish of Otumba as depicted on the *Mapa de Otumba*, including possible hierarchical relations among the Catholic sanctuaries.

https://doi.org/10.1017/S0956536101121073 Published online by Cambridge University Press

Table 5. Descriptive locaters and/or toponyms; classification and meaning in alphabetical order

Place Names	Location on the Map	Proposed Translation(s)	Syllabic Elements	Sources
Ahuatepec	F2	On the hill's oak(s)	*ahua(tl)* = oak (poss. from * *a(tl)* + *huâ* [poss. suffix]) *-tepe(tl)* = hill *-c(o)* = on	Siméon (1963), p. 38 (s.v. *Auatl*)
Alhuexoyo (can)	C1	Place filled with river willows	*a(tl)* = water + *-huexo(tl)* = willow *-ahuexo(tl)* = river willow *alhueoxoyo* = the ensemble of river willows *-can* = place (place suffix)	Siméon, p. 40 (s.v. *Auexotl*)
Axoloapa (San Miguel)	E7	At the place of the salamander; on the salamander's river	*axolo(tl)* = salamander + *-a(tl)* = water *-pa(n)* = on, at	Siméon, p. 44 (s.v. *axolotl*)
Çihuatecpa(n)	C4	Woman-palace	*cihua(tl)* = woman, female *-tecpan* = palace	Siméon, p. 100, 401 (s.vv. *ciuatl*, *tecpan*)
Çontolo (Çottola)	A2	Place filled with palm trees	*çotol(in)* = palm tree *-(t)la* = full of, covered with	Siméon, p. 113 (s.v. *çotolin*)
Nopalcalco	M1	House where the Nopalli [fruits] are stored	*nopal(li)* = nopal, prickly pear *-cal(li)* = house *-co* = on or in (locative suffix)	Siméon, p. 38 (s.v. *Auatl*)
Otumba (Otomi–pan)	R1	Toward where the Otomi are	*Otom(itl)* = Otomi *-pa(n)* = toward, among	Siméon, p. 325 (s.v. *Otompan*)
Otumba Tepanpa	Q2	Near/at the walls of Otumba	*Otompa(n)* = Otumba *tepan(tli)* = wall *-pa(n)* = near (by), at, close (to)	Siméon, p. 325, 442 (s.v. *Otompan*, *tepantli*)
Otumpatlali (San Miguel Axoloapa)	E7	Otumba land; property of Otumba	*Otompa(n)* = Otumba *-tla(l)li* = land, property, dependency	Siméon, p. 325 (s.v. *Otompan*)
Posuhtecali or *Pinaztecatl* (maybe Pocho-te-calli)	A1	At the governor's stone house	*pocho(tl)* = big and nice tree whose roots were used as febrifuge (to reduce fever) *pocho(tl)* (fig. = (father, mother, leader, governor *-te(tl)* = stone(s) + *-calli* = house	Siméon, p. 346 (s.v. *pochotl*)
Quanmilpa or *Quaninilpa*	B1	In the countryside of the trees	*quau(itl)* = trees + *-mil(pa)* = countryside *-pa(n)* = at, on	Siméon, p. 245, 372 (s.v. *milli*, *quauitl*)
Quauhtlazinco (San Salvador)	T1	The little thicket or woods	*quau(itl)* = wood, thicket, copse, grove *-tzin(tli)-co* = diminutive suffix + locative suffix	Siméon, p. 368 (s.v. *quauhtla*)
Taquautemalco or *Tecuauhtemalco* (maybe Te-quau-temal-co)	C2	At the stony place where the pile of wood is	*te(tl)* = stone(s) *-quau(itl)* = trees, wood *-temal(li)* = *-co* = locative	Siméon, p. 367 (s.v. *quauhtemalli*)
Teocalli (San Martín)	F3	The god house; the temple	*teo(tl)* = god, deity, divinity, holy thing *-calli* = house	Siméon, p. 433 (s.v. *teocalli*)
Tepan	E6	On the sone	*te(tl)* = stone + -pan = on	Siméon, p. 467 (s.v. *tetl*)
Tepoliuhca	H2	The place where the stones are destroyed	*te(tl)* = sone *-poliu(i)* = to destroy *-co* = locative suffix	Siméon, p. 348 (s.v. *poliui*)
Tezcatzinco	J1	The place of the small mirror	*tezcat(l)* = mirror *-tzin* = diminutive suffix *-co* = locative suffix	Siméon, p. 490 (s.v. *tezcatl*)
Ticoma or *Tocoma* (maybe Te-coma(c))	I1	The place where the terracota ware is; house where the dinnerware is; the place where the "tecomatl" trees are	*tecoma(tl)* = indigenous jars *tecoma(tl)* = tree whose calabashes were used as bowls *-c(o)* = locative suffix	Siméon, p. 400 (s.vv. *tecomatl*)
Tlahuisco	K1	At the light (East); at the weapons (armory?)	*tlahuiz* = light, dawn, daybreak *tlahuiz(tli)* = weapons, banners *-co* = locative suffix	Siméon p. 630 (s.v. *tlahuiztli*)
Tlamimilolpa	P1	On the mound or hillock; on the high and difficult place (to reach?)	*tlamimilol(li)* = mound, hillock, increased, high, difficult *-pa(n)* = on	Siméon, p. 555 (s.v. *tlamimilolli*)
Tlaquiltenanco	W1	Place of the dam; place of the plastered wall	*tlaquil(li)* = roughcast, plaster, sculptured *-tenam(itl)* = wall *-co* = locative suffix	Siméon, p. 586 (s.v. *tlaquiltenanco*)

(continued)

https://doi.org/10.1017/S0956536101121073 Published online by Cambridge University Press

Table 5. Continued

Place Names	Location on the Map	Proposed Translation(s)	Syllabic Elements	Sources
Tlatenanco Xocoyoltepec	D1	At the edge of something; place surrounded by walls Place of the wild sorrel	*tlatenan(tilli)-co* = surrounded by walls + *-co* = locative suffix *xo(tl)* = foot + *-coyol(li)* = little spherical bell *xocoyol(li)* = wild sorrel *-tepe(tl)* = hill *-co* = locative suffix	Siméon, p. 444, 703 (s.v. *tepetl*, *xocoyolli*)
Tlictepec	A3	On the black hill	*tlil(tic)* = black + *-tepe(tl)* = hill *-co* = locative suffix	Simφeon, p. 642 (s.v. *tliltic*)
Xacalco	S1	The place of the hut	*xa(lli)* + *-cal(li)* = *xacalli* = hut, cabin *-co* = locative suffix	Siméon, p. 690 (s.v. *xacalli*)
Xaxalpa	O1	The place of the sand	*xaxal(lo)* = full of sand *-pa(n)* = on	
Xixipetzo	C3	Place filled with the herbs "xipetziuh"	*xipetziuh* = medicinal herb used to cure fractured bones	Siméon, p. 38, 696 (s.v. *xipetziuh*)

eight sections, supports this interpretation. Although it is possible to suggest that some names on the document refer to tax collectors or *calpixqui*, it is not feasible to construct these people's roles within the Early Colonial-period political system (Figure 10).

The religious organization represented on the map is less complex than the sociopolitical organization (Figure 11). The Franciscan monastery complex that includes the church of Santa María Concepción and the chapel of San Franciso represented the top of the religious hierarchy in the area. Smaller churches occurred in sub-*altepetl* units, and in five more distant *calpolli* (A, C, D, F, G) *visitas* were established. Other small buildings (small squares surmounted by a cross) were probably built in *calpolli* A, C, D, and F to augment the churches that already had been erected or to serve as locales for open-air worship during processions in the countryside.

From this study of the *Mapa de Otumba* I have determined two important aspects of post-Conquest cultural change during the third quarter of the sixteenth century. First, the structure of sociopolitical organization was still rooted in the indigenous, pre-Conquest complex *altepetl* but associated with a new and overlaid religious organization directed by members of the Franciscan monastic order. The map clearly demonstrates that the *altepetl* of Otumba survived into post-Conquest times as the basis of the most important institutional forms affecting indigenous life in the countryside.

At the same time, the religious organization shown in the map has lost all traces of a traditional nature, except for the Nahuatl word *teocalli* associated with the church of San Martín. This indicates that Christian religious structures had usurped the religious roles of the pre-Hispanic temple. All of the depictions of religious buildings are of churches or chapels belonging to the Franciscan order and are rendered in a style distinct from that used for civil structures. Obviously, the Spanish completely replaced pre-Hispanic religious structures and organization but worked through a pre-Hispanic sociopolitical organization that they adapted to their needs.

The simple observation that the religious buildings are larger than the civil buildings indicates that they, or their occupants, might have had more important roles. Throughout the sixteenth century, the Otumba region had few Spaniards: The Franciscans, with their monastery complex, and some Spanish officials made up most of the intrusive population. The document might reflect the relative importance of religious functionaries early in the Colonial period or their role and interest in the contents of the document. It is possible that the document defined, through writing and pictographs, the traditional bases of legal rights to the different territorial units of the region and, at the same time, highlighted the importance of the Franciscans centered at the monastery of Otumba but traveling to numerous *visitas* throughout the region.

According to Lockhart (1992:206), the friars considered and conceptualized their parishes as products of their own activities, with little or no recognition of the cross-cutting institutions of the *encomienda* and the *altepetl*—despite the important economic and political roles that the latter institutions played. Thus, the friars' perspective may have dominated the execution of the *Mapa de Otumba*, and it may be reflected in the hierarchical depiction of buildings and the less prominent depiction of the labor and tribute mechanisms used by *altepetl* officials.

RESUMEN

El *Mapa de Otumba*, un documento del siglo XVI (1550–1575), al momento archivado por la Biblioteca Nacional de Antropología e Historia del Museo Nacional de Antropología, México, representa una sección pequeña del *altepetl* de Otompan y sus sucesores administrativos del período colonial temprano la *Parroquia* y el *Corregimiento* de Otumba. No sabemos las circunstancias precisas de la producción del mapa, ni su función original, ni si originalmente había manuscritos asociados con el mapa. Se ejecutan el mapa sobre papel amate, de un tipo prehispánico, y en un estilo de dibujos y escritura colonial por un *tlacuilo* el que conocia bien los cambios después de la conquista dentro de la estructura indígena sociopolítica y religiosa.

Un análisis de los elementos del mapa muestra su localización geográfica y su fechamiento probable. Al mismo tiempo pone en relieve los cambios postconquistas dentro de la organización sociopolítica y religiosa durante los primeros cinquenta años del período colonial temprano.

https://doi.org/10.1017/S0956536101121073 Published online by Cambridge University Press

ACKNOWLEDGMENTS

This article was translated from French by Kate Creskoff, a student at Dartmouth College, and initially edited by Deborah L. Nichols. Thomas H. Charlton reviewed the edited translation and made translation and editing suggestions; he also reviewed the final revised English version of the paper, making additional translation and editing suggestions. The final text was submitted to me for approval. Cynthia L. Otis Charlton made necessary revisions in the figures and tables and developed final computer-generated copies. The proposed translations from Nahuatl were done by Christian Duverger, Joaquín Galarza, and Antonio Perri.

REFERENCES

Acuña, René (editor)
1985 Relación de Cempoala. In *Relaciones Geográficas del siglo XVI, México*, vol. 6 pp. 369–382. Ethnohistoria, Serie Antropólogia 63. Universidad Autónoma de México, Mexico, DF.

Archivo General de la Nación
1603 *Congregaciones* I, exp. 48:Folios 30v, 34r.
1702 *Tierras* 1702, exp. 2:Folio 66r.

Bataillon, C.
1967 Régions géographiques au Mexique. *Travaux et Mémoires de l'Institut des Hautes Etudes l'Amérique Latine* 20. Université de Paris.

Berdan, Frances F., and Patricia Rief Anawalt
1992 *Codex Mendoza*, 4 vols. University of California Press, Berkeley and Los Angeles.

Boone, Elizabeth Hill
2000 *Stories in Red and Black*. University of Texas Press, Austin.

Carta de México
1988 Topográfica 1:250,000. Instituto Nacional de Estadística, Geografía e Informática, Mexico, DF.

Caso, Alfonso
1979 Trabajos inéditos del Doctor Alfonso Caso. *Cuadernos de la Biblioteca*, Serie Códices 4:1–18, Biblioteca Nacional de Antropología e Historia. INAH, Mexico, DF.

Charlton, Thomas H.
1969 Ethnohistory and Archaeology: Postconquest Aztec Sites. *American Antiquity* 34:286–294.
1973 *Post-Conquest Developments in the Teotihuacan Valley, Mexico. Part I: Excavations*. Office of the State Archaeologist, Report No. 5. University of Iowa, Iowa City.
1979 Historical Archaeology in the Valley of Mexico. *Proceedings of the 42nd International Congress of Americanists 1976*, VIII:21-33. Paris.
1980 The Aztec–Early Colonial Transition in the Teotihuacan Valley. *Proceedings of the 42nd International Congress of Americanists* 1976, IX-B:199–208. Paris.
1990 *Early State Formation Processes: The Aztec City-State of Otumba, Mexico*. Mesoamerican Research Colloquium, Research Report No. 3. Department of Anthropology, University of Iowa, Iowa City.
1991 Land Tenure and Agricultural Production in the Otumba Region, 1785–1803. In *Land and Politics in the Valley of Mexico, A Two Thousand Year Perspective*, edited by H.R. Harvey, pp. 223–263. University of New Mexico Press, Albuquerque.

Charlton, Thomas H., Deborah L. Nichols, and Cynthia L. Otis Charlton
2000 Otumba and Its Neighbors: Ex Oriente Lux. *Ancient Mesoamerica* 11:247–266.

Charlton, Thomas H., and Michael W. Spence
1983 Obsidian Exploitation and Civilization in the Basin of Mexico. In *Mining and Mining Techniques in Ancient Mesoamerica*, edited by P.C. Weigand and G. Gwynne, pp. 7–86. Anthropology 4(1–2), State University of New York, Stony Brook.

Chávez Orozco, Luis
1934 *Historia de México*. 2 vols. Editorial Patria, Mexico, DF.

Cline, Howard F.
1972 Introductory Notes on Territorial Divisions of Middle America. In *Handbook of Middle American Indians*, vol. 12, edited by Robert Wauchope, pp. 17–62. University of Texas Press, Austin.

Códice Boturini
1975 *Códice Boturini (Tira de la Peregrinación)*. Colección de Documentos Conmemorativos del DCL Aniversario de la Fundación de Tenochtitlán. SEP, Mexico, DF.

Códice Chimalpopoca
1945 *Anales de Cuauhtitlán y Leyenda de los Soles*, translated by Primo Feliciano Velázquez. Universidad Nacional Autónoma de México, Mexico, DF.

Códice Franciscano
1941 [1570] *Nueva Colección de Documentos para la Historia de México*, vol. 2, edited by J. García Icazbalceta. Editorial Salvador Chavez Hayhoe, Mexico, DF.

Davies, Nigel
1973 *The Aztecs, a History*. University of Oklahoma Press, Norman.

Diccionario Porrúa
1986 *Historia, biografía y geografía de México*, 5th ed., vol. 2. Editorial Porrúa, Mexico.

Duverger, Christian
1983 *L'Origine des Aztèques*. Collection Recherches Anthropologiques. Du Seuil, Paris.

Galarza, Joaquín
1962 Codex Santa Anita Zacatlalmanco. Manuscrit pictographique du Musée de l'Homme de Paris. *Journal de la Société des Américanistes* 51:7–33.
1982 Codex de Zempoala. Techialoyan E-705. Manuscrit pictographique de Zempoala, Hidalgo, Mexico. MAEFM, Lille.
1983a *Codex Mendoza* 1, page 2r. Méthode d'analyse. Microfiches, Institut d'Ethnologie, Paris.
1983b *Codex Mendoza* 1, page 2r. Lecture Nahuatl. Microfiches, Institut d'Ethnologie, Paris.

Gamio, Manuel
1922 *La Población del Valle de Teotihuacán*. Secretaría de Agricultura y Fomento, Mexico, DF.

García, Enriqueta
1968 Clima Actual de Teotihuacán. In *Materiales para la Arqueología de Teotihuacán*, edited by José Luis Lorenzo, pp. 9–28. Serie Investigaciones, No. 17. INAH, Mexico, DF.

Genotte, Jean-François
1994 *Le Mapa de Otumba (Estado de México), Manuscrit pictographique indigène traditionnel du XVIème siècle. Etude iconographique et interprétative*. Mémoire de Diplôme d'Etudes Approfondies de l'Université de Paris-Sorbonne. Manuscript on file.
1998 Le Mapa de Otumba (Mexico). Manuscrit pictographique traditionnel indigène du XVIème siècle: étude iconographiquen et interprétative. *Thule* (Italian Review for Mesoamerican Studies) 4/5:205–263. Perugia, Italy.

Gerhard, Peter
1972 Colonial New Spain, 1519–1786: Historical Notes on the Evolution of Minor Political Jurisdictions. In *Handbook of Middle American Indians*, vol. 12, edited by Robert Wauchope, pp. 63–137. University of Texas Press, Austin.
1986 *Geografía histórica de la Nueva España 1519–1821*. Instituto de Investigaciones Históricas–Instituto de Geografía. Universidad Nacional Autónoma de México, Mexico, DF.

Gibson, Charles
1964 *The Aztecs under Spanish Rule. A History of the Indians of the Valley of Mexico 1519–1810*. Stanford University Press, Stanford, CA.

Gillet, L.
1929 L'Art dans l'Amérique latine. In *André Michel, Histoire de l'Art* VIII(3):1019–1096.

Glass, John B.
1964 *Catálogo de la Colección de Códices*. Museo Nacional de Antropología de México, Mexico, DF.
1975 The Boturini Collection. In *Handbook of Middle American Indians*, vol. 15, edited by Robert Wauchope, pp. 473–486. University of Texas Press, Austin.

Glass, John B., and Donald Robertson
1975 A Census of Native Middle American Pictorial Manuscripts. In *Handbook of Middle American Indians*, vol. 14, edited by Robert Wauchope, pp. 81–253. University of Texas Press, Austin.

https://doi.org/10.1017/S0956536101121073 Published online by Cambridge University Press

Gruzinski, Serge
1992 *Painting the Conquest: The Mexican Indians and the European Renaissance*. Unesco/Flammarion, Paris.
Hassig, Ross
1988 *Aztec Warfare*. University of Oklahoma Press, Norman.
Ixtlilxóchitl, F. de Alva
1965 [1891–1892] *Obras Históricas*, 2 vols., edited by Alfredo Chavero. Editoria Nacional, Mexico, DF.
Kubler, George
1948 *Mexican Architecture of the Sixteenth Century*, 2 vols. Yale Historical Publications, History of Art. Yale University Press, New Haven, CT.
Lenz, Hans
1950 *El papel indígena mexicano*. Editorial Cultura, Mexico, DF.
Lockhart, James
1992 *The Nahuas after the Conquest. A Social and Cultural History of the Indians of Central Mexico, Sixteenth through Eighteenth Centuries*. Stanford University Press, Stanford, CA.
López de Velasco, Juan
1894 *Geografía y descripción universal de las Indias*. Justo Zaragoza, Madrid.
Lorenzo, José Luis
1968 Clima y Agricultura en Teotihuacán. In *Materiales para la Arqueología de Teotihuacán*, edited by José Luis Lorenzo, pp. 51–72. Serie Investigaciones No. 17. INAH, Mexico, DF.
McAndrew, John
1964 *The Open-Air Churches of Sixteenth-Century Mexico*. Harvard University Press, Cambridge.
Matrícula de Tributos
1980 *Matrícula de Tributos (Códice de Moctezuma)*, with commentary by Frances F. Berdan and Jacqueline de Durand-Forest. Akademische Druck U. Verlagsanstalt. Graz, Austria.
Mena, Ramón
1923 La colección arqueológica de Boturini. Ejemplares desconocidos existentes en la Biblioteca Nacional. *Anales del Museo Nacional de Arqueología, Historia, y Etnografía*, 4th Epoch, II(1):55, 69. Mexico, DF.
Mendieta, Jerónimo de, Pedro Oroz, and Francisco Suaréz
1947 [1585] *Relación de la Descripción de la Provincia Franciscana del Santo Evangelio que es en las Indias Occidentales que llaman la Nueva España (Descripción de la Provincia del Santo Evangelio de México), Hecha el año de 1585*. Editorial Juan Aguilar Reyes, Mexico, DF.
Mooser, Federico
1968 Geología, naturaleza, y desarrollo del Valle de Teotihuacán. In *Materiales para la Arqueología de Teotihuacán*, edited by José Luis Lorenzo, pp. 31–37. Serie Investigaciones No. 17. INAH, Mexico, DF.
Motolinía, Fray Toribio de Benavente
1985 [1504] *Historia de los indios de la nueva españa*, edited by Georges Beaudot. Madrid.
Mundy, Barbara E.
1996 *The Mapping of New Spain*. University of Chicago Press, Chicago.
Musset, Alain
1988 El acueducto de Otumba, las repuestas del Padre Tembleque. *Historias* 18:81–91.
1991 *De l'eau vive à l'eau morte. Enjeux techniques et culturels dans la Vallée de Mexico (XVIème–XIXème siècle)*. Recherches sur les Civilisations, Paris.
Niederberger-Betton, Christine
1987 *Paléopaysages et archéologie pré-urbaine du bassin de Mexico (Mexique)*. Collection études mésoaméricaines, vol. XI, no. I. CEMCA, Mexico, DF.
Offner, J.A.
1979 A Reassessment on the Extent and Structuring of the Empire of Techotlalatzin, Fourteenth Century Ruler. *Ethnohistory* 26:231–242.
Otis Charlton, Cynthia L., Thomas H. Charlton, and Deborah. L. Nichols
1993 Aztec Household-based Craft Production: Archaeological Evidence from the City-State of Otumba, Mexico. In *Prehispanic Domestic Units in Western Mesoamerica: Studies of the Household, Compound, and Residence*, edited by Robert S. Santley and Kenneth G. Hirth, pp. 147–171. CRC Press, Boca Raton, FL.
Paso y Troncoso, Francisco del (editor)
1905 *Descripción del Arzobispado de México, Manuscrito del Archivo de Indias en Sevilla, Año 1571*. Papeles de Nueva España, Segunda Serie Geografía y Estadística, tomo III, Madrid. (Relaciones Geográficas de la Diócesis de México. Manuscritos de la Real Academia de la Historia de Madrid y del Archivo de Indias en Sevilla, Años 1579–1582, Madrid).
Ricard, Robert
1933 *La Conquête spirituelle du Mexique. Essai sur l'Apostolat et les méthodes missionaires des Ordres Mendiants en Nouvelle-Espagne de 1523-1524 à 1572*. Travaux et Mémoires de l'Institut d'Ethnologie 20, Paris.
Robertson, Donald
1959 *Mexican Manuscript Painting of the Early Colonial Period, the Metropolitan Schools*. Yale University Press, New Haven, CT.
Roitel, Valérie
1992 *Una investigación arqueobotánica del sitio arqueológico de Otumba*. Informe No. 1. Mexico, DF. Manuscript on file.
Romero de Terreros, Manuel
1925 Los acueductos de México. *Anales del Museo Nacional de Arqueología, Historia, y Etnografía* 3(4):131–142.
Sanders, William T.
1976 The Agricultural History of the Basin of Mexico. In *The Valley of Mexico*, edited by Eric R. Wolf, pp. 101–159. University of New Mexico Press, Albuquerque.
Sanders, William T., Anton Kovar, Thomas Charlton, and Richard A. Diehl
1970 *The Natural Environment, Contemporary Occupation, and 16th Century Population of the Valley*. Teotihuacan Valley Project Final Report, Vol. 1. Occasional Publications in Anthropology No. 3. Department of Anthropology, Pennsylvania State University, University Park.
Sanders, William T., Jeffrey R. Parsons, and Robert S. Santley
1979 *The Basin of Mexico: Ecological Processes in the Evolution of a Civilization*. Academic Press, New York.
Simeon, Rémi
1963 [1885] *Dictionnaire de la langue nahuatl ou mexicaine*. Akademische Druck U. Verlagsantalt. Graz, Austria.
Stretta, Eduardo J.P., and P.A. Mosiño
1963 Distribución de las zonas áridas de la República Mexicana. *Ingeniería Hidráulica en México* 17(1):40–48.
Vetancurt, Fray Augustín de
1971 [1697–1698] *Teatro Mexicano*. Editorial Porrúa, Mexico. Facsimile.
Von Hagen, Victor Wolfgang
1948 *La fabricación del papel entre los Aztecas y los Mayas*. Mexico, DF.

https://doi.org/10.1017/S0956536101121073 Published online by Cambridge University Press