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Urban Plan and Architecture on Spanish Frontier Missions

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One element of Spaniish policy in the Americas was the evangelization of the indigenous peoples, and their incorporation into a colonial society based on Iberian norms. Missionaries from different orders arrived to attempt to convert natives to Catholicism, and, where necessary, engage in a process of social engineering. The policy objective was for indigenous peoples to be sedentary agriculturalists to live in settled communities. Where settled communities already existed, the missionaries established a presence, and, in collaboration with indigenous leaders, directed the construction of doctrina (mission) complexes often with monumental churches and cloisters as residences. Where missionaries encountered non-sedentary indigenous peoples or groups of agriculturalists that lived in small and dispersed settlements, they created new communities from whole cloth and attempted to congregate or settle the indigenous peoples on the new communities.

The mission urban plan was an important element of the program of social engineering, and particularly in cases where missionaries created new communities from whole cloth. Mission communities were to be organized on the grid plan, and the mission residents were to live according to European norms. This included living in European-style housing, and, at least in theory, wear European-style clothing and conform to European norms of marriage, family, and sexuality.[1]. In the case of Mexico City, the Spanish began the process of modifying the indigenous urban plan to convert the indigenous city into the seat of power for the new colonial order soon after the conquest.[2] The reality, however, was that the missionaries often failed to transform the way of life of indigenous peoples, and could not create new communities that conformed to the norm.

This article examines and discusses the mission urban plan on three frontiers. The analysis begins with an example of the first Spanish mission frontier in central Mexico. Although the region began the seat of Spanish domination, it was still a frontier in every sense of the word, and particularly as regards the dynamic of the evangelization campaign that began with the arrival of the first Franciscans in 1523 and 1524. Cartographic evidence documents the structure of indigenous communities towards the end of the sixteenth century, and we present two detailed case studies of the spatial organization, urban plan, and architectural development of two doctrinas. The first is Los Reyes Metztitlán located in what today is Hidalgo, and the second is San Mateo Atlatlahucan in Morelos. These case studies are presented in the first section of the article.

Missionaries created new communities from whole cloth on a number of frontiers, and this article examines two examples. The first is the Jesuit missions among the Guaraní located in parts of Argentina, Paraguay, and Brazil. The Jesuit missionaries congregated thousands of people who practiced shifting slash-and-burn agriculture on new communities, and directed the development of sophisticated mission complexes spatially organized on the grid plan. These were the most populous of the missions located on the frontiers of Spanish America, and the urban plan and architecture are documented in several contemporary diagrams. The second group is the Franciscan missions established in (Alta) California beginning in 1769. This group of missions is important, because the Franciscans established them in conformity with the Bourbon Reform initiative to accelerate the integration of indigenous peoples living on the frontiers into colonial society. Diagrams that date to the 1850s, two decades following the secularization of the missions, document the urban plan.

Mission Urban Plan on central Mexican Doctrinas

This section examines the doctrinas or missions established among the sedentary indigenous populations in central Mexico in the decades following the Spanish conquest. In many instances, the missionaries established their doctrinas in existing communities, and at times on the sites of pre-Hispanic temples. In other instances, and particularly in the second half of the sixteenth century, indigenous leaders agreed to relocate community sites at the behest of the missionaries or royal officials. The case of the Dominican doctrina at Yucundáa (Oaxaca) provides an example of the early doctrina development, the organization of evangelization, and the subsequent relocation of the indigenous community to another site. The pre-Hispanic city was located on the top of a hill, as was the case of many settlements at the time of the conquest. Dominican missionaries arrived around 1538, and had a small primitive church and cloister built. Extensive archaeological excavations of the site uncovered the primitive doctrina complex, but also a mass grave dated to the time of a mid-1540s epidemic. In the early 1550s, the indigenous leaders and Dominican missionaries relocated much of the population from the hilltop site to a new community located in the valley at the base of the hill designated Teposcolula (see Figures 1-2). This was an instance of the policy of *congregación*. Construction projects at the site included a new doctrina complex, a hospital for the indigenous population, and an *aniñe* or palace complex for the ruling lineage known today as the "*casa de la cacica*."[3]

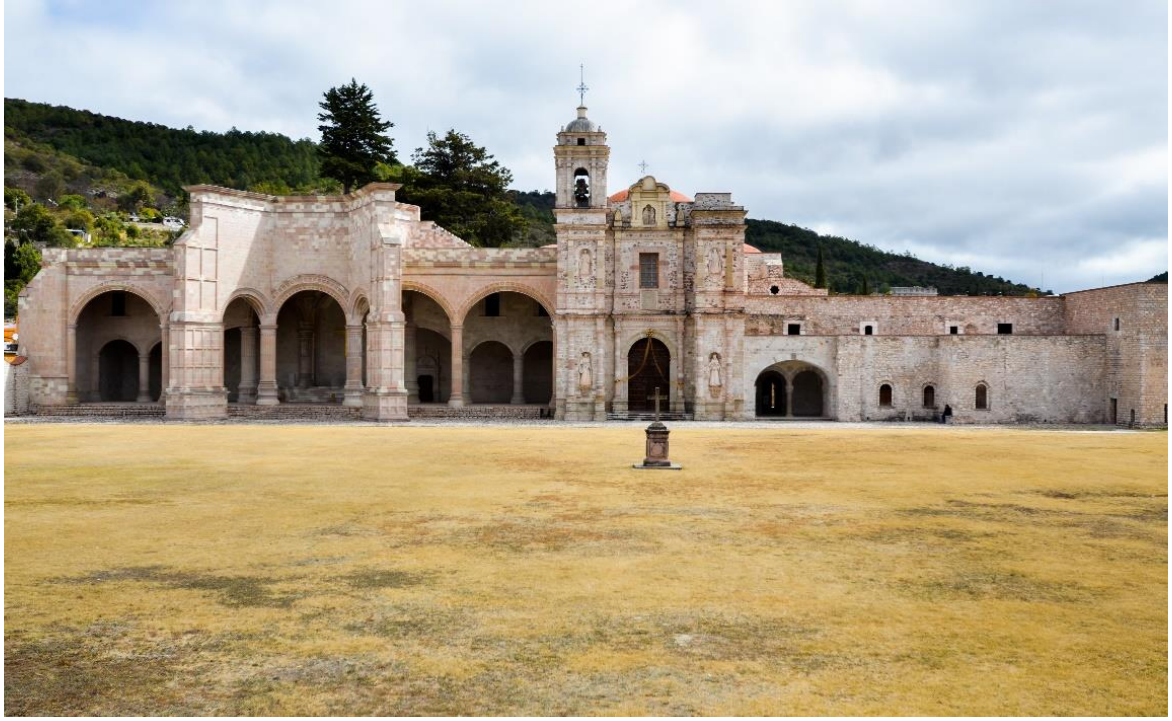


Figure 1: The Dominican doctrina complex at Teposcolula. Photograph in the collection of Robert H. Jackson.

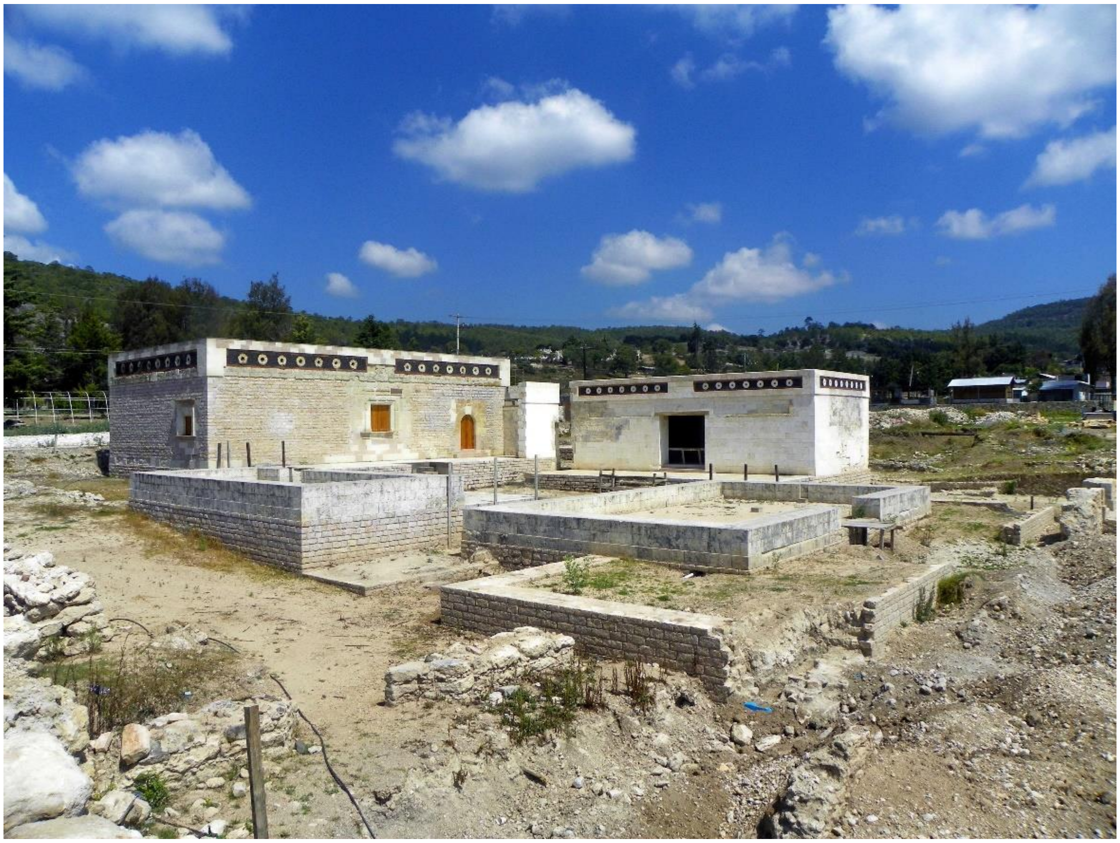


Figure 2: The “casa de la Cacica,” Teposcolula. Photograph in the collection of Robert H. Jackson.

Some relaciones geográficas maps prepared to accompany the reports drafted about 1580 documented the urban plan of the indigenous communities towards the end of the sixteenth century. Four examples are those of Huatlatlauca (Puebla), Texupa (Tejupan, Oaxaca), Nochiztlan (Nochistlan, Oaxaca), and Teotenango (Edo. de Mexico) (see Figures 3-6). They show communities organized on a grid plan. In the case of Nochiztlan the Dominican doctrina is located on the main square of the community and perhaps on the site of an earlier pre-Hispanic temple, and the Augustinian doctrina is at the center of Huatlatlauca. The map of Teotenango shows the pre-Hispanic settlement located on the hill behind the colonial-era community that was later relocated to the valley floor.

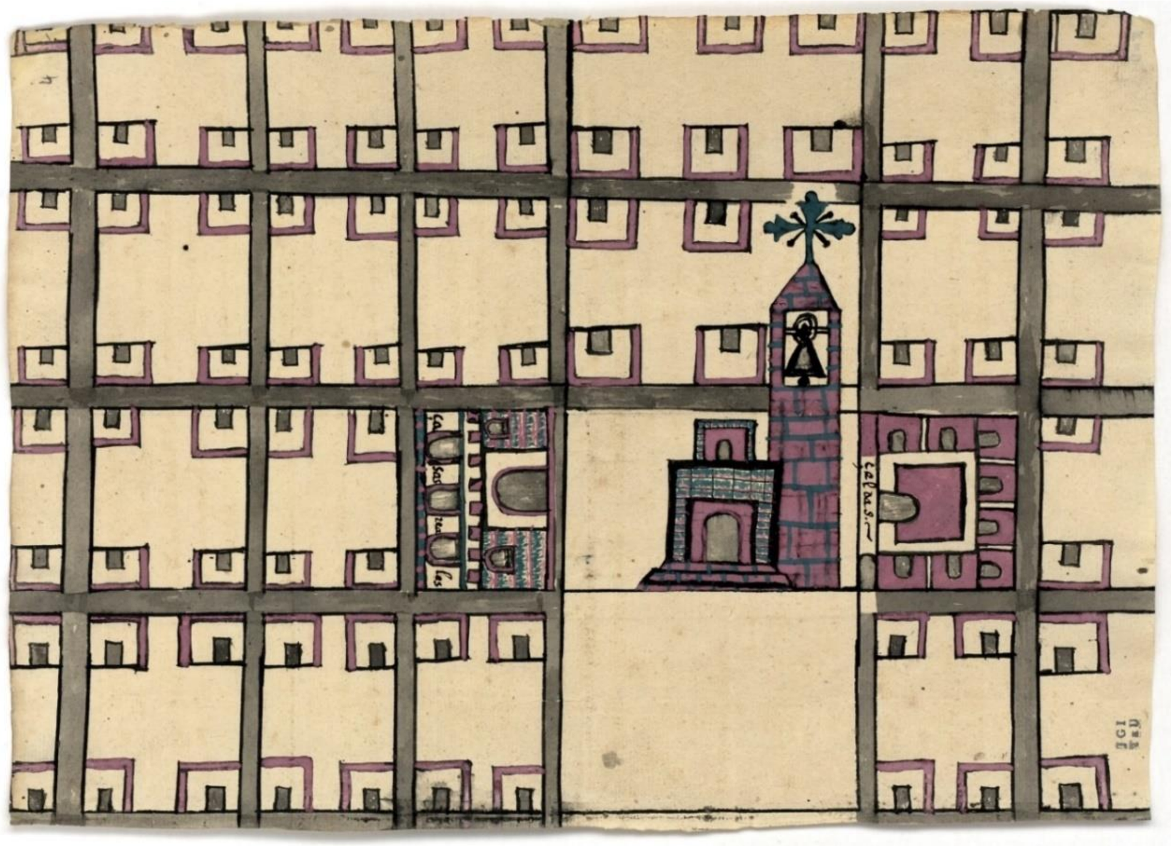


Figure 3: Relación Geográfica map of Huatlatlauca (Puebla) c. 1580.

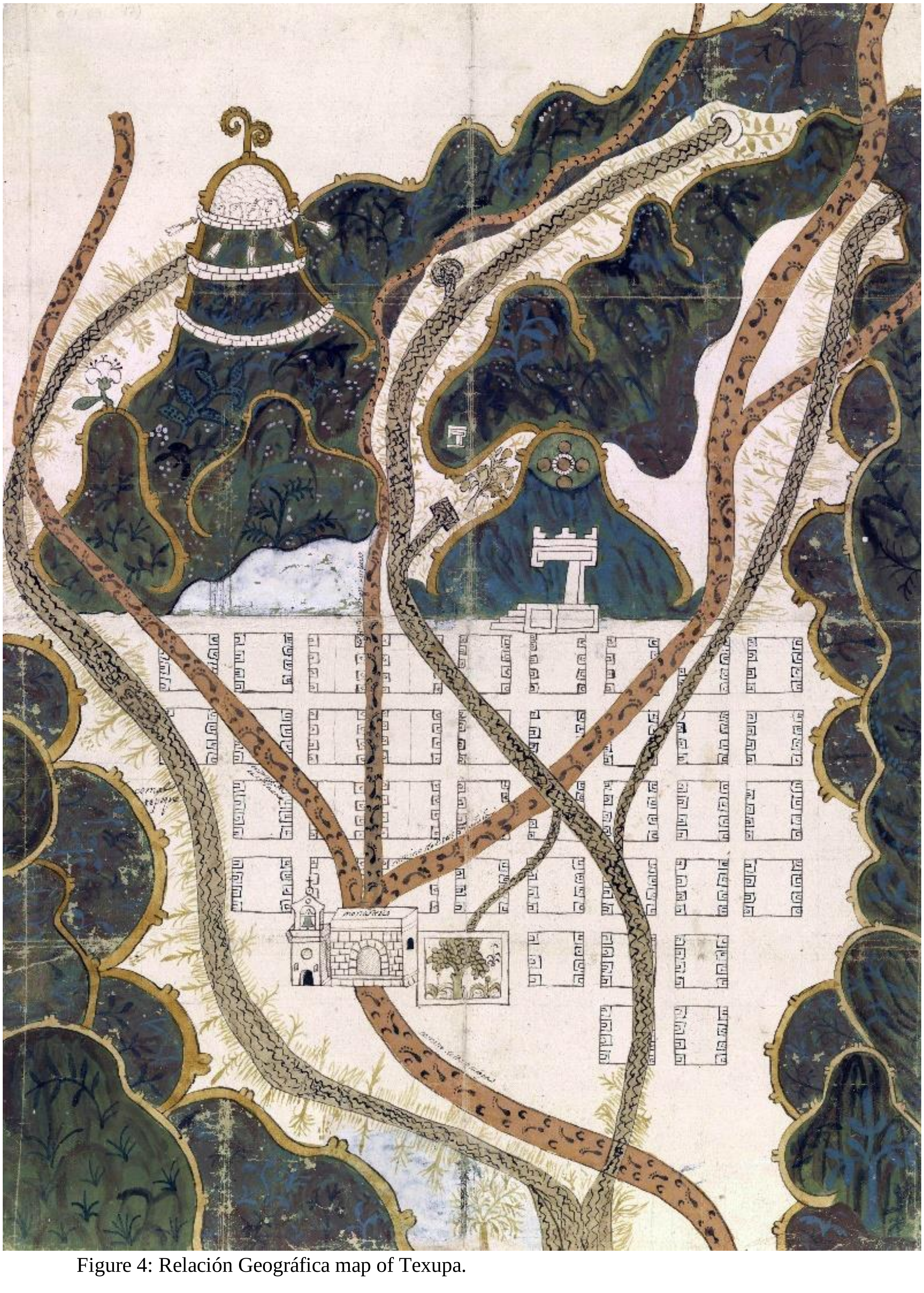
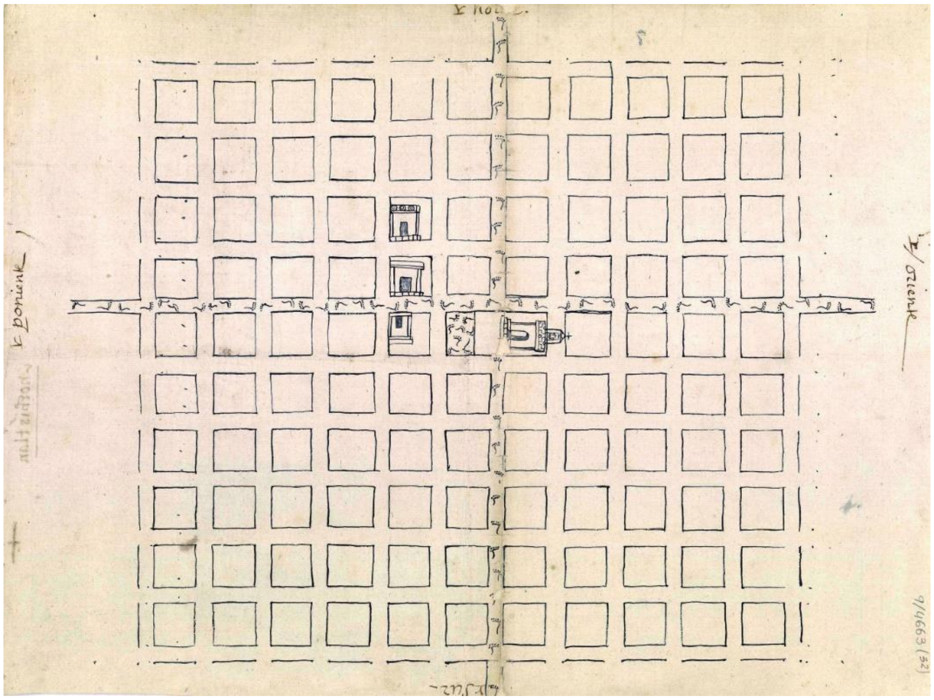


Figure 4: Relación Geográfica map of Texupa.


poniente
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9/4663 (32)

Figure 5: Relación Geográfica map of Nochitzlan.

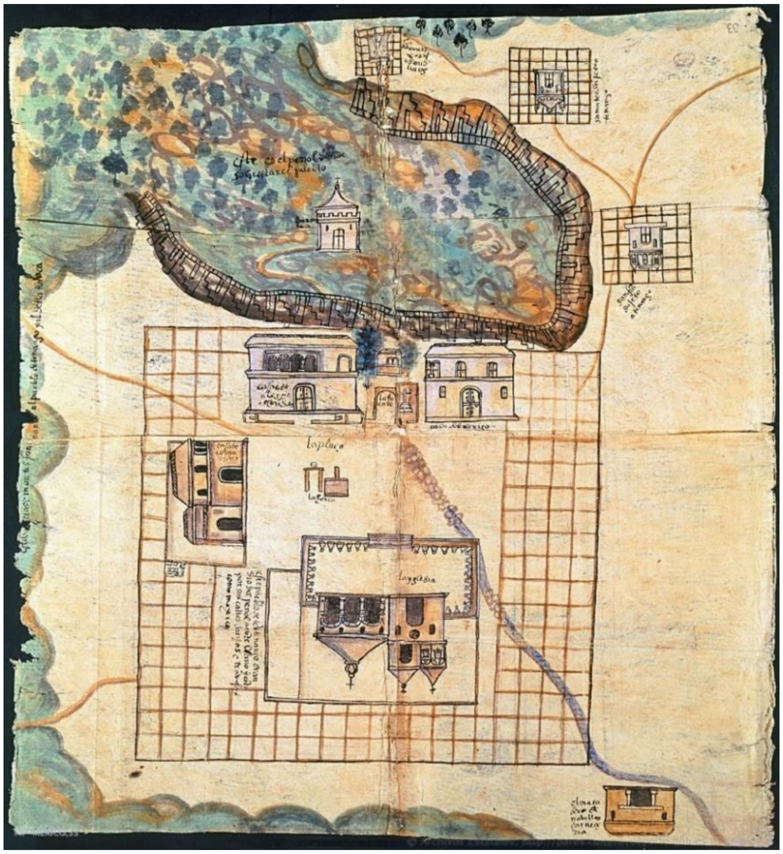

Figure 6: A 1582 map of Teotenango (Edo. de México). It shows the pre-Hispanic city located on the hill behind the community.

Beyond the frontier of advanced sedentary indigenous societies in the different regions of Spanish America, the Spanish encountered peoples with different levels of social-political organization, and relied on missions staffed by members of different religious orders as a cost-effective way to promote integration. The Chichimeca frontier was a zone of conflict, as seen in the relación geográfica map of San Miguel and San Felipe de los Chichimecas (see Figure 7) where bands of non-sedentary peoples resisted the Spanish advance. The map shows, for example, raids on supply trains headed towards the mining center at Zacatecas. Missions established beyond the Chichimeca frontier in México at the end of the sixteenth century were an example of the creation of new communities. An initial military effort to subjugate the bands of nomadic hunters and gatherers collectively known as Chichimecas failed, and Church officials pressed for a changed policy of evangelization and integration. The Jesuit mission San Luis de la Paz (Guanajuato) established in the early 1590s was a part of a program that attempted to congregate and integrate bands of non-sedentary peoples, and was an example of a new community established from whole cloth on the grid plan (see Figure 8).[4]

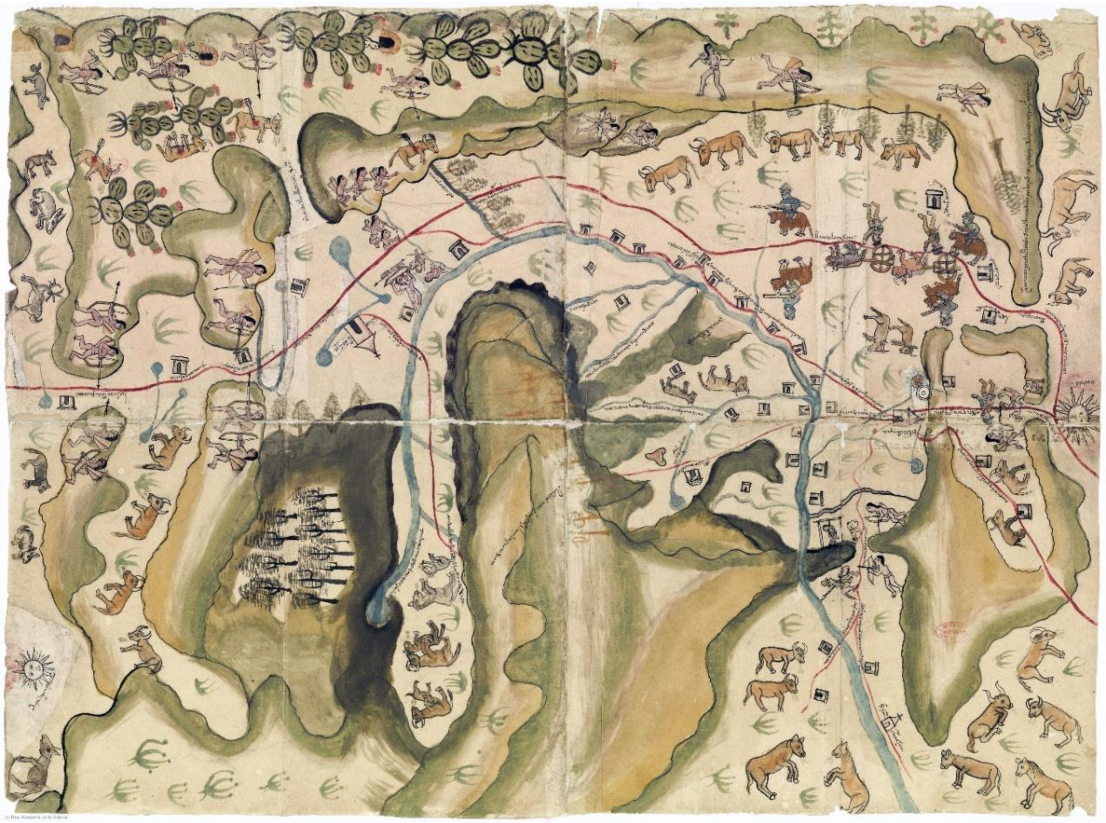

Figure 7: Relación Geográfica map of San Miguel and San Felipe de los Chichimecas.

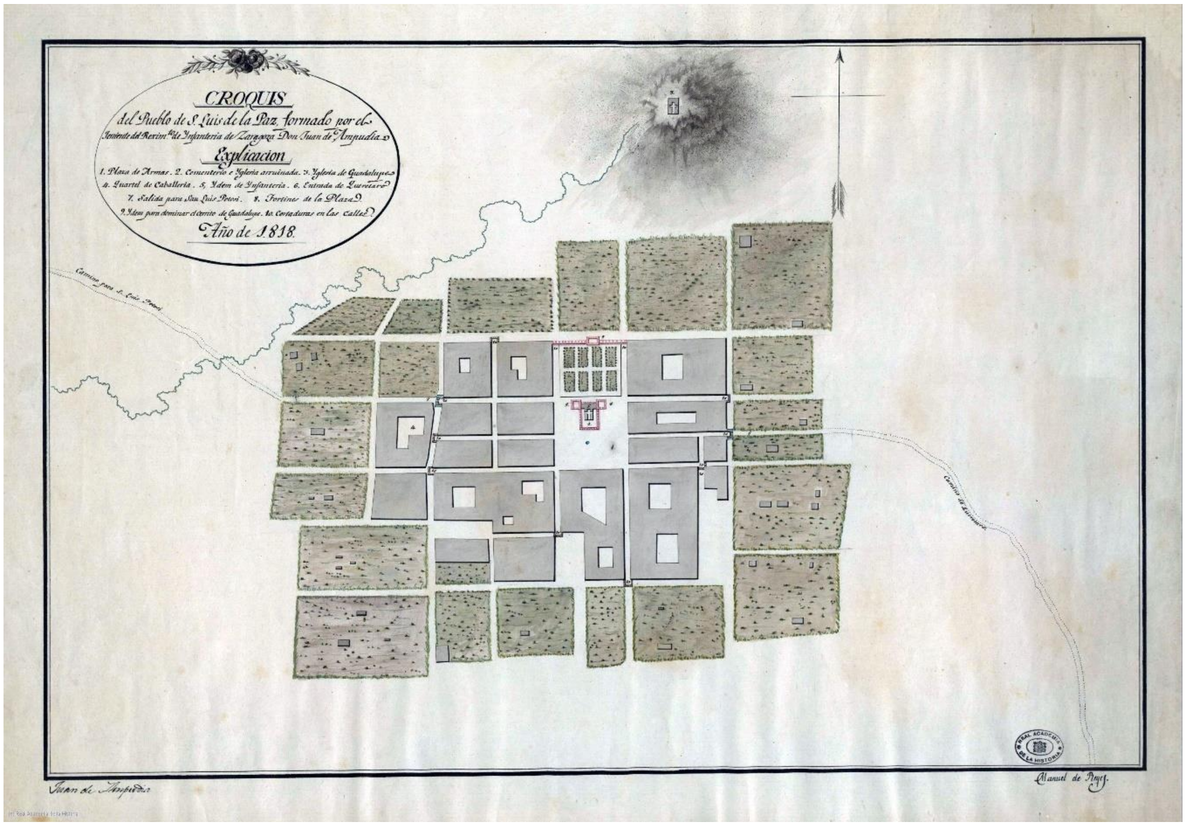
CROQUIS
del Pueblo de S. Luis de la Paz, formado por el Teniente del Rexim.to de Ynfanteria de Zaragoza Don Juan de Ampudia
Explicacion
1. Plaza de Armas. 2. Comenterio e Yglesia arruinada. 3. Yglesia de Guadalupe
4. Quartel de Caballeria. 5, Ydem de Ynfanteria. 6. Entrada de Queretaro
7. Salida para San Luis Potosi. 8. Fortines de la Plaza
9. Ydem para dominar el Cerrito de Guadalupe. 10. Cortaduras en las Calles
Año de 1818.
Camino para S. Luis Potosi
Juan de Ampudia
Manuel de Reyes

Figure 8: An 1818 map of San Luis de la Paz (Guanajuato) showing the urban plan. San Luis de la Paz was the site of a Jesuit mission established in the 1590s, and later a Jesuit colegio.

The case studies document in more detail the development of doctrinas and the urban plan in the first missions in central Mexico The first is the Augustinian doctrina Los Reyes Metztitlán.

A case study of the development of the Augustinian doctrina Los Reyes Metztitlán documents the complex process of the construction of sixteenth century complexes, and the urban plan and spatial organization of evangelization. The doctrina established at Metztitlán around 1539 played an important role in the evangelization of the *Sierra Alta* of what today is Hidalgo, as well as of the groups collectively known as the Chichimecas living beyond the frontier of sedentary settlement. It was an example of an early complex constructed within several decades of the Spanish conquest. The Augustinians staffed the mission at Metztitlán with four or five missionaries who also visited numerous visitas across a large territory that extended as far north as what today is southern San Luis Potosi. At the end of the sixteenth century the Augustinians stationed there administered 120 visitas.[5] As more missionary personnel became available the Augustinians elevated selected visitas to the status of independent missions with resident missionaries including Chichicaxtla (Hidalgo), Chapulhuacán (Hidalgo), and Xilitlán (San Luis Potosi). These three establishments were important in the first efforts to evangelize the Chichimecas in the region of the Sierra Gorda, but in the later sixteenth century the missionaries stationed on Chapulhuacán and Xilitlán administered communities populated by Náhuas and Hñahñu/Otomi that had colonized the region (see Table 1).

The Augustinians administered other doctrinas along the Chichimeca frontier in the area known as the Sierra Alta of Hidalgo, but most focused on populations of Náhuas, Otomí, or Huastecos. Towards the end of the sixteenth century the Augustinians stationed on the doctrina at Metztitlán reportedly spoke either Náhuatl or Otomí, and none spoke a Chichimeca language. The reorganization of the missions in the region with the elevation of the status of former visitas to independent doctrinas shifted responsibility for the evangelization of Chichimecas primarily to the missionaries stationed on Chichicaxtla.[6] The Augustinians at Molango and Huejutla also spoke languages of sedentary Náhuas and Hustecos.[7] At Tlachinoltipac, the missionaries reportedly spoke Náhuatl, *Serrano* which was a generic term for natives that lived in mountainous areas and Ocuilleco which is an Otopame language also known as Tlahuica or Matlazinca.[8] With the exception of Chichicaxtla, the missionaries stationed on the Augustinian doctrinas in this frontier zone did not attempt to evangelize the bands collectively identified as Chichimecas.

Two sixteenth century documents provide additional detail regarding the organization of the evangelization campaign the Augustinians administered from Metztitlán. The first is the *Suma de Visitas*, which was a summary of a series of reports on the tribute paid by the indigenous populations drafted around 1550. The report for Metztitlán documents the type and amount of tribute paid, as well as the number of visitas.[9] As it was concerned with tribute collection, the report enumerated the number of houses and families, which were categories useful for estimating the number of tributaries. There was a total of 1,342 houses and 6,308 married men. The Augustinians administered 41 visitas identified by the term *estancia*: 18 were located in the "valley" and 23 in the "sierra" (see Table 2). The visitas located in the valley included Xiuco and Ayotuiapa (Atzolcintla).

Two individuals held the jurisdiction of Metztitlán in encomienda. They were Andrés de Barrios and Alonso de Mérida. The indigenous population paid tribute in agricultural products, but also quantities of textiles. The report summarized the tribute paid in the following terms:

> Tributan cada sesenta días: sesenta cargas de ropa muy buena;650 y seis cargas de ropa menuda; y veinte naguas; y veinte camisas; y veinte mantillas; y veinte másteles; y sesenta piernas de cama damascadas; y veinte piernas de sábanas delgadas; y seis piernas de manteles; y diez y seis pares de alpargates;651 y ochenta pares de cutaras; y diez cántaros de miel; y diez cántaros de azúcar de la tierra. Y [dan] cada año noventa y cuatro cestos de ají y frijoles y pepitas, que al parecer será cada uno de dos fanegas (folio 107 frente). Y dan cada día: diez gallinas; y veinte indios de servicio en Mexico y en el pueblo; todo el servicio necesario al calpixque y caballos.[10]

The second document is the report titled “Descripción del Arzobispado de México” drafted in 1571.[11] It provides more detailed information on Metztitlán and its visitas. Francisco de Merida and Doña Isabel de Barrios, the widow of Diego de Guebara, held the jurisdiction in encomienda. Metztitlán administered another 74 communities, and the report noted a total of 6,980 households. Metztitlán and its barrios had a total of 1,738 households. Jihuico, listed in the report as Maxuico, counted 126 married men and 280 people confessing.[12] It was an important visita, and has a tall façade, but only a short nave. The Jihuico chapel is a larger example of other visita chapels found in the barranca de Metztitlán and the larger territory administered by the Augustinians in the Sierra Alta, and shows similarities to the design of other chapels although there were differences in size (see Figure 9). Juan B. Artigas analyzed the architectural evolution of the chapel, and identified it as an example of an “open chapel” later rebuilt with an expansion of the nave and the addition of a tall façade characteristic of the Augustinian architectural style in the region.[13] Other visita chapels of Metztitlán had a similar history, such as Atzolcintla that Artigas also analyzed (see Figure 10).[14]

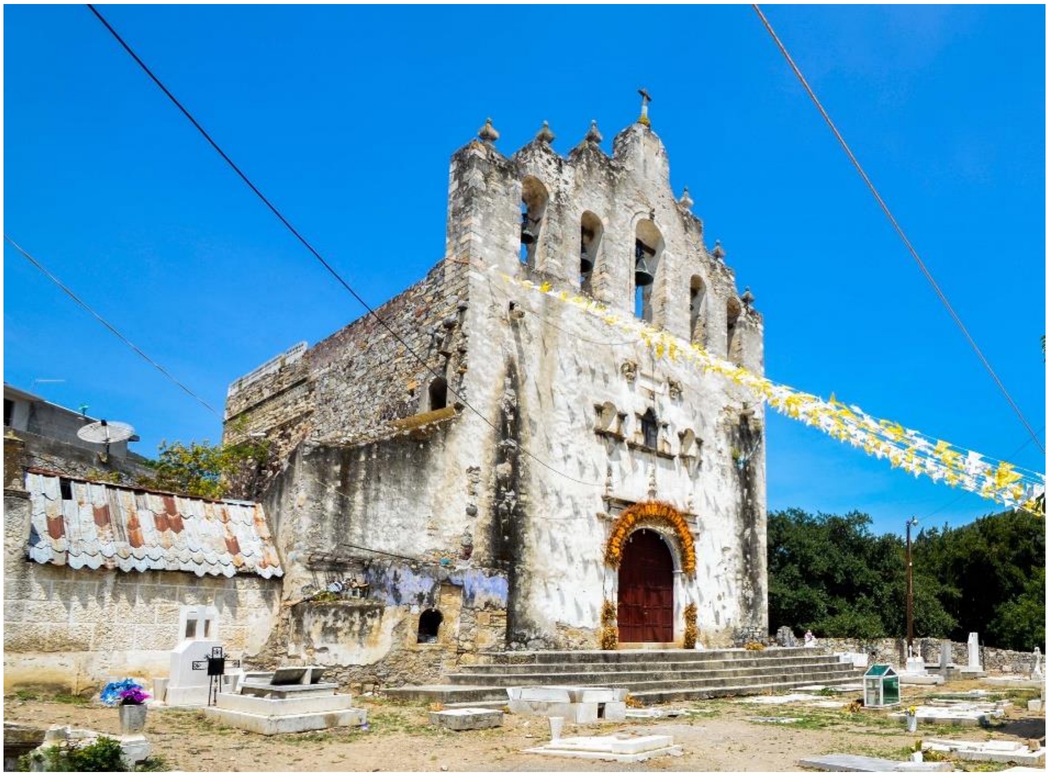

Figure 9: The visita chapel in Jihuico. Photograph in the collection of Robert H. Jackson.

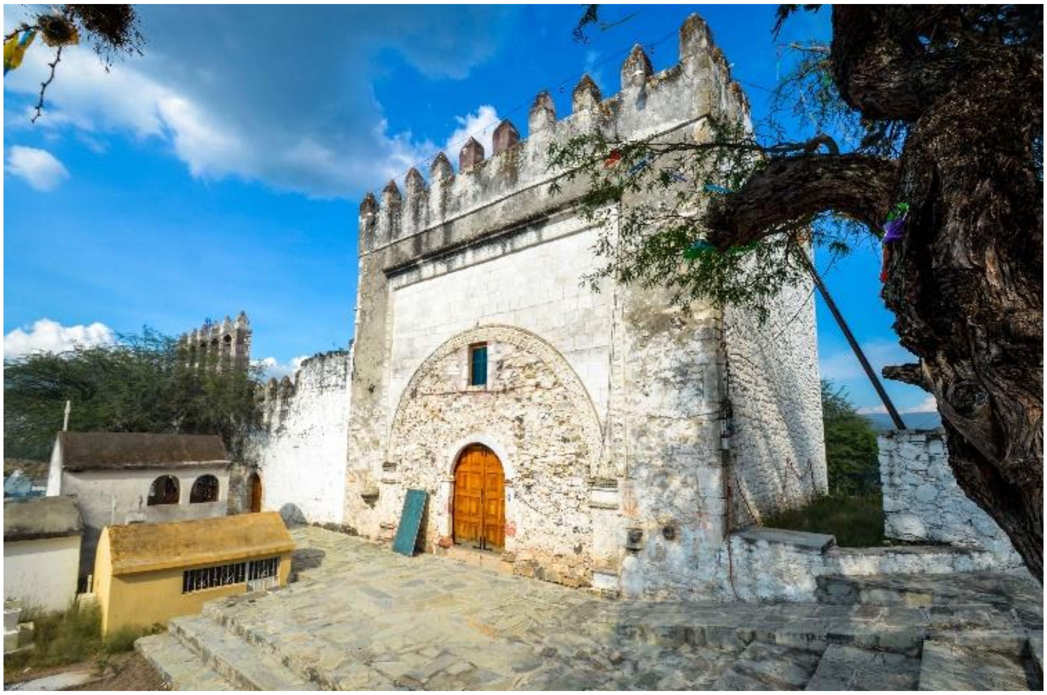

Figure 10: The visita chapel Atzolcintla. Photograph in the collection of Robert H. Jackson.

The Augustinians selected Metztitlán as the site of the doctrina because of its geographic advantages over the important pre-Hispanic city Tepatetipa within the Señorio of Metztitlán, which is located at the top of a hill not far from the site chosen for the doctrina complex. The complex known as "la Comunidad" was the first early doctrina complex they had built. Artigas analyzed the three-principal colonial-era structures in the community, that is la Comunidad, la Tercena or the *tecpán* or seat of government of the indigenous government, and the los Reyes convent complex located higher up the hill. Artigas found several architectural elements missing from the structure identified as the church of the "La Comunidad" complex. They include the triumphal arch, a choir loft, and exterior decorations on the façade. There is another peculiarity in the structure. Christian churches traditionally have a west-east orientation, whereas the nave of the la Comunidad church structure runs south-north which is the Mesoamerican orientation (see Figure 11).[15]

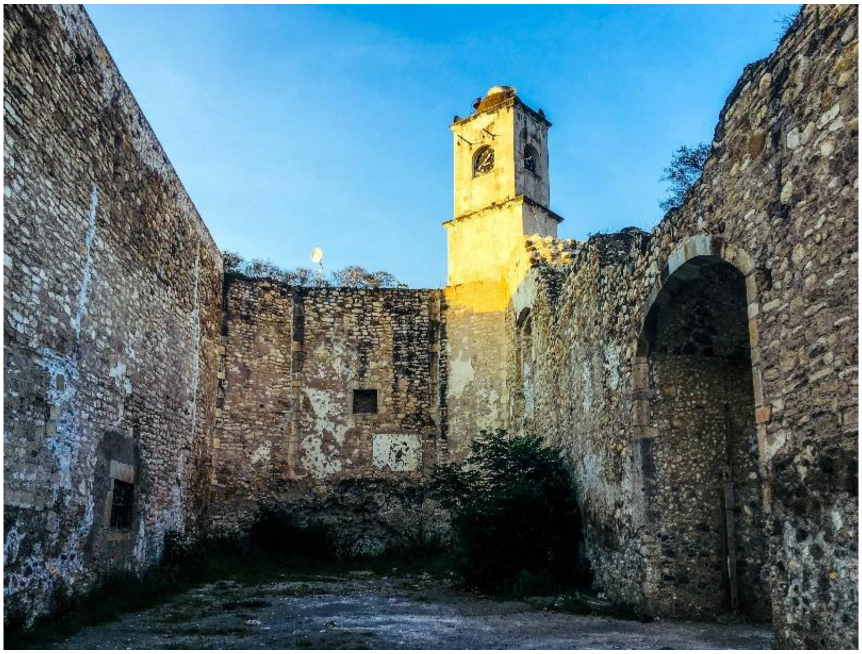

Figure 11: The nave of the church of La Comunidad, one entrance to the main square of the community, and the tower added in the mid-seventeenth century. It also shows the original roof line of the structure, and the later reconstruction that raised the roof line. Photograph in the collection of Robert H. Jackson.

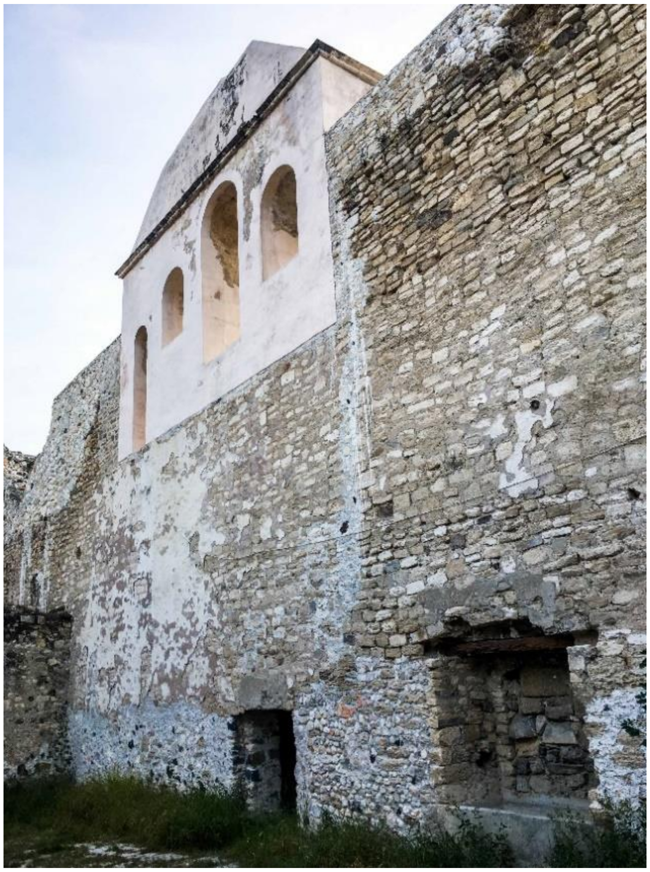

Figure 12: Detail of the church and espadaña showing the original roof line and new construction that raised the roof line when the church was reconstructed. Photograph in the collection of Robert H. Jackson.

The structure faced the main square of the community, and the Tercena was at the other side of the square. Artigas reported that there were two openings that faced the square, and the true west-east orientation was also towards the square.[16] The *Catalogo de Construciones Religiosas del Estado de Hidalgo* published in 1940 showed that small structures had been built up against the wall of la Comunidad, but they have since been demolished.[17] A visual examination of the la Comunidad ruins provides evidence to support a different interpretation of the early form of the structure as an "open chapel" with three arches in the front facing the main square with the west-east orientation.

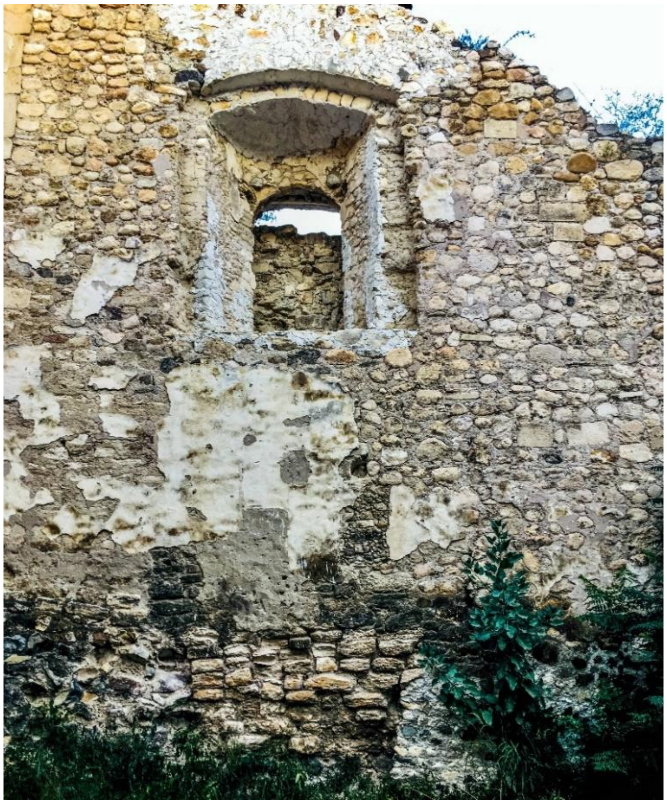

Figure 13: Detail showing the third arch that was later filled in when the “open chapel” was reconstructed and a window was added. Photograph in the collection of Robert H. Jackson.

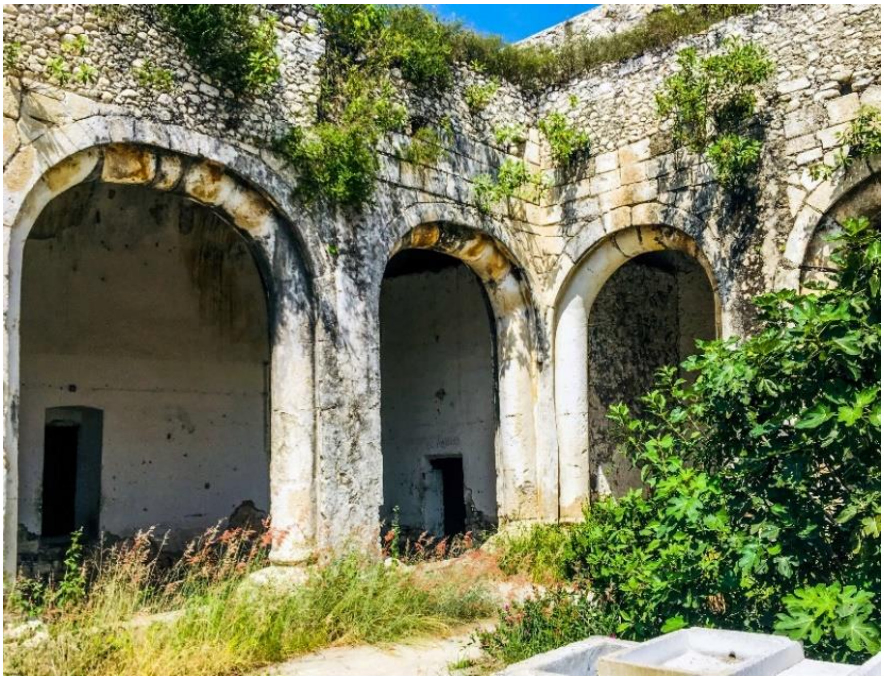

Figure 14: The cloister of the la Comunidad complex. Photograph in the collection of Robert H. Jackson.

The “open chapel” and convent complex was built in the form of a rectangle on the edge of a hill with a broad *barranca* or gorge to its back (see Figure 15). The original roof line is clearly visible in the ruins, and there is evidence of later construction that raised the height of the walls (see Figures 11-14). The structure most likely had a flat roof of beams. The espadaña or bell wall was at the back of the structure, and the new construction that raised the roof line is visible on both sides of it. In his article Artigas mentioned several windows on the façade that faced the main square. However, an examination of the interior wall of the structure shows that the third arch was filled in when the “open chapel” was reconstructed as a conventional church, the walls were raised, and a window was added in place of an arch (see Figure 11).

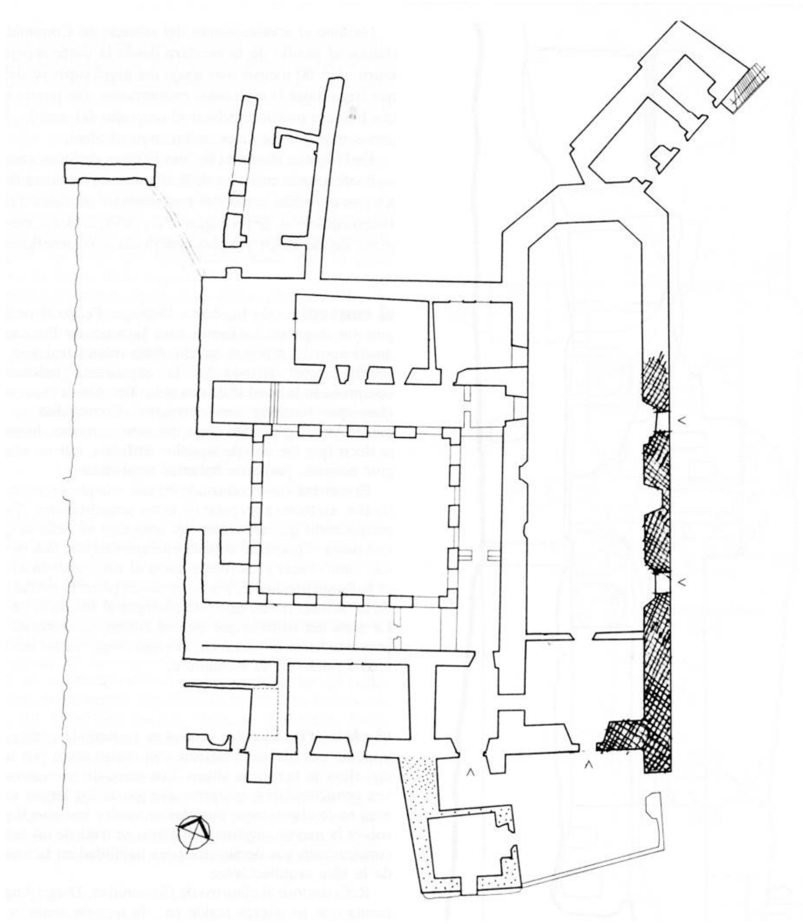

Figure 15: A diagram of the “la Comunidad” complex.

A small atrium exists on the south side of the structure, which has been interpreted as being the main entrance. However, given that the atrium fronts the slope that leads to the valley floor below the complex, it was not particularly practical as a main entrance. The entrances to the main square most likely were generally used by people entering the church. The fact that there are no exterior designs on either the east or south façade lends credence to the hypothesis that it was an "open chapel." The surviving capillas de indios generally do not have exterior designs as do later church structures. The small cloister was built behind the "open chapel" (see Figure 14). In this sense the la Comunidad complex was similar to other complexes that consisted of a capilla de indios and cloister, as in the case of the Franciscan visita complex at Temimilcingo located in Morelos.[18]

The Augustinians later relocated the doctrina to a site higher up the hill, where they had a larger complex built (see Figure 16). The question remains as to why? It most likely was because of the limited space below on which to have a larger complex built. As already noted, there is a gorge behind the "la Comunidad" site, and a descending slope to one side of the "open chapel"/church. Building a church and complex the size of what was eventually erected at the new site would have been difficult if not impossible. The second question remains is if the "la Comunidad" complex was abandoned after the Augustinians relocated the doctrina to the new site? The hypothesis presented here is that the complex was not abandoned, but rather the church was rebuilt. The reconstruction of the church entailed the raising of the walls. Moreover, a tower was added at the rear of the nave of the reconstructed church, and reportedly dates to the mid-seventeenth century. The church most likely was used for the growing Spanish population that resided in Metztitlán.

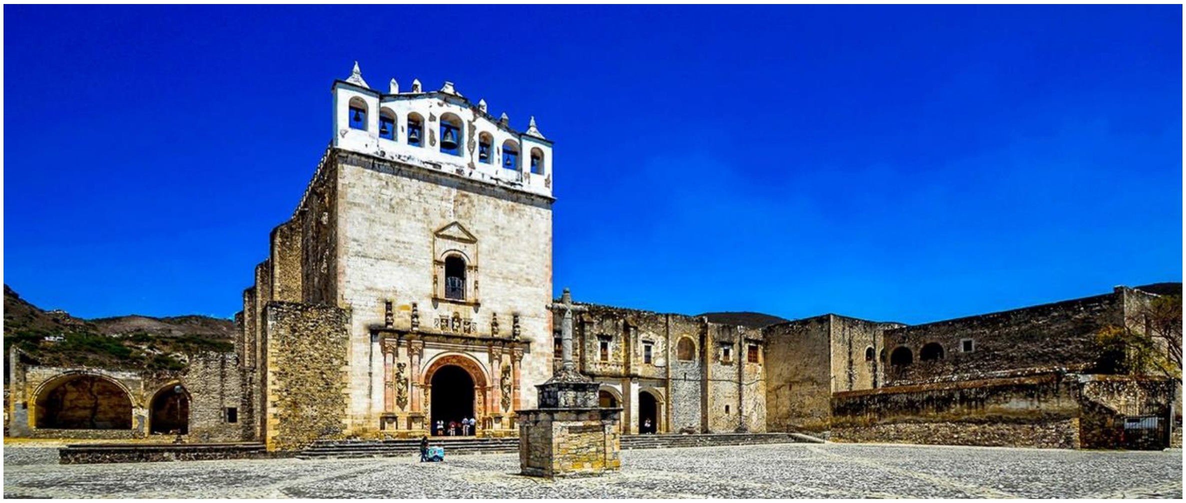

Figure 16: The church and convent built at the second doctrina site. Photograph in the collection of Robert H. Jackson.

Sixteenth-Century Missions in northern Morelos, Mexico

Two communities located in what today is Morelos are further examples of the sixteenth-century urban plan They are Atlatlahucan and Tlayacapan. Atlatlahucan was also an Augustinian doctrina elevated to independent priory status around 1570.[19] It was an example of a later construction project, and there most likely was a capilla de indios there prior to the start of the construction of the doctrina complex. At the time of the Spanish conquest Atlatlahucan was a part of the Huaxtepec tributary province of the Culhua-México tributary state. The *matricula de tributos*, a document prepared in the mid-1530s to summarize the quantity and type of tribute paid by the different jurisdictions paid to the Culhua-México, also identifies the different communities in the larger Huaxtepec jurisdiction (see Table 3, Figure 17). It was a system of indirect rule. The local jurisdictions (*altépetl*) retained autonomy as long as they complied with tribute obligations, and each head town (cabecera) had its own subject communities that also paid tribute and provided labor to the ruling lineage of the cabecera. Following the conquest, the Spanish imposed their authority on this system of indirect rule, and merely displaced the Culhua-México. The missionaries, in this case the Augustinians, based their own organization on the same system. They established their doctrinas in many of the head towns, and designated the subject communities as visitas that did not have resident missionaries.

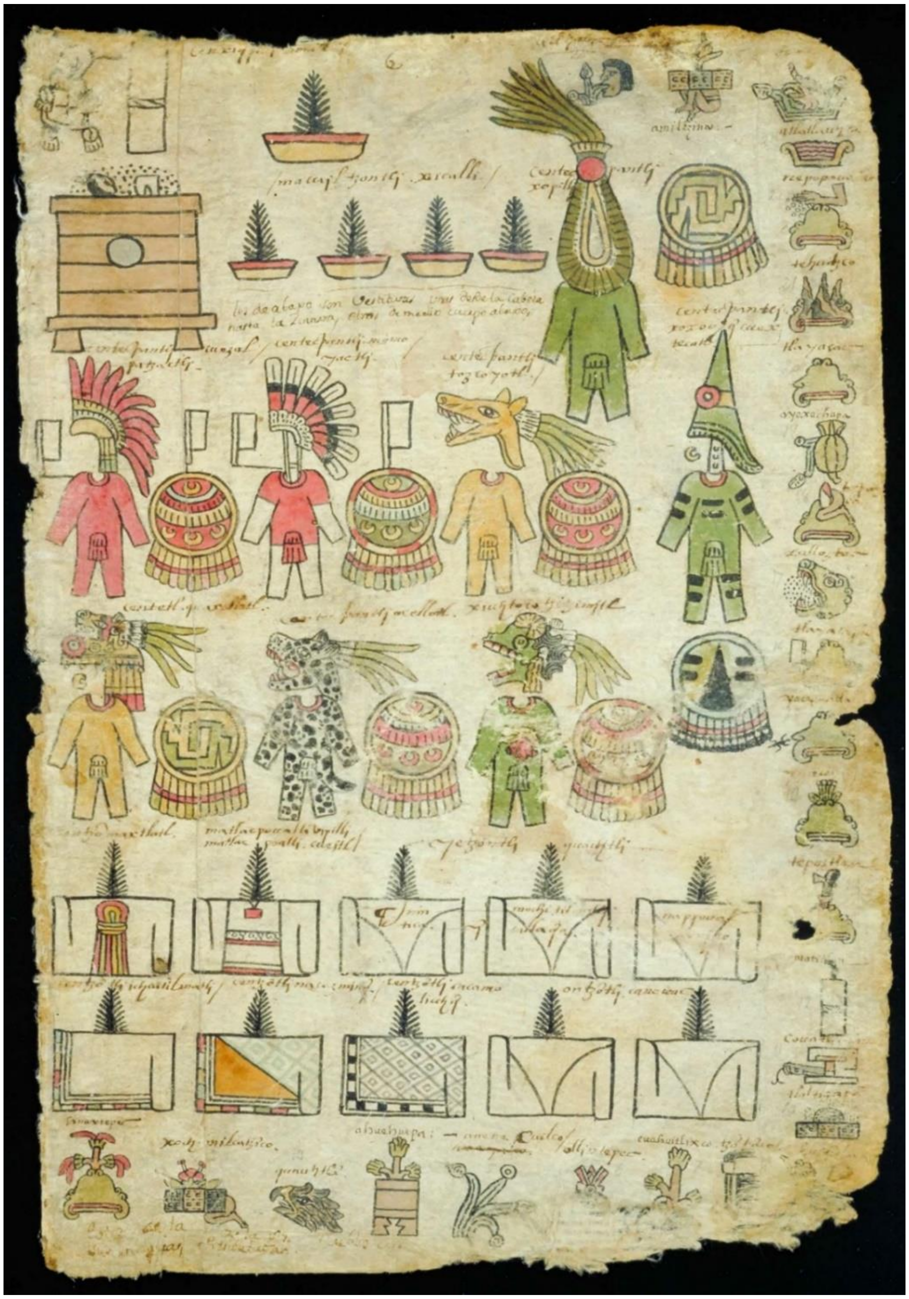

Figure 17: The Huaxtepec tributary province from the Matricula de Tributos.

A series of sixteenth-century maps of selected jurisdictions in what today is Morelos document the system of indirect rule in the indigenous communities that no longer were a part of the former Culhua-México tributary province, and the indigenous artists who drafted the maps incorporated pre-Hispanic iconographic conventions. The maps show the water sources such as the Yautepec River, mountains, and roads. The maps also present a visual record of the internal political structure of the altépetl with the cabeceras and subject communities. They also supplement information from a series of reports from 1571 drafted by Augustinian missionaries and the c. 1580 reports known as the *relaciones geográficas*. A 1539 map of Atlatlahucan shows the cabecera and three subject communities, as well as the mountains, water sources, and roads (see Figure 18). The 1579 relación geográfica report of Totolapan identified the subject communities of Atlatlahucan as Texcalpán, Tepetlixpán (Tepetlixpita), and Tonalá (unidentified). Tlayacapan was also a cabecera with subject communities (see Table 4).

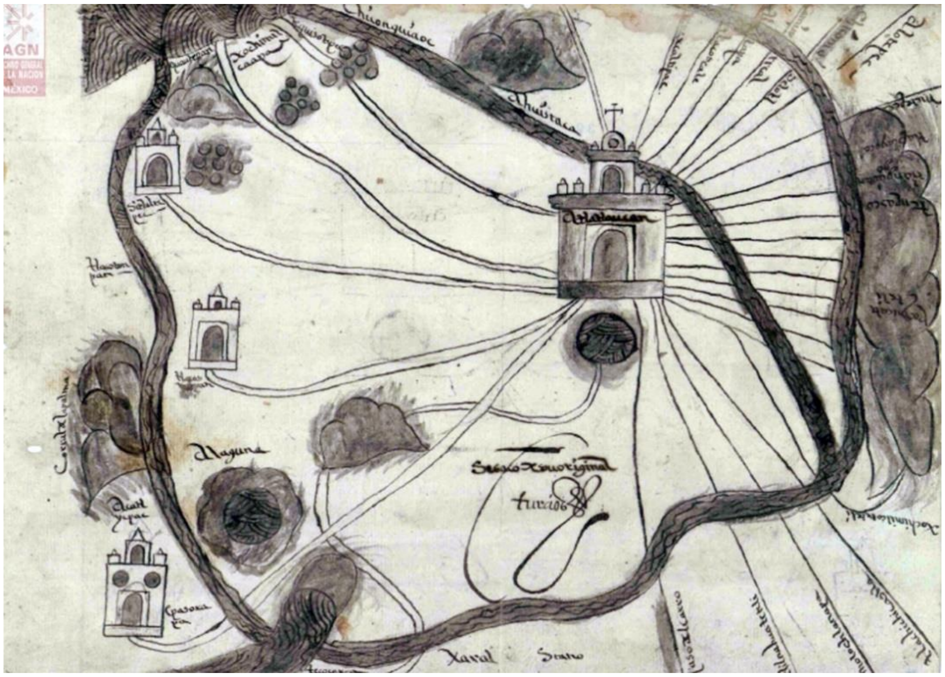

Figure 18: A 1539 map of the altépetl of Atlatlahucan.

One political dynamic among indigenous communities in sujeto status was to litigate to attain status as independent cabeceras. In the early years following the Spanish conquest Atlatlahucan and Tlayacapan were cabeceras of altépetl, but were politically subject to Totolapan. However, the indigenous leaders of both Tlayacapan and Atlatlahuacan successfully litigated to become politically independent of Totolapan.[1] Atlatlahucan had become independent by 1579. At the same time the process of demographic change discussed in more detail below resulted in the shifting of populations through the policy of

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[1] Peter Gerhard, *A Guide to the Historical Geography of New Spain*, revised edition (Norman: University of Oklahoma Press, 1993), 105.

congregación implemented around 1600. A shifting of populations in 1604 resulted in the abandonment of Tonalá and Tepetlixpita, although by 1790 the latter had been repopulated. Between 1601 and 1604, the populations of eight estancias of Tlayacapan moved to the cabecera.[2] A c. 1600 congregación resulted in the depopulation of four of the subject communities of Totolapan, and the resettlement of the populations of three on Tlalnepantla (Cuauhtenca). In the eighteenth century Ahuatlán, Nepopualco, San Miguel Metepec, and San Luis Tehuizco were still populated.

Land formed the basis of social, economic and political organization in an agrarian society such as colonial Mexico, including Morelos. In his 1964 study of central Mexico following the Spanish conquest Charles Gibson outlined the contours of the politics of land during the colonial period.[3] The indigenous population of central Mexico developed a communal concept of land tenure, and land was a collective resource shared by all members of a community. Moreover, each community had specific lands it exploited for agriculture, collecting fire wood, or collecting building materials. The Spanish brought the European concept of private land ownership that gave the titled owner the exclusive right to exploit the land. However, the Crown did recognize and preserve communal tenures in the indigenous communities that, at least in theory, could not be alienated. Following the conquest royal officials granted titles to community lands identified by the term *fundo legal*. *Tierras baldias*, that is untitled lands, were then made available for exploitation by Spaniards, and royal officials also made grants of privately owned land.

The basis of royal land policy was the recognition of a minimum amount of land for the pueblos de indios, but communities also received additional lands through grants and in some cases purchased additional land. At the same time the owners of haciendas mostly dedicated to sugar production usurped community lands and water rights, and regularized land titles through the *composición de tierras*, or basically the payment of a sum of money.

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[2] Ibid, 105-106.

[3] Charles Gibson, *The Aztecs under Spanish rule: a history of the Indians of the Valley of Mexico, 1519-1810* (Stanford: Stanford University Press, 1964), 257-299.

Indigenous communities could also do the same. Royal officials conducted a review of land titles in central Mexico in 1591 and again in 1643-1645.[4]

Thirteen to 15 large sugar mills and other smaller ones existed in the Cuernavaca-Cuautla region around 1600. One study estimated that the 13 most important mills produced some 240 metric tons of sugar, and employed 1,300 salaried workers and 300 slaves. In the 1590s, the Crown prohibited the use of indigenous laborers on the sugar estates, and instead promoted the use of African slaves. [5] Hacienda Cocoyoc that was located close to San Juan Texcalpán, which was a visita of Atlatlahucan, owned 79 slaves in 1702 and 61 that worked. Similarly, the hacienda owned 62 slaves in 1769, and 38 laborers.[6] The importation of slaves added to the ethnic mix in the region, but also constituted a large capital investment in an agricultural sector that competed for land and water with the indigenous communities.

Land records show that Atlatlahucan controlled some 100 hectares of land in the fundo legal confirmed in 1539, and a grant of an additional 43 hectares of land recognized in the same year. The community received title to an additional 780 hectares of land in 1598 for pasturing livestock. Altogether, the community controlled some 923 hectares of land.[7] In the sixteenth-century there were two instances of complaints by the community over damages to their lands. In both instances the damages resulted from livestock that most likely damaged crops.[8] There is no record of usurpations of community lands, or disputes over titles and water rights. The Spanish brought European agriculture to Morelos, but much survived and continues to survive today from pre-Hispanic agricultural practices. One example is the cuexcomate, a granary still used today in parts of Morelos, including Atlatlahucan (see Figure 19).

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[4] Alicia Hernández Orive, “Haciendas y pueblos en el estado de Morelos, 1535-1810,” unpublished Master`s tesis, El Colegio de México, 1973, 42.

[5] Gisela Von Wobeser, “La política económica de la corona española frente a la industria azucarera en la Nueva España (1599-1630),” *Estudios de Historia Novohispana* 9:9 (1987), 56-57.

[6] Gisela Von Wobeser, “Los esclavos negros en el México colonial Las haciendas de Cuernavaca-Cuautla,” *Jahrbuch für Geschichte Lateinamerikas-Anuario de Historia de América Latina* 23 (1986), 149.

[7] Hernández Orive, “Haciendas y pueblos,” 46.

[8] Ibid, 75.

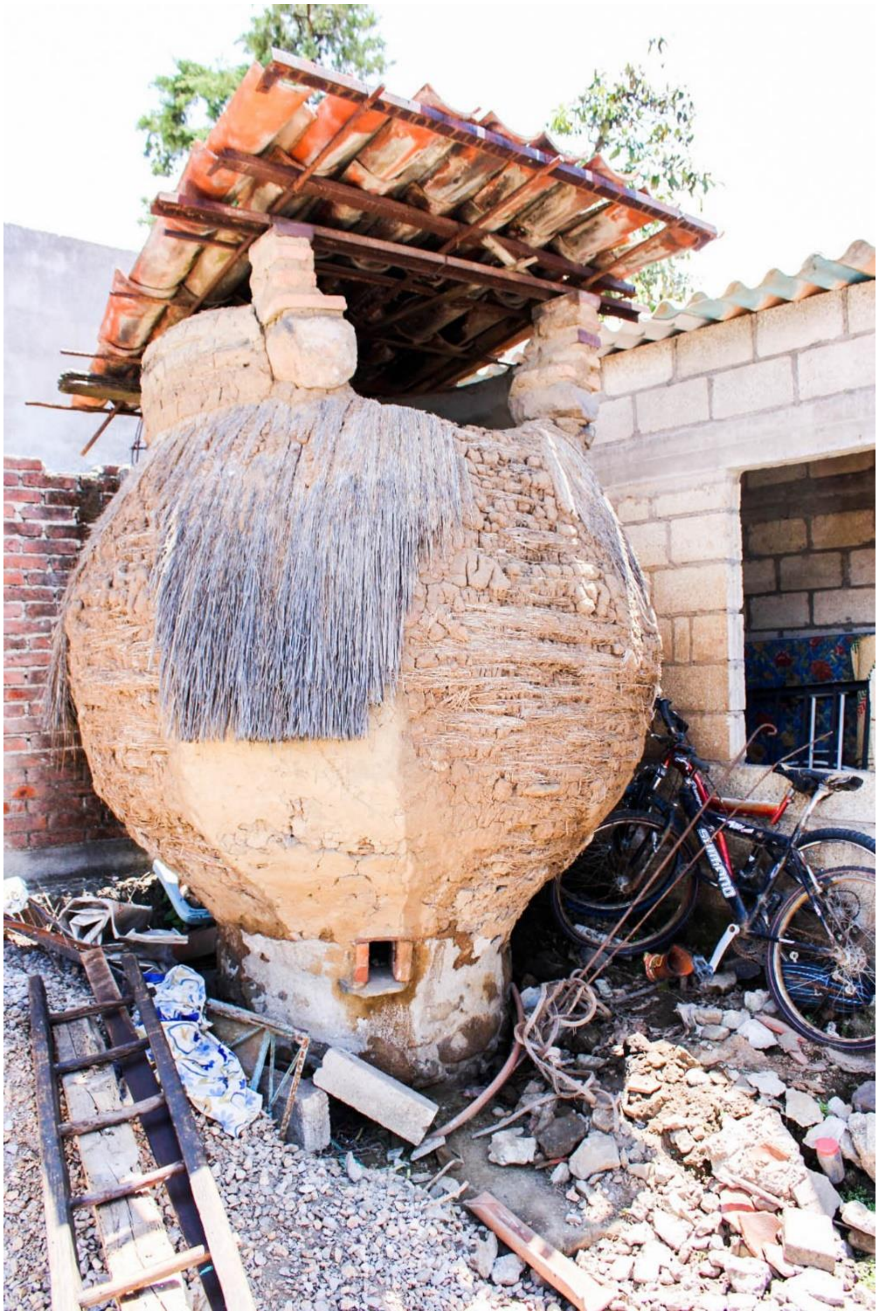


Figure 19: A cuexcomate in the barrio de los Reyes, Atlatlahucan. Photograph in the collection of Robert H. Jackson

An analysis of the urban plan of Atlatlahucan shows it evolved with the Mesoamerican south-north axis of the main street, as well as the east-west street axis (see Figure 20). The main street that runs through the community is on the Mesoamerican south-north axis, and south of the doctrina complex today is Calle Guerrero (see Figure 21). The same street continues to the north of the doctrina complex, and ends at the barrio chapel Los

Reyes built on the same south-north axis. The main street aligns with a mountain visible from the street, and that most likely was a sacred mountain. The Augustinian doctrina complex dedicated to San Mateo was most likely built on the site of a pre-Hispanic temple at the center of the community. Internally, the community is divided into barrios that in the sixteenth-century corresponded to the pre-Hispanic calpulli, or basic social-political administrative unit. In addition to the main doctrina complex, there were barrio chapels that in many instances were built on pre-Hispanic calpulli temples. There are six barrio chapels south of the doctrina complex on located on Calle Guerrero, and three more to the north.

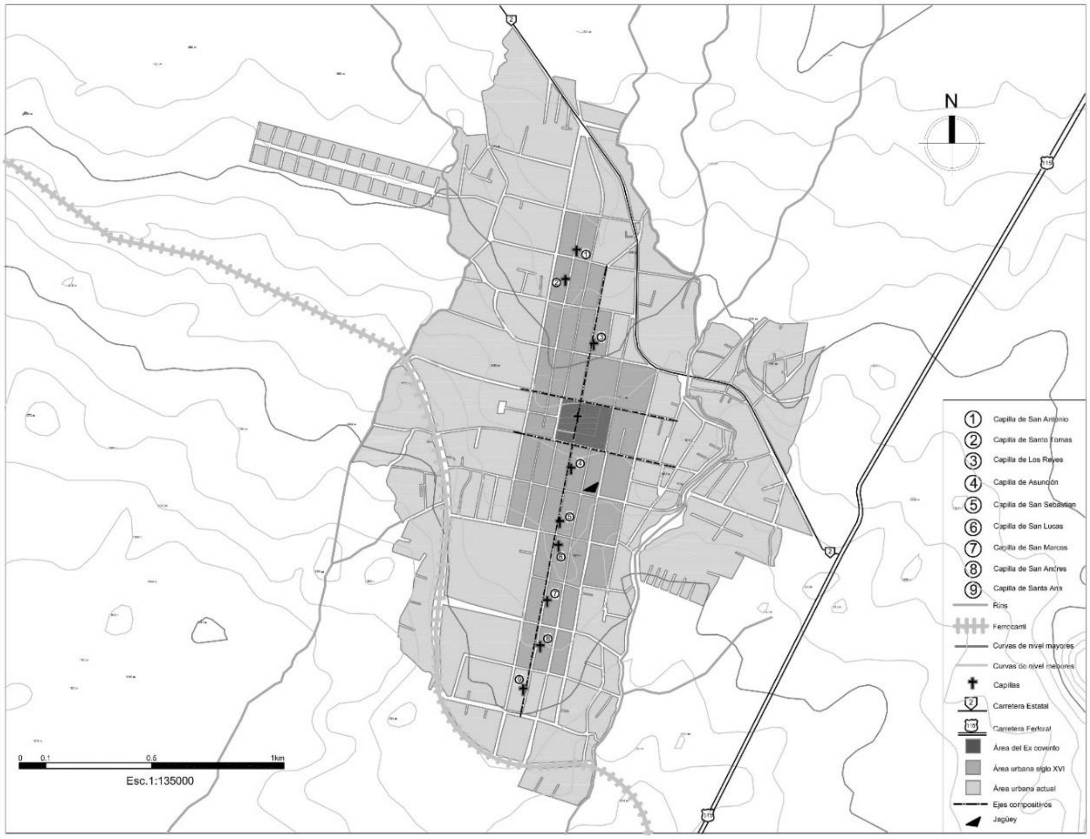

N
0 0.1 0.5 1km
Esc.1:135000
① Capilla de San Antonio
② Capilla de Santo Tomas
③ Capilla de Los Reyes
④ Capilla de Asunción
⑤ Capilla de San Sebastian
⑥ Capilla de San Lucas
⑦ Capilla de San Marcos
⑧ Capilla de San Andres
⑨ Capilla de Santa Ana
Ríos
Ferrocarril
Curvas de nivel mayores
Curvas de nivel menores
Capillas
Carretera Estatal
Carretera Federal
Área del Ex convento
Área urbana siglo XVI
Área urbana actual
Ejes compositivos
Jagüey

Figure 20: The urban plan of Atlatlahucan showing the location of the doctrina complex, the area of the community in the sixteenth century, and the area of the community today. The south-north and east-west axes are also shown. Created by Leonardo Merz Quintana.

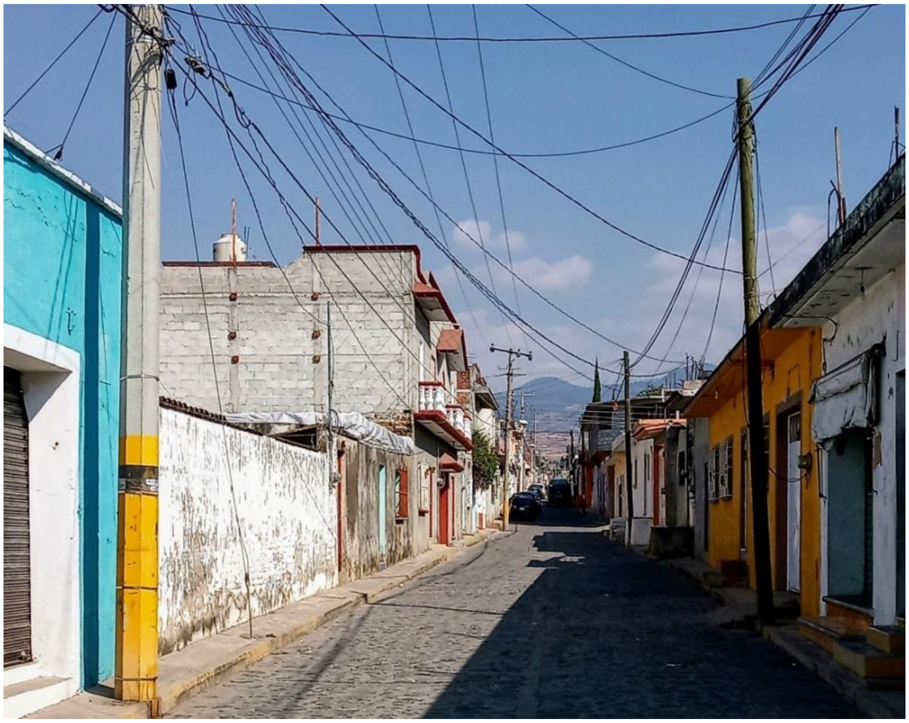


Figure 21: The main street in pre-Hispanic and colonial Atlatlahucan located on the south-north axis. Photograph in the collection of Robert H. Jackson.

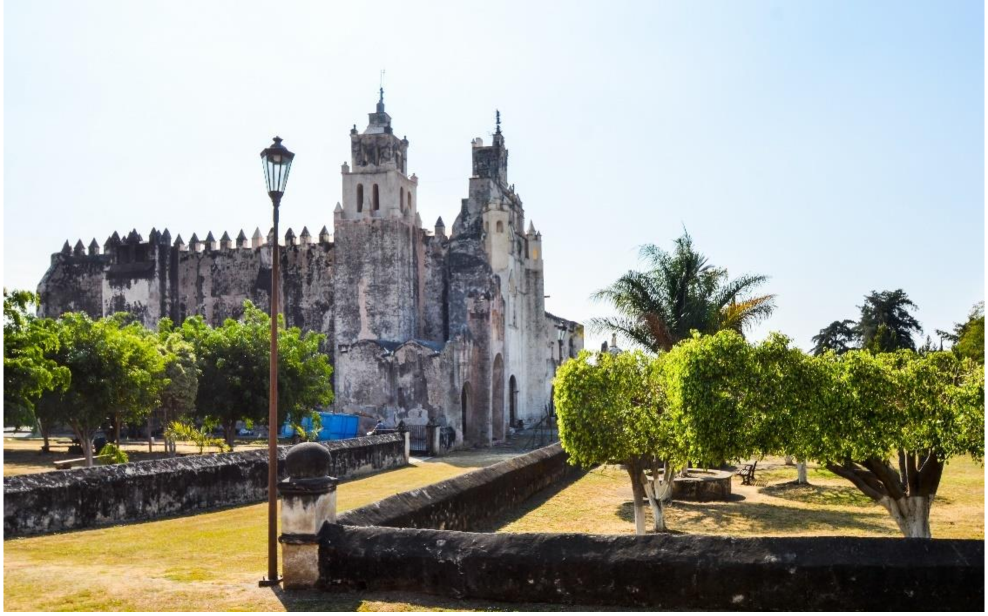


Figure 22: The doctrina complex San Mateo Atlatlahucan. showing the main street on a south-north axis that passed in front of the church and cloister. Photograph in the collection of Robert H. Jackson.

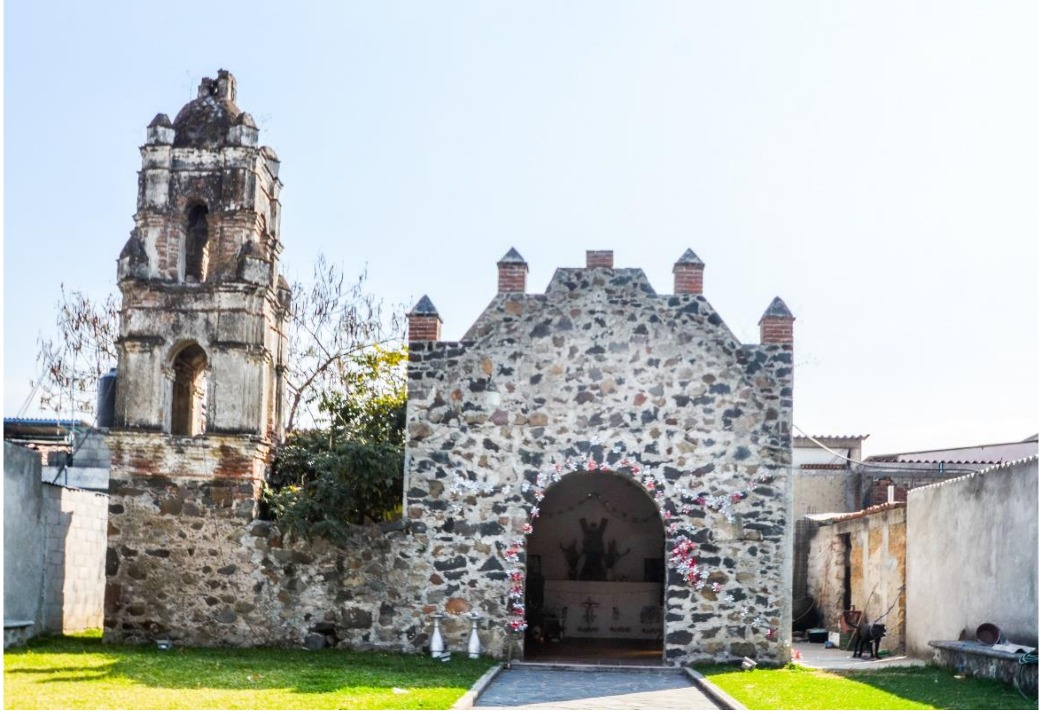


Figure 23: The barrio chapel of San Andres located to the south of the main doctrina complex. Photograph in the collection of Robert H. Jackson.

The doctrina complex was at the center of the sixteenth-century community. It included a large atrium, the surface of which had been leveled. The atrial wall to the north is shaped like a retaining wall, and access on this side is by nine steps that go down into the atrium. On the opposite side, to the south, the atrial wall becomes another retaining wall with similar access. This leveling surely required extensive excavation and filling work. The internal wall in the atrium of San Mateo Atlatlahucan is a unique element in the architecture of the 16th century doctrinas. It was a processional path that connected capillas posa. There are breaks in the wall and processional path at the capilla de indios, main church entrance, and at the capilla del Sr. de Tepalcingo. The processional path was also built along the south-north axis that was the same of the main street (see Figures 24-25).

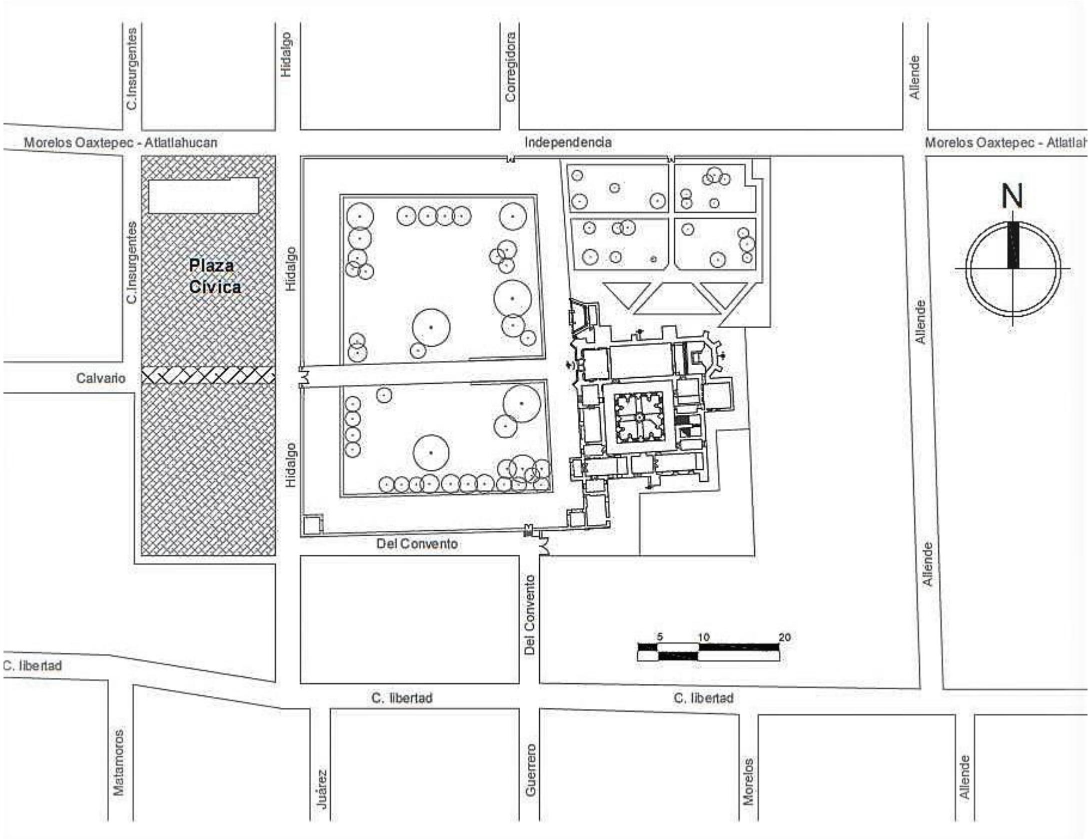

C.Insurgentes
Hidalgo
Corregidora
Allende
Morelos Oaxtepec - Atlatlahucan
Independencia
Morelos Oaxtepec - Atlatlah
N
C.Insurgentes
Plaza Cívica
Hidalgo
Allende
Calvario
Hidalgo
Del Convento
Allende
Del Convento
5
10
20
C. libertad
C. libertad
C. libertad
Matamoros
Juárez
Guerrero
Morelos
Allende

Figure 24: A plan of the doctrina complex, atrium, and center of Atlatlahucan. Created by Leonardo Meraz Quintana.

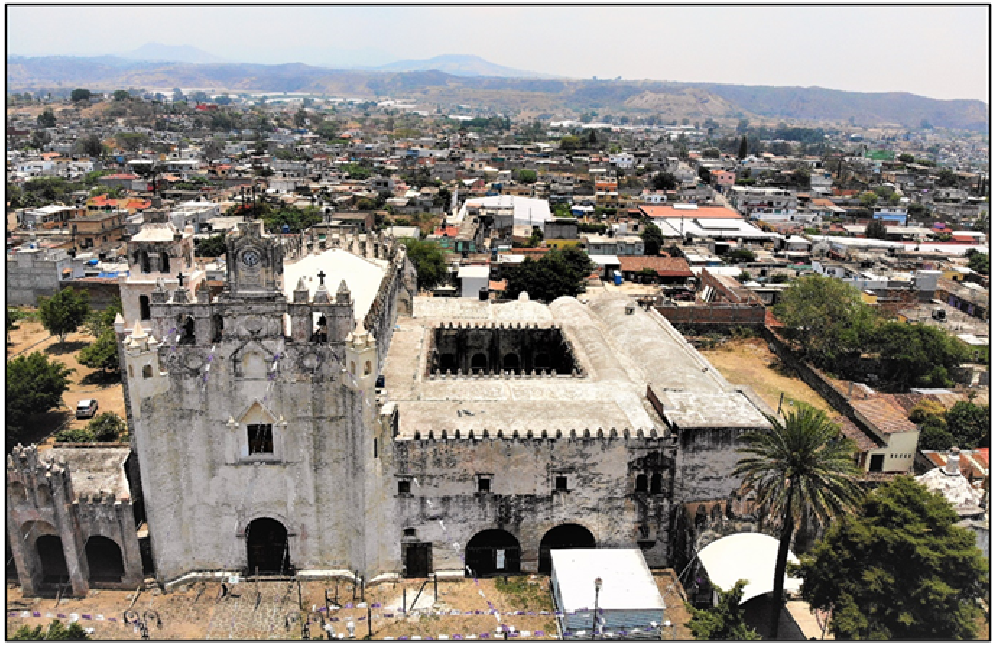


Figure 25: The doctrina complex. Photograph in the collection of Leonardo Meraz Quintana.

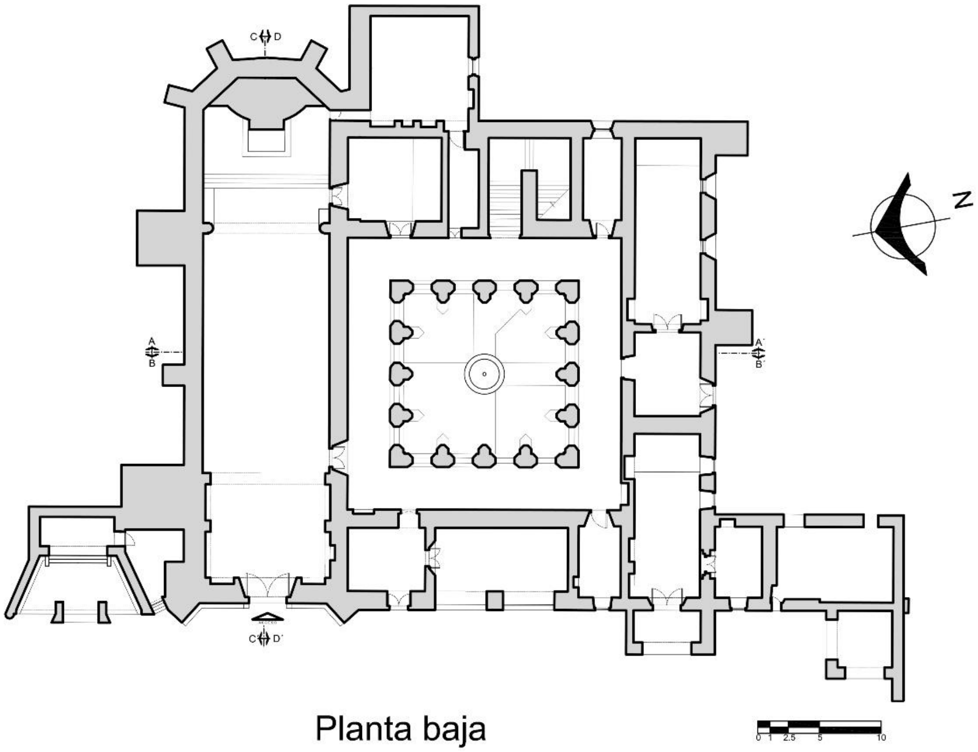


Figure 26: A diagram of the main doctrina complex. Created by Leonardo Meraz Quintana.

The church is a simple oblong structure divided into a choir loft, nave and presbytery. In the choir loft there are some blind arches on the south and north walls of the nave, worked in quarry stone and carved with floral motifs and small columns, a curious feature in a church that hardly exhibits stone decorations. The choir loft is covered with a thick barrel vault, above which is the choir with a large organ. The nave has been flattened and repainted in the 19th or early 20th century. The chancel, generous in size, is separated from the nave by a triumphal arch, and there is also a low-rise nineteenth-century altar. A curious aspect of this church is that the barrel vault of the nave is higher than the vault that covers the presbytery, whose curious shape is almost like a dome. This can be explained by the original the roof of the nave originally had a wooden roof before it was replaced by a barrel vault. As such, the wall that separates the nave from the presbytery (continuation of the triumphal arch) is finished off with a two waters roof and is of a vain circular "porthole" type. Finally, the windows of the temple are located under the vault, and are of sufficient size to illuminate the church interior.

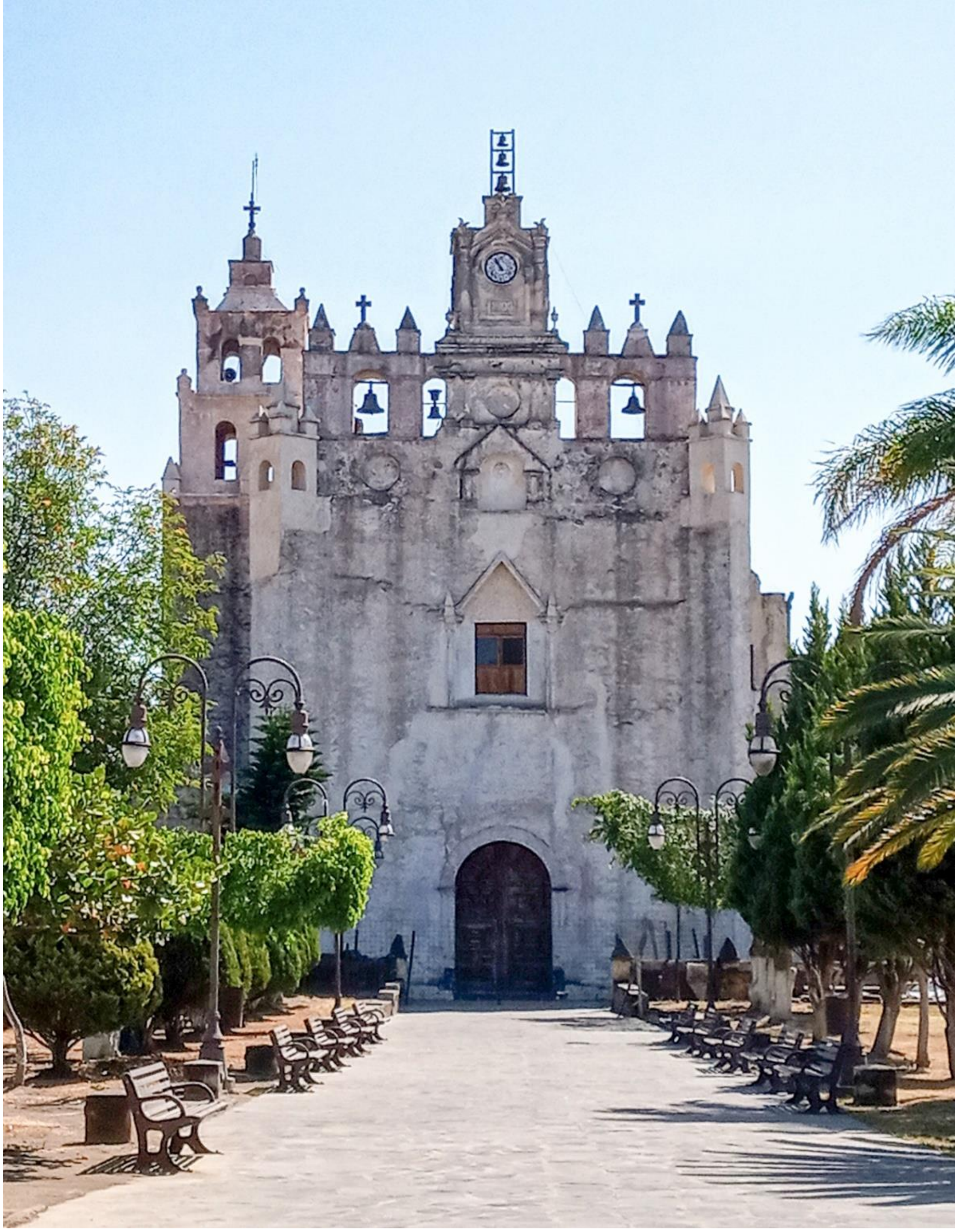


Figure 27: The church façade. Photograph in the collection of Robert H. Jackson.

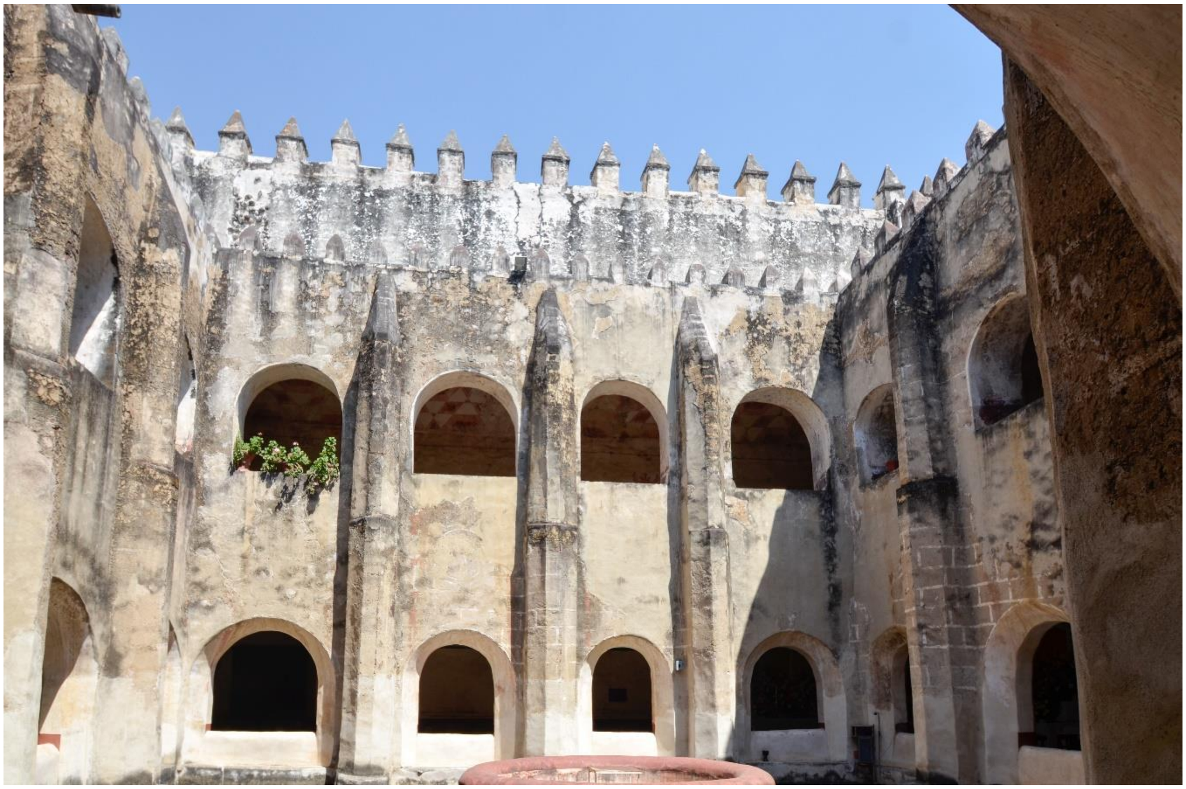
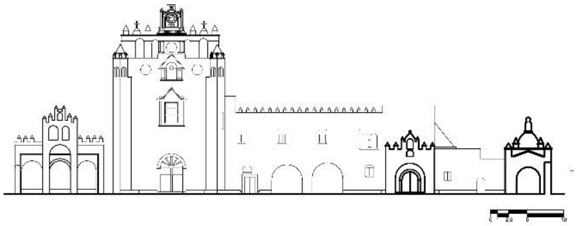
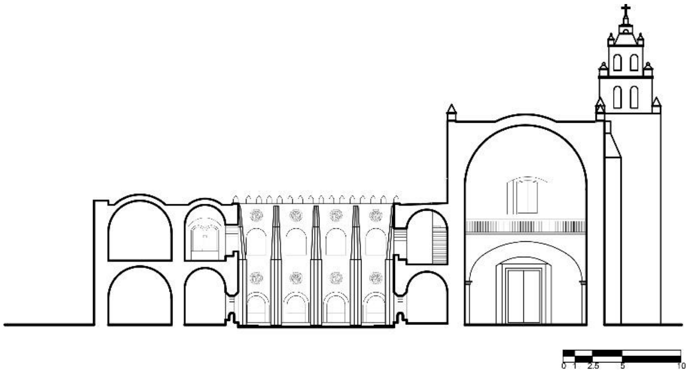


Figure 28: The cloister of the doctrina complex. Photograph in the collection of Robert H. Jackson.



Fachada principal



Corte B-B´

Figure 29: Architectural diagrams of the doctrina complex. Created by Leonardo Meraz Quintana.

The cloister used as a residential and administrative area has an architectural layout very common to all sixteenth-century doctrina complexes. It is square in shape with two levels, and an interior patio. The volume is semi-closed to the outside and with its north side adjoining the temple nave. The other three external facades contain small openings on both levels. To access the different internal spaces, there is a porch on the façade that that overlooks the atrium (west face). It is a space that is semi-open to the atrium and from which you access the interior of the cloister; In Atlatlahucan, this space with two arches (one slightly higher than the other) has a continuous barrel vault ceiling, like the rest of the spaces in the complex, decorated with mural painting. There are smaller doors in the three facades to communicate with the orchard and the service patios. The facade that faces the atrium also has a small protruding structure at its southern end that gives access to a chapel dedicated to the Christ of Tepalcingo. Both the façade of the chapel of Cristo de Tepalcingo and most of the cloister façade that faces the atrium are crowned with battlements topped with pyramids, that join the cloister to the nave. Inside, there is a corridor that surrounds the central patio that opens with simple semicircular arches towards it, on both levels, they are very simple semicircular arches. The arched walls of the internal courtyard are topped with battlements similar to those of the nave and the façade of the cloister, but they are smaller and lower in height.

From the corridors all the spaces of the cloister are connected, and the two levels are connected by a large staircase that in the case of Atlatlahucan is located to the east of the cloister and has two ramps with a landing. For each activity of the cloister there was a specific space. Group activities were carried out on the ground floor, such as food preparation and eating, prayers, meetings, among others. This included the portico, sala de profundis, dining room or Refectory, Kitchen, Sacristy, and a library. The Cells are concentrated on the upper floor, and in this case the number and distribution of these does not seem to coincide with what was originally built. There must have been simpler cells for the lower-ranking monks, and at least one special cell, perhaps larger or strategically located, for the guardian father. The common cells most likely were in the south and west corridors, and larger cells in the eastern part next to the grand staircase The corridors are also roofed with their own barrel vault, and the corridor to the south of the patio extends the entire length of the cloister and ends, at both ends, with paired openings (or twinned) with stone arches separated by a short stone column. While the stairwell has a semi-dome vault with a small lantern. It is noteworthy that this layout and type of vaults are replicated on the ground floor. This varied and numerous set of vaults supported by wide walls is a special characteristic of the Atlatlahucan cloister, as is the small proportion of its openings that accentuate the massiveness of the complex.

The organization of evangelization in the sixteenth-century also included the visitas that were the subject communities of the head towns without resident missionaries. As already discussed above, Atlatlahucan counted three subject communities towards the end of the sixteenth-century, and two still have visita chapels that were originally built as "open chapels" on a more modest scale. They are San Juan Bautista Texcalpan and San Agustín Tepetlixpita. Both chapels exhibit the architectural elements of "Open chapels" with open arches in the façade, and in both cases the arches were filled in at a later date when the chapels were reconstructed (see Figures 30-31).

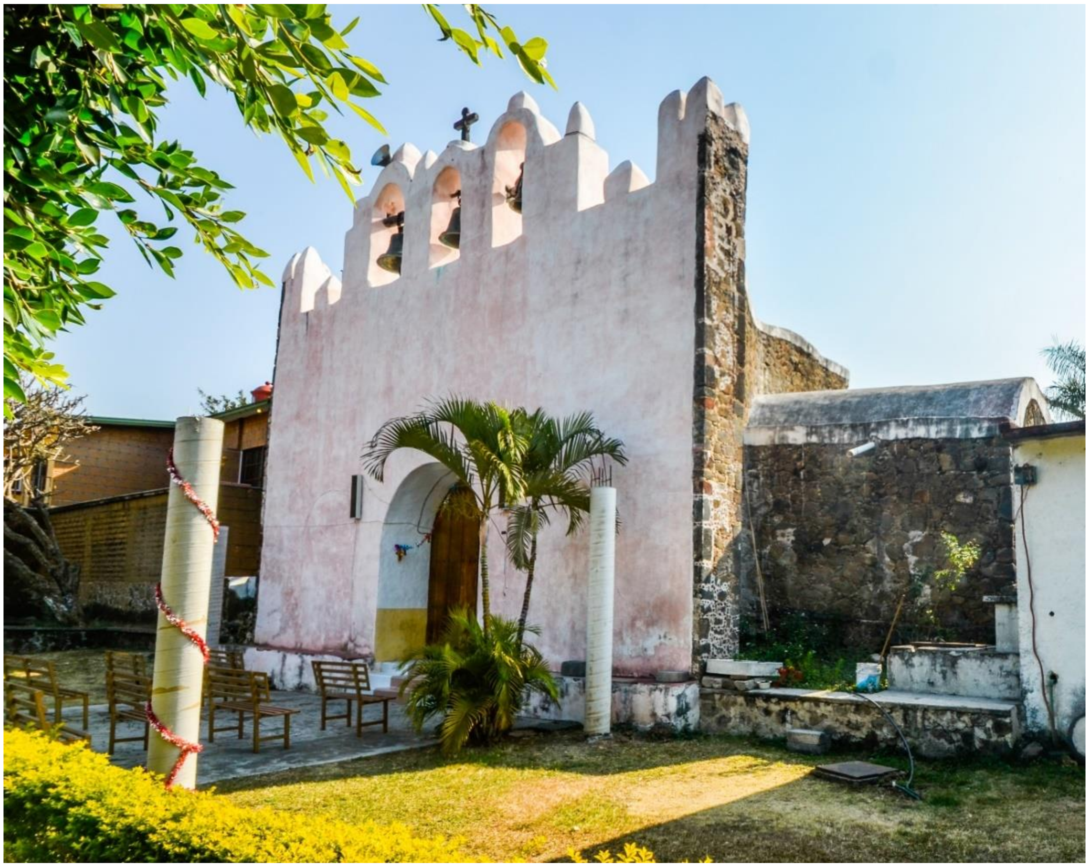


Figure 30: The visita chapel San Juan Bautista Texcalpan (Morelos). Photograph in the collection of Robert H. Jackson.

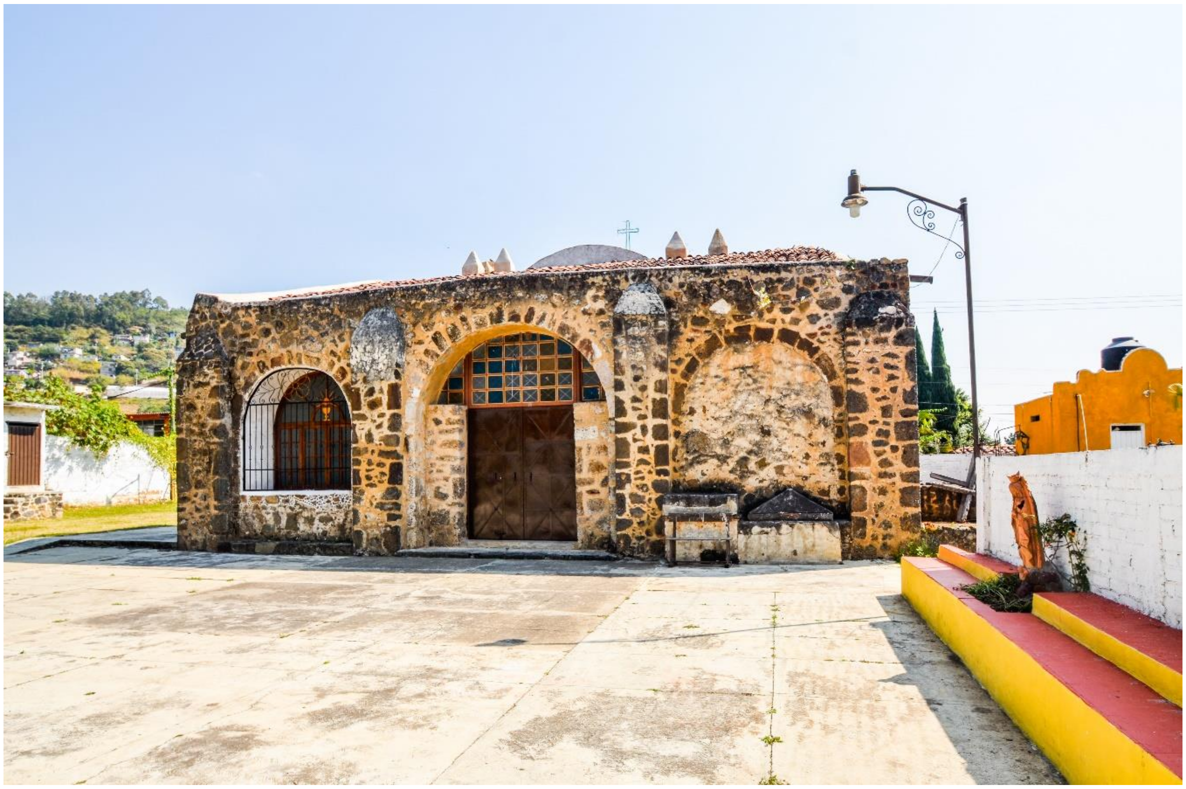


Figure 31: The visita chapel San Agustín Tepetlixpita (Morelos). Photograph in the collection of Robert H. Jackson.

Tlayacapan also preserves the Mesoamerican-colonial-era urban plan, and its colonial-era architectural heritage. At the time of the Spanish conquest Tlayacapan counted four calpulli or barrios, each with its own temple. A south-north Mesoamerican and east-west axis defined the urban structure of the community, and converged where the Augustinians directed the construction of the sixteenth-century doctrina complex dedicated to San Juan Bautista. Barrio chapels mark where the two streets end, and most likely occupy the sites of pre-Hispanic temples. The south-north street is named Calle 5 de Mayo/Justo Sierra. At the south end is the capilla de la Exaltación and the municipal cemetery. At the north end is the Capilla de Santa Ana. The chapels are visible from both ends of the street (see Figures 32-33). Barrio chapels also mark either end of the east-west axis that today is the Calle Benito Juarez/Emiliano Zapata. The Capilla del Sr. Santiago is located to the east, and the Capilla del Rosario to the west (see Figures 34-37).

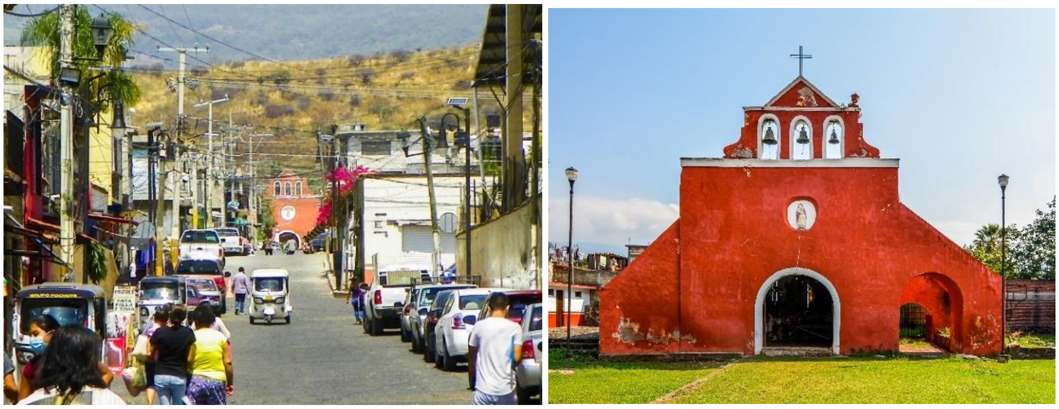


Figure 32: The Santa Ana barrio chapel seen from the lower part of Calle 5 de Mayo/Justo Sierra. Photographs in the collection of Robert H. Jackson.

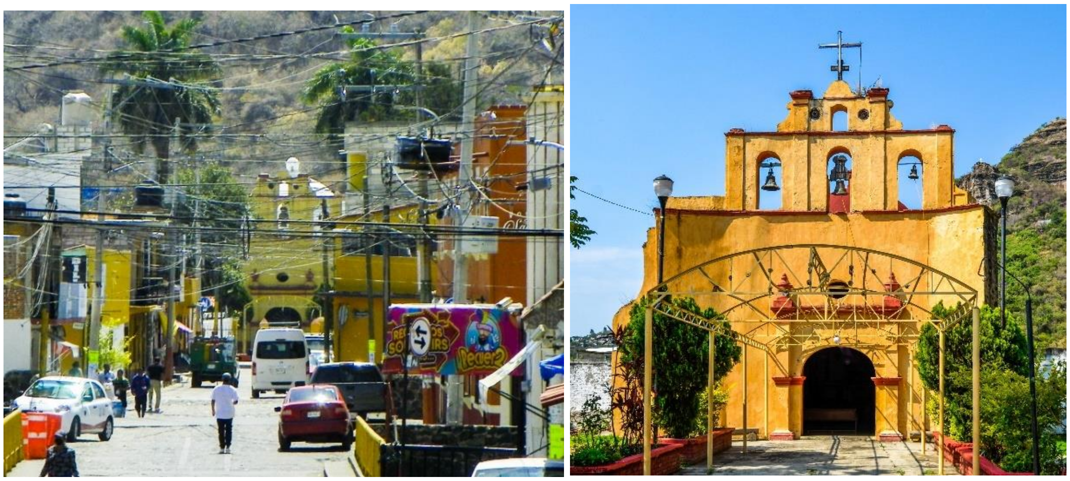


Figure 33: The Exaltación barrio chapel seen from the upper part of Calle 5 de Mayo/Justo Sierra. Photographs in the collection of Robert H. Jackson.

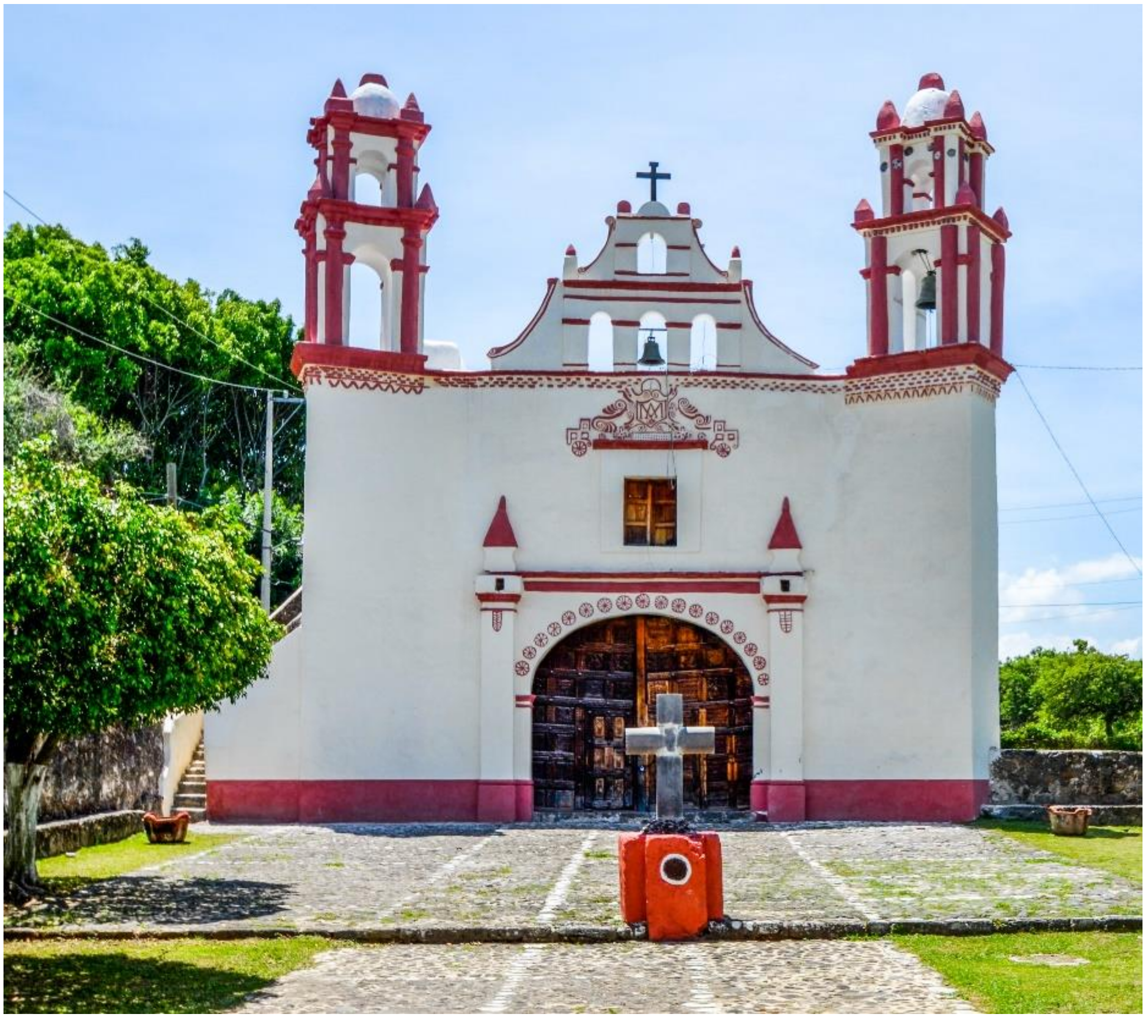


Figure 34: The barrio chapel dedicated to Sr. Santiago Apóstol that marks the eastern end of the east-west axis. The base of the atrial cross has a pre-Hispanic stone that depicts the sun. Photograph in the collection of Robert H. Jackson.

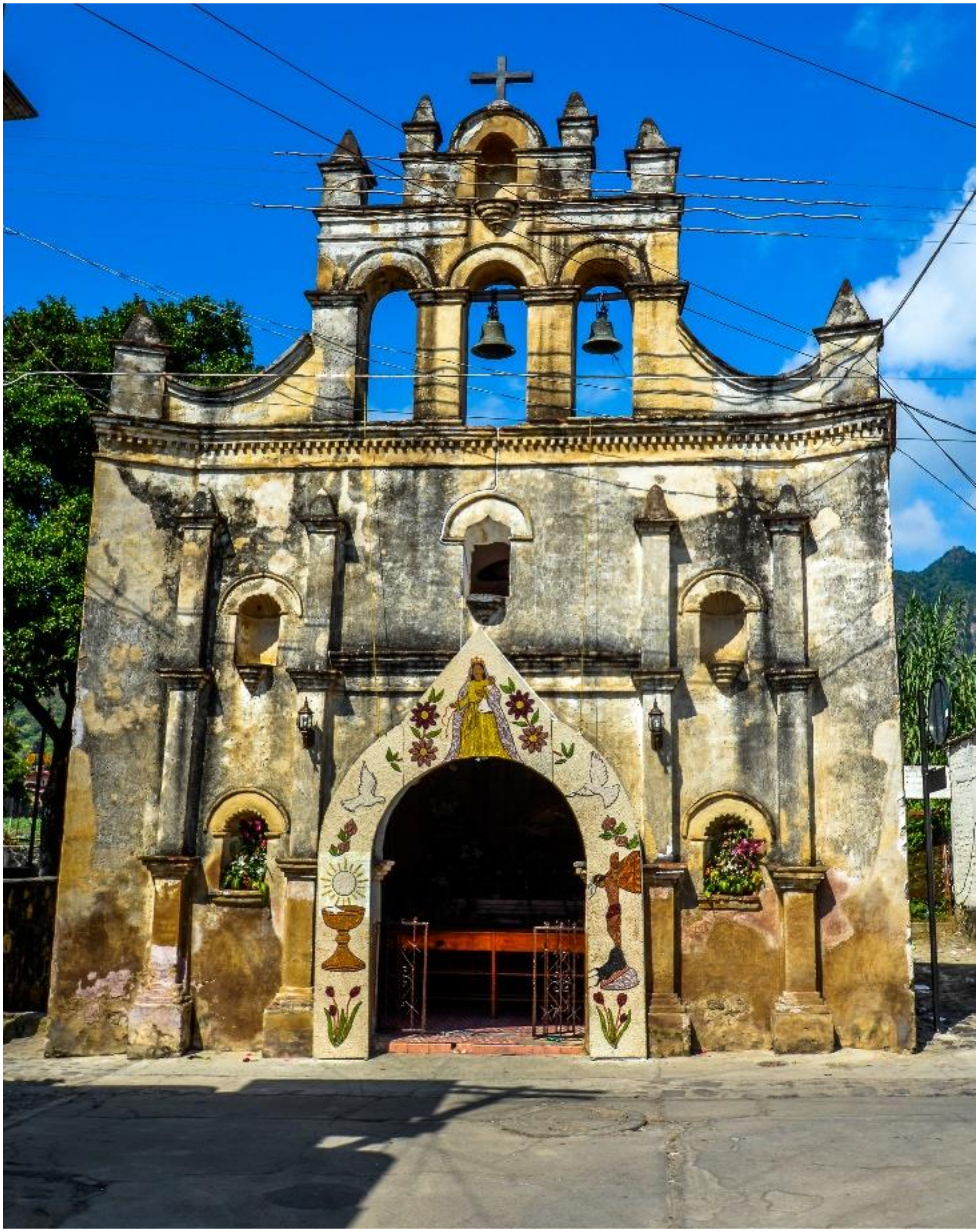


Figure 35: The Rosario barrio chapel that marks the western end of the east-west axis. Photograph in the collection of Robert H. Jackson.

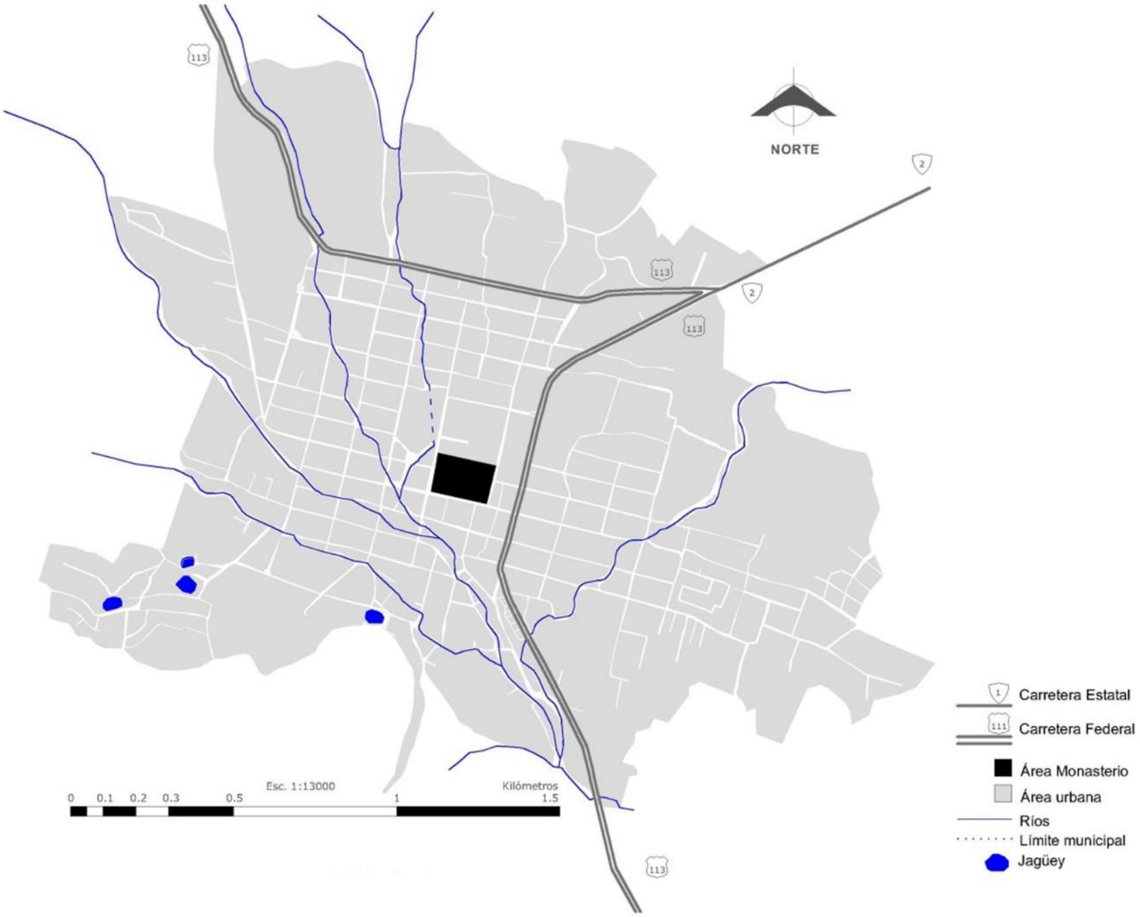

NORTE
113
2
Esc. 1:13000
Kilómetros
0
0.1
0.2
0.3
0.5
1
1.5
Carretera Estatal
Carretera Federal
Área Monasterio
Área urbana
Ríos
Límite municipal
Jagüey

Figure 36: The urban plan of modern Tlayacapan showing the location of the ex-doctrina of San Juan Bautista. Leonardo Meraz Quintana, *Fundaciones monásticas en la Sierra Nevada: Historia y medio ambiente* (México, D.F.: Universidad Autónoma Metropolitana, 2017), 90.

Three historic structures dominate the center of the community. The first is the Augustinian doctrina complex dedicated to San Juan Bautista that most likely occupies the site of the principal pre-Hispanic temple. It should also be noted that there is a small ceremonial center on the Cerro Tlatoani that overlooks the town.[9] According to George Kubler, the construction of the doctrina church and cloister date to the years 1550-1570, and more specifically the years 1555-1565 following its elevation to the status of an independent doctrina.[10] Ryan Crewe documented construction in the same years.[11] The doctrina complex consists of a large and spacious atrium, the monumental church, and cloister, and “open chapel” (see Figures -). The complex and particularly the church were badly damaged in the earthquake of September 19, 2017, and restoration has been slow.

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[9] Leonardo Meraz Quintana, *Fundaciones monásticas en la Sierra Nevada: Historia y medio ambiente* (México, D.F.: Universidad Autónoma Metropolitana, 2017), 82.

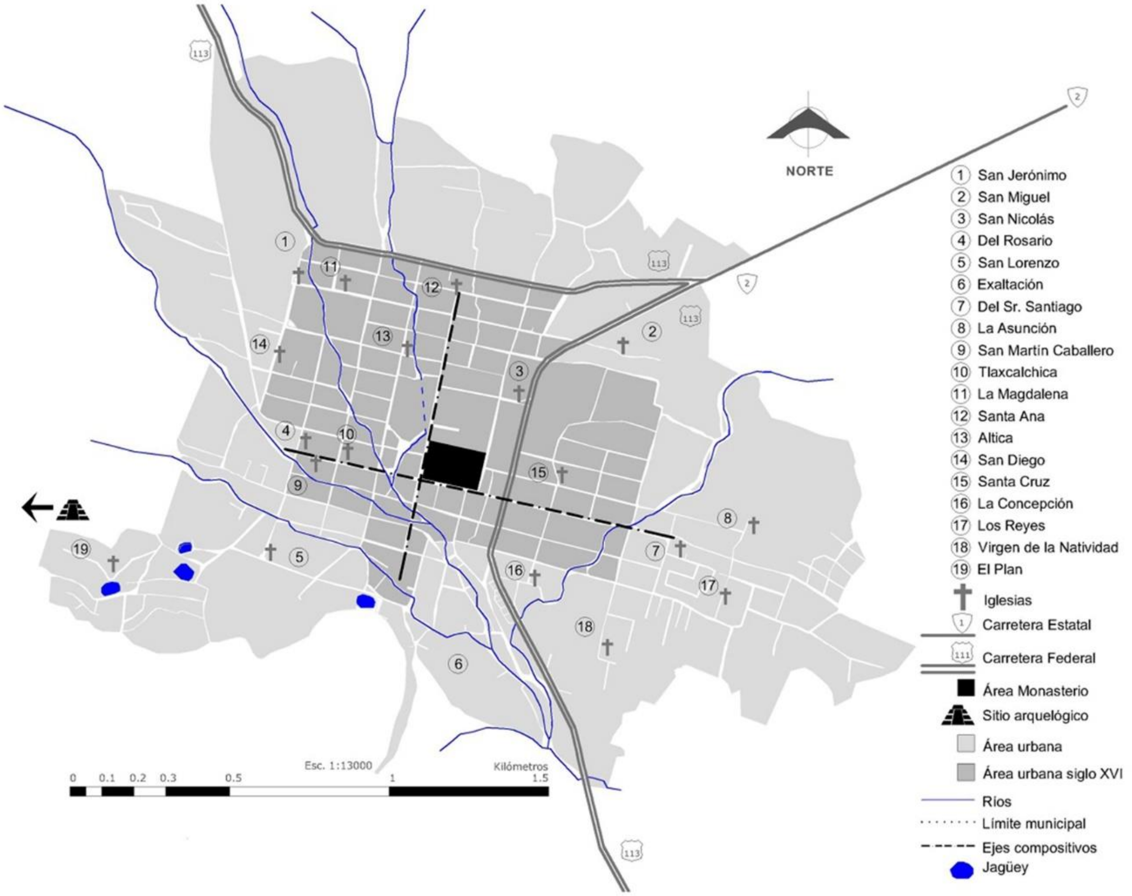
NORTE
1 San Jerónimo
2 San Miguel
3 San Nicolás
4 Del Rosario
5 San Lorenzo
6 Exaltación
7 Del Sr. Santiago
8 La Asunción
9 San Martín Caballero
10 Tlaxcalchica
11 La Magdalena
12 Santa Ana
13 Altica
14 San Diego
15 Santa Cruz
16 La Concepción
17 Los Reyes
18 Virgen de la Natividad
19 El Plan
Iglesias
Carretera Estatal
Carretera Federal
Área Monasterio
Sitio arqueológico
Área urbana
Área urbana siglo XVI
Ríos
Límite municipal
Ejes compositivos
Jagüey
113
2
1
111
Esc. 1:13000
Kilómetros
0
0.1
0.2
0.3
0.5
1
1.5

Figure 37: The colonial-era and modern urban plan of Tlayacapan showing the location of the ex-doctrina complex, the south-north and east-west axis streets, and the locations of the barrio chapels. Leonardo Meraz Quintana, *Fundaciones monásticas en la Sierra Nevada: Historia y medio ambiente* (México, D.F.: Universidad Autónoma Metropolitana, 2017), 91.

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[10] George Kubler, *Arquitectura mexicana del siglo XVI*, first Spanish edition (México, D.F.: Fondo de Cultura Económica, 1983), 110, 629-630.

[11] Ryan D. Crewe, *The Mexican Mission: Indigenous Reconstruction and Mendicant Enterprise in New Spain, 1521-1600* (Cambridge: Cambridge University Press, 2019), 264-265.

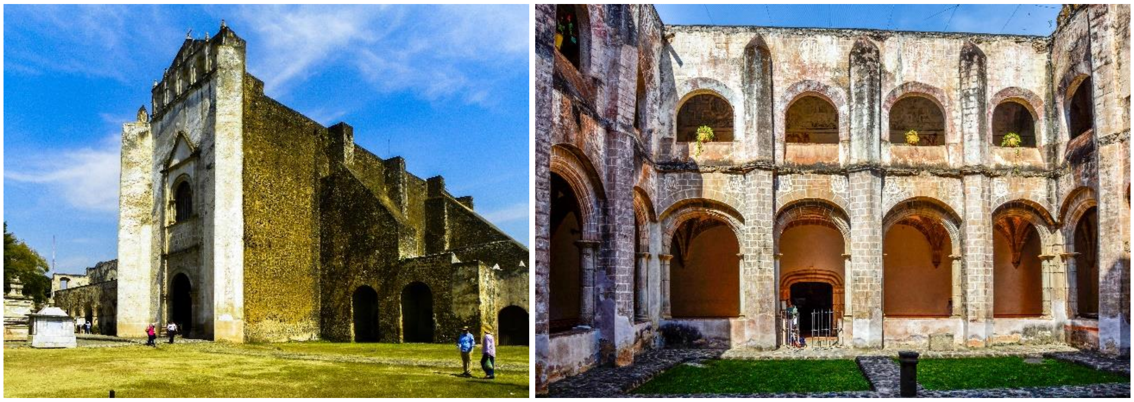

Figure 38: The church and cloister of the ex-doctrina complex prior to the earthquake of September 19, 2017. Photographs in the collection of Robert H. Jackson.

Prior to the elevation of Tlayacapan to the status of an independent doctrina in the 1550s, it was a visita of Atlatlahucan. The construction of the monumental church and cloister dates to the period following the Assignment of resident missionaries. As a visita, it most likely had a free-standing "capilla de indios" or "open chapel," and that structure still exists today and is located immediately to the right of the monumental church. As in many other sites, it was an easy expedient to have a structure to initiate evangelization. When the Augustinians had buttresses added to the monumental church, they incorporated a part of the "capilla de indios" into that new structure (see Figure 38).

The second historic structure is the tecpán, or seat of the post-conquest indigenous government of Tlayacapan. It most likely dates to the mid-sixteenth century. As already noted, the upper façade of the structure is decorated with ritually significant pre-Hispanic engraved stones including chalchihuitl, and there are also remains of sixteenth-century mural design elements. The structure was badly damaged in the earthquake of September 19, 2017, and prior to the earthquake had functioned as the municipal palace. In the reconstruction process a monumental clock that dates to 1872 was removed, and the appearance of the structure more closely approximates that of the colonial-period (see Figure 39). The second is the ”Casa de Cerería" that was a *casona* or private residence built in the sixteenth-century. Its name derives from its later use in the production of wax candles. It functions today as the *Casa de Cultura* of Tlayacapan.

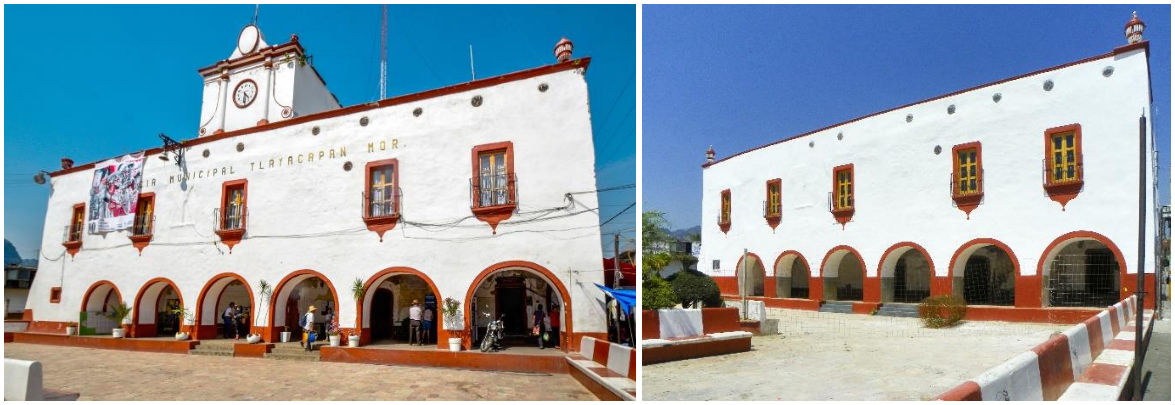

Figure 39: The Tlayacapan tecpán before the earthquake of September 19, 2017, and as reconstructed. Photographs in the collection of Robert H. Jackson.

Barrio chapels were an important element of the colonial-era religious and social life, and a number of former indigenous communities still preserve chapels. In the greater Mexico City area, for example, Azcapotzalco, Coyoacán, and Xochimilco still preserve barrio chapels that date to the sixteenth and seventeenth centuries.[12] Tlayacapan preserves 18 colonial-era barrio chapels in its modern urban area (see Figure). Those located east of the south-north axis street include Sr. Santiago, San Nicolas, San Miguel, la Concepción, la Natividad, los Reyes, and la Asunción. Those located west of the south-north axis are Santa Ana, la Exaltación, el Rosario, Altica, la Magdalena (Santa María Magdalena), San Diego, San Jéronimo, Santa Cruz Tlaxcalchica, San Martín Caballero, and San Lorenzo. The barrio known today as "El Plan" most likely was a subject community of Tlayacapan in the sixteenth-century. Its chapel is known as Nuestra Señora del Tránsito.

The chapels are located close to each other that shows the social-political division of the colonial-era indigenous community, and most likely was a consequence of the relocation of population to Tlayacapan from the early seventeenth-century policy of congregación. Although physically relocated to Tlayacapan, the populations of the extinguished communities retained a separate social-political identity in the period immediately following the resettlement. This most likely accounted for the proliferation of barrio chapels. For example, Santa Cruz Tlaxcalchica is located on the corner of Calle Emiliano Zapata (the east-west axis street) and Calle Manuel Matamoros. Half a block away on the east-west axis street is the chapel dedicated to San Martín Caballero, and Rosario chapel that marked the end of the same east-west axis street is a further half-block from San Martín Caballero (see Figure). A second example is the location of three chapels at the western edge of the community. San Diego is a block and a half away from San Jéronimo on Calle Niños Heroes, and la Magdalena is a block away from the latter on the Calle Miguel Hidalgo.

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[12] Robert H. Jackson and Fernando Esparragoza Amador, *A Visual Catalog of Sixteenth Century Central Mexican Doctrinas* (Newcastle upon Tyne: Cambridge Scholars Publishing, 2016), .125-129, 525-526; Arturo Vergara Hernández and Robert H. Jackson, *Las doctrinas franciscanas de México a fines del siglo XVI en las descripciones de Antonio de Ciudad Real (O.F.M.) y su situación actual* (Pachuca: Universidad Autónoma Estado de Hidalgo), 23-26.

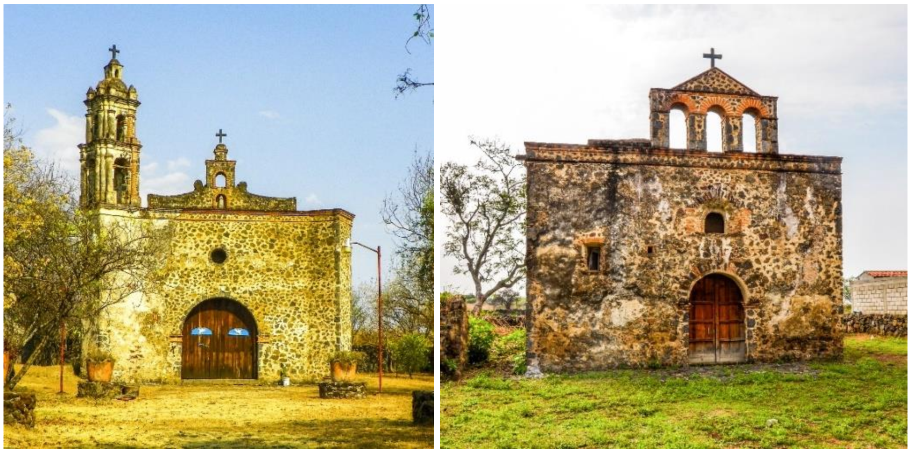

Figure 40: The chapels of la Nativida and la Asunción located east of the south-north axis street. Photographs in the collection of Robert H. Jackson.

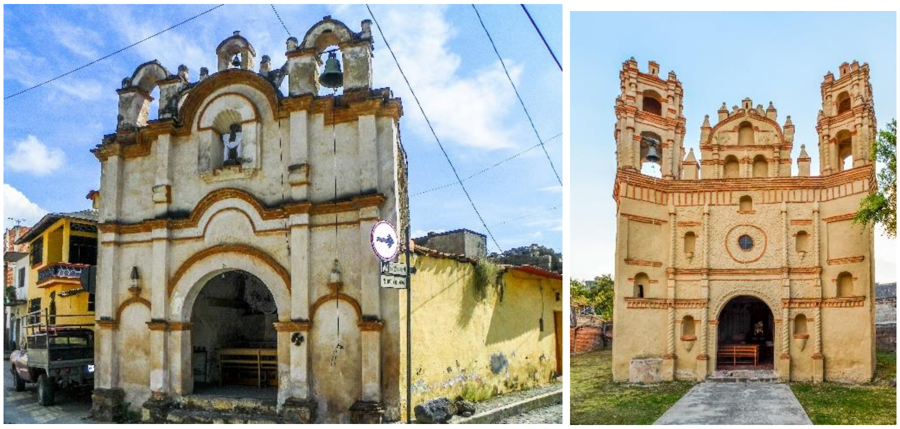

Figure 41: The chapels of Santa Cruz Tlaxcalchica and San Martín Caballero. Photographs in the collection of Robert H. Jackson.

The south-north and east-west orientation and alignment was also related to the pre-Hispanic conceptualization of a sacred geography, and particularly to astronomical vents such as solar events that marked key dates in the Mesoamerican ritual calendar such as the agricultural cycle. A solar occurs in Acámbaro (Guanajuato) in mid-February, and marks the beginning of the Mesoamerican agricultural cycle. The Franciscan doctrina church as a south-north orientation, and not the traditional west-east Christian orientation. The solar event occurs with the first light of the morning as the sun rises from behind a hill and behind the chapel of the *hospital de indios* (see Figure 42). The hospital chapel dates to the mid-sixteenth century on an east-west orientation, and was built on the site of a pre-Hispanic temple that most likely figured in the solar event. As the sun rises it illuminates east-west oriented street, and what most likely was a sacred mountain located to the west. The chapel façade also incorporates pre-Hispanic iconography that depicts the sky, earth, and the underworld.[20]

A second example occurs in the Dominican doctrina church San Juan Bautista Coixtlahuaca (Oaxaca), that was also built on the site of a pre-Hispanic temple. The last light of the day bathes the façade of the church, and sunlight enters the church from several sources and illuminates the statue of saint John the Baptist located on the main altar. This solar event occurs over a period of days, and is associated with the winter solstice. It would have been the intent of the architects who designed the pre-Hispanic temple to mark the winter solstice. It also occurs at Christmas, and the Dominicans would have used the solar event to mark this Christian date (see Figure 43). These two examples demonstrate how the indigenous peoples od central Mexico incorporated the sacred geography and astronomical events into their world view, even following the Spanish conquest.

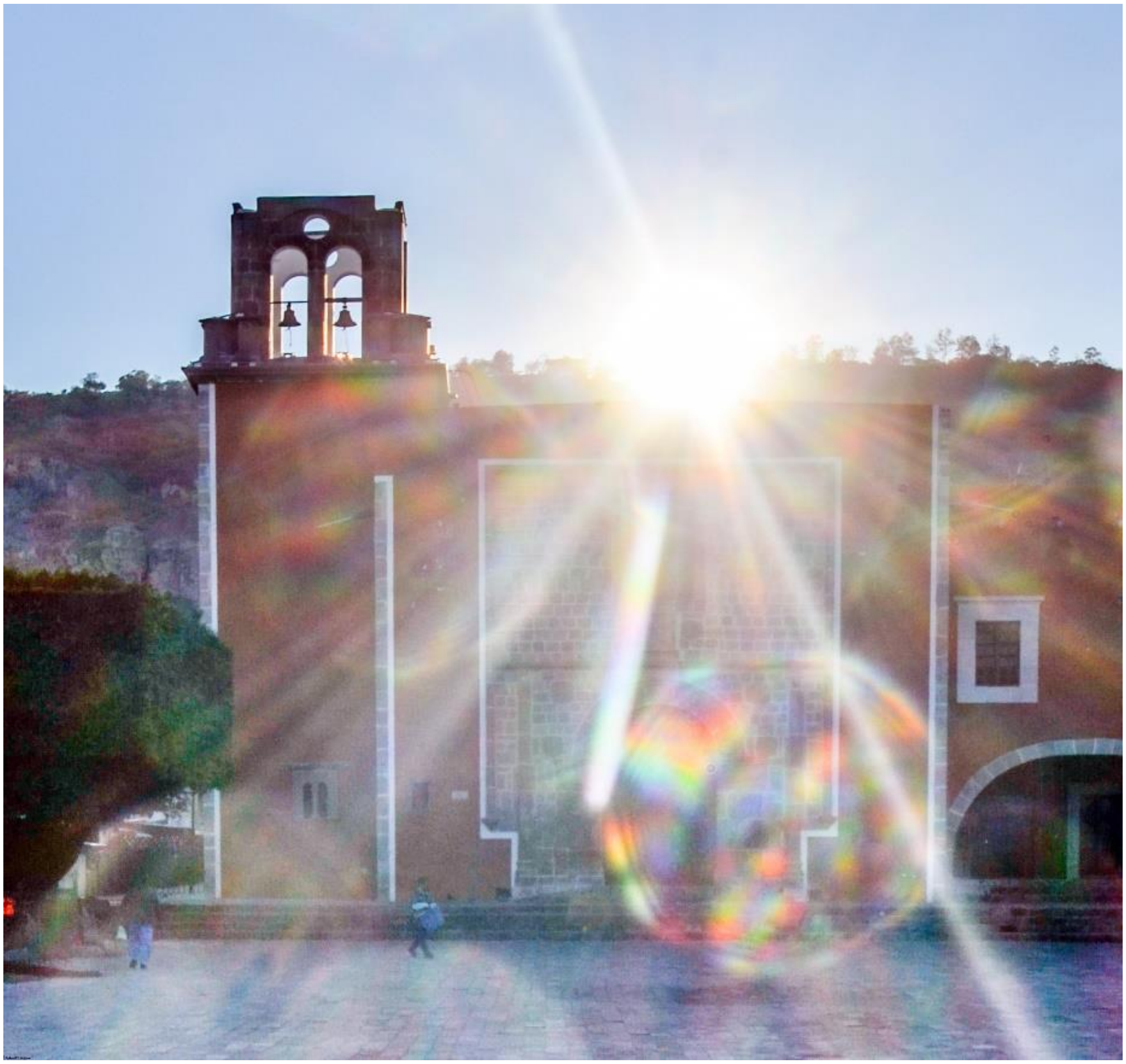

Figure 14: The solar event in mid-February that marks the beginning of the Mesoamerican agricultural cycle in Acámbaro. Photograph in the collection of Robert H. Jackson.

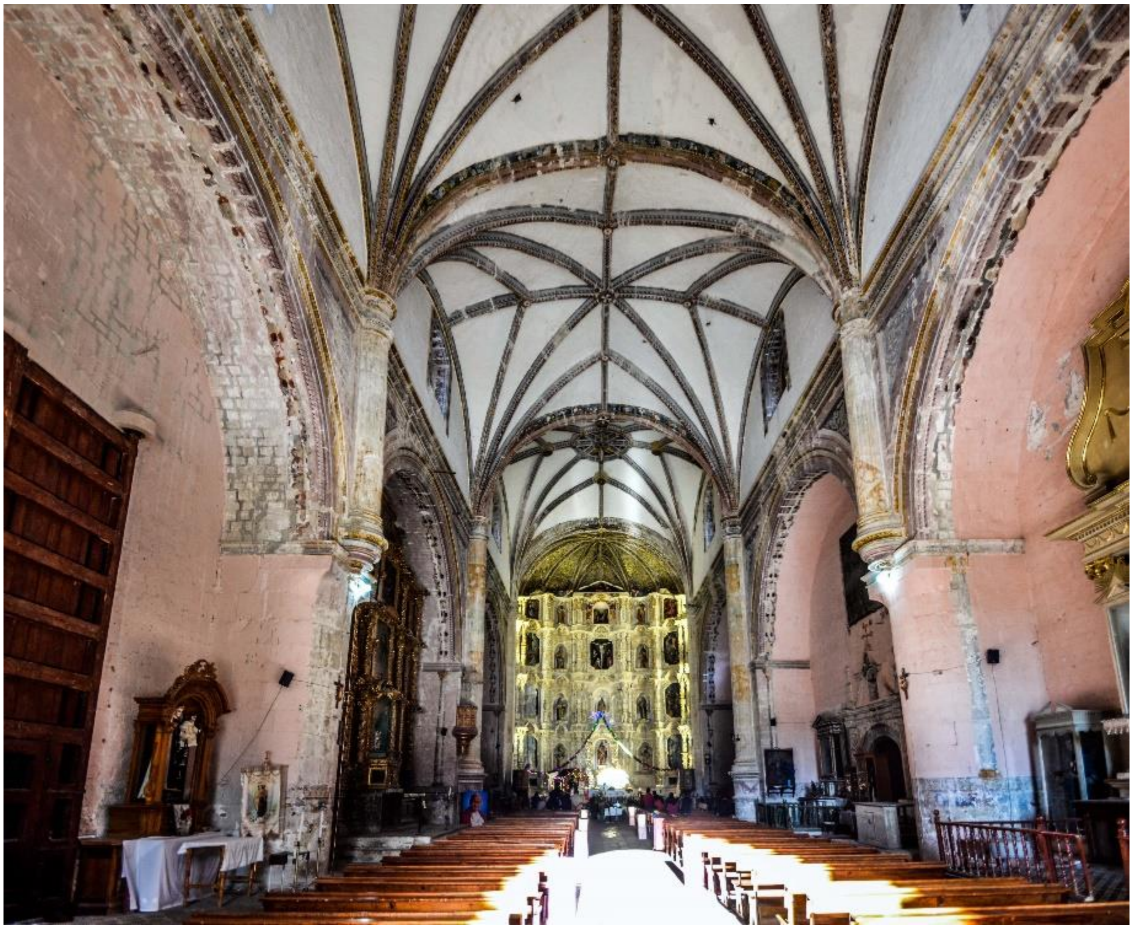

Figure 43: The solar event in the Dominican doctrina church San Juan Bautista Coixtlahuaca that marks the winter solstice and also occurs during Christmas. Photograph in the collection of Robert H. Jackson.

The three case studies presented above were of communities that existed at the time of the Spanish conquest. Missionaries on different Spanish American frontiers directed the development of mission building complexes of varying degrees of complexity from whole cloth. The missionaries congregated the indigenous peoples on the new communities. Contemporary historic diagrams exist of the fully developed building complexes of missions, and examples from two frontiers are analyzed here. They are the fully developed mid-eighteenth-century complexes of the Jesuit Guaraní missions (parts of Argentina, Paraguay, and Brazil) that were, along with those of Chiquiitos and Moxos in eastern Bolivia, perhaps the most sophisticated mission communities in the Americas, and most closely corresponded to the ideal of the urban scheme introduced by royal fiat. The second case study is of the fully developed Franciscan missions in California established after 1769 at the height of the so-called Bourbon Reforms.

Jesuit Guaraní Missions

What did mission complexes look like? There are historic drawings and paintings of mission complexes while still administered by missionaries, but very few examples of contemporary professionally drawn diagrams of mission complexes. One exception is the existence of diagrams of selected Guaraní missions. Mixed Spanish-Portuguese boundary commissions undertook the process of establishing the boundaries of Spanish and Portuguese territory in South America following the Treaty of Madrid (1750) and the Treaty of San Ildefonso (1777). King Fernando VI (r. 1746-1759) was married to a member of the Portuguese royal family, and pursued a more pro-Portuguese policy. He signed the Treaty of Madrid that defined Spanish and Portuguese spheres of influence in South America. King Carlos III (r. 1759-1788) ascended the throne on the death of his brother, and pursued an anti-Portuguese policy. He abrogated the Treaty of Madrid in 1761, and in 1777 signed the Treaty of San Ildefonso after a renewed period of armed conflict during the Seven Years War (1755-1763) and after the declared peace.[21] Members of the mixed commissions produced professionally drawn diagrams of the fully developed complexes of the seven Guaraní missions located east of the Uruguay River in what today is Rio Grande do Sul, Brazil, and of other missions. Under the terms of the Treaty of Madrid Spain transferred the territory east of the Uruguay River to Portugal in exchange for Colônia do Sacramento located in what today is Uruguay, and members of the joint commission organized under the terms of the treaty produced the earliest detailed diagrams.

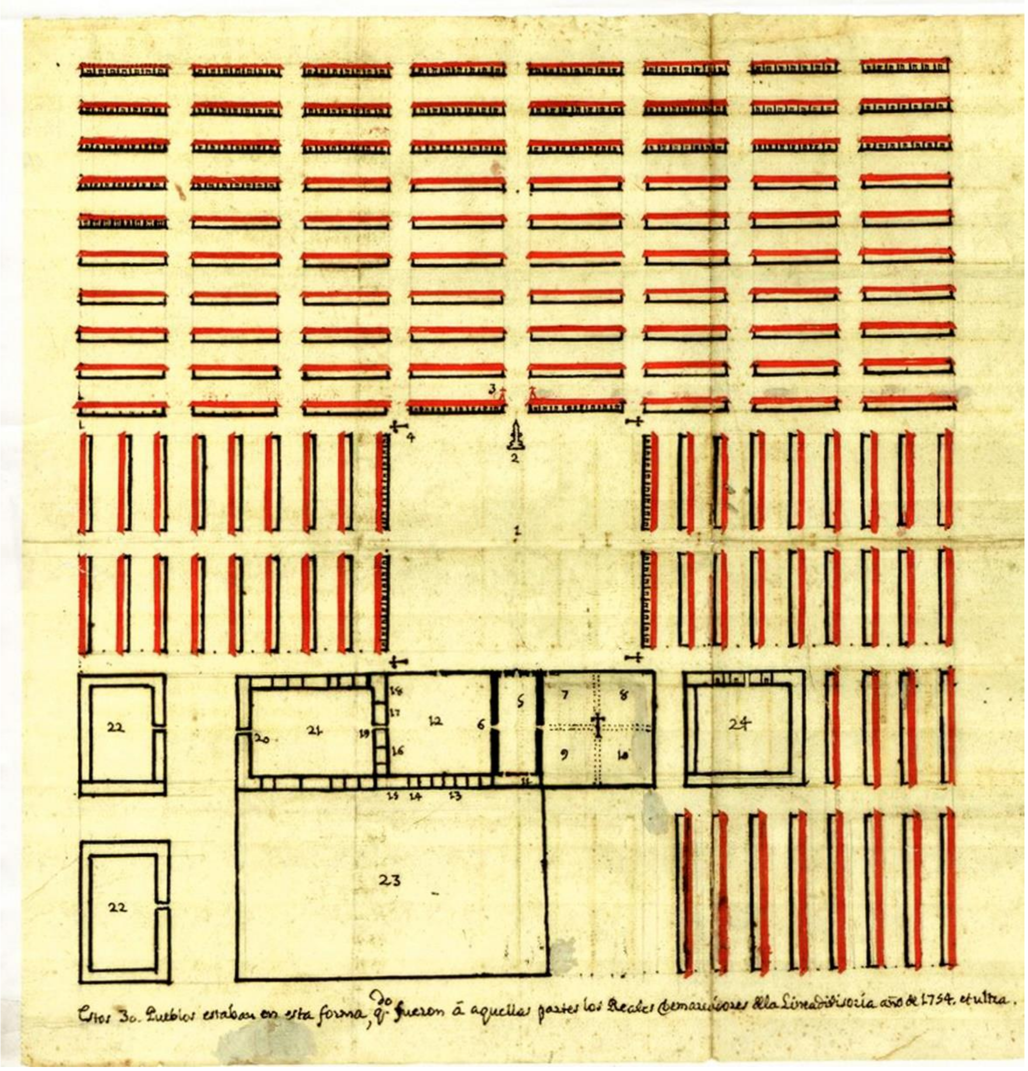
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Figure 44: The undated diagram of the typical Guaraní mission urban plan.

An undated and unsigned document and diagram found in the Archivum Romanum Societatis Iesu (Vatican City) depicted the typical urban plan of the Jesuit Guaraní missions, and the document also described the types of structures and construction materials of the different buildings (see Figure 44).[22] The churches were large monumental structures that generally measured 70-80 *varas* (about .864 meters) in length, and 26-28 in width, and in some cases 90 x 30 varas. Most had three naves, whereas the church at Concepción had five naves and was 86 x 40 varas. They were built of stone or a combination of stone and adobe with one to two varas of stone construction, as in the case of the San Juan Bautista mission church. The monumental church dominated the mission complex and fronted the plaza or main square. The square was the center of communal life, and the document reported that the plaza generally was 160 square varas. The streets in the mission community reportedly were 16-18 varas in width. Other architectural elements included the colegio complex with residences for the Jesuit missionaries, kitchen, store rooms, and workshops. Adjoining the church there generally was a free-standing bell tower and cemetery divided into four sections for the burials of men, women, boys, and girls.

There was also the cabildo and housing for the Guaraní that usually consisted of long barracks-like structures with multiple small apartments. The Jesuits congregated thousands of Guaraní, and the spatially compact mission villages had a high population density. The same document described the housing in general terms, and that generally was not built or the same quality as other structures in the complexes. In some cases, as at Trinidad and San Ignacio Mini, housing was built of stone. Others had stone walls to a height of about a vara, and the rest adobe. They had stone or wooden columns to support the tile roofs with overhangs that protected the walls from rain and provided shade. The document reported that the apartments were generally three varas wide.[23] A comment below the diagram suggests that the author may have based the diagram on information from the joint boundary commission of the late 1750s.

A second document written at about or shortly after the Jesuit expulsion by Jaime Oliver, S.J., described the mission churches. At the time of the Jesuit expulsion, Oliver was at La Fe mission located today in what is southern Paraguay. He was born in Palma (Mallorca) in 1733, and arrived in the Guaraní missions about 1750. In 1755, he was in Montevideo, but then returned to the missions. He survived the trip into exile, and died in Rome in 1813 one year before the restoration of the Society of Jesus.[24] Oliver merits attention because he wrote a description of the missions about 1768 that recorded many details including numbers related to demographic patterns on the missions. He also wrote about high infant mortality, and offered an explanation of how an eighteenth-century cleric came to grips with the deaths of many young children. His description of the Yapeyú mission church is typical. He noted that: “La [iglesia] del Pueblo de Yapeyu es capaz como p[ar]a 7974 almas q[u]e tiene el Pueblo/ The [church] that the Pueblo of Yapeyu has is adequate for the 7974 souls the Pueblo has.” The figure 7.974 was the population in 1767.[25]

There are two surviving Portuguese diagrams of San Miguel mission that date to the late 1750s, and they document the typical mission urban plan (see Figures 45-46). One drafted in a two-dimensional form shows the similarity of the church façade to that of Il Gesu church in Rome. It also shows the different elements found on the other missions that included the colegio, cabildo, chapels, housing for the mission residents, and a structure known as the cotiguaçu or dormitory for widows and orphans. The undated diagram is a part of an atlas of that documents the suppression of Guaraní resistance to the transfer of the seven missions located east of the Uruguay River per the terms of the Treaty of Madrid.[26] The second probably dates to 1759, and is a one-dimensional representation of the mission complex.[27] At about the time of the drafting of the two diagrams, in 1754, the population of San Miguel totaled 6,450.[28]

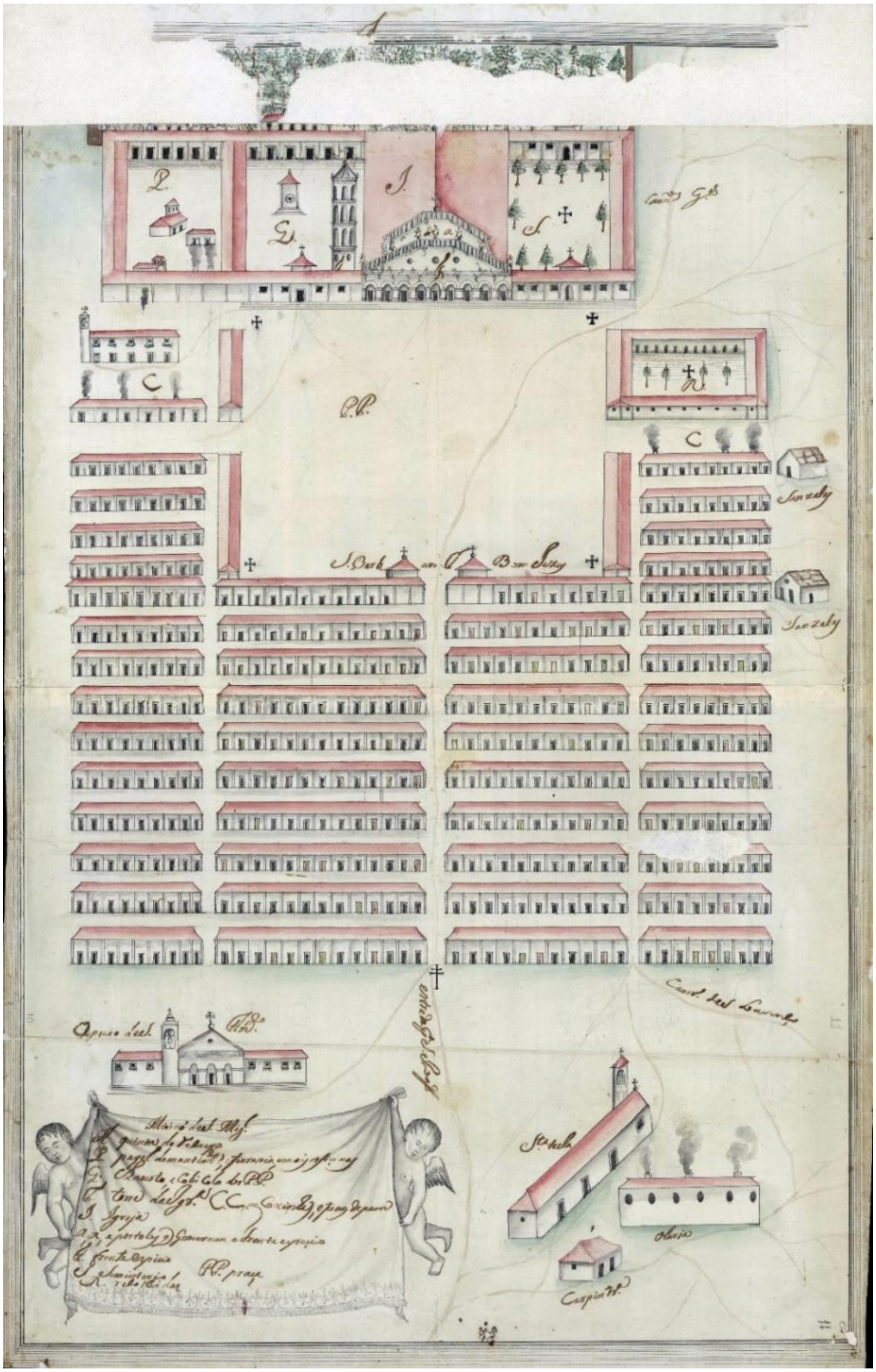
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Figure 45: A c. 1759 diagram of San Miguel Mission: Missió de S. Migl.. Biblioteca Nacional de Brasil, Rio de Janeiro. In the public domain.

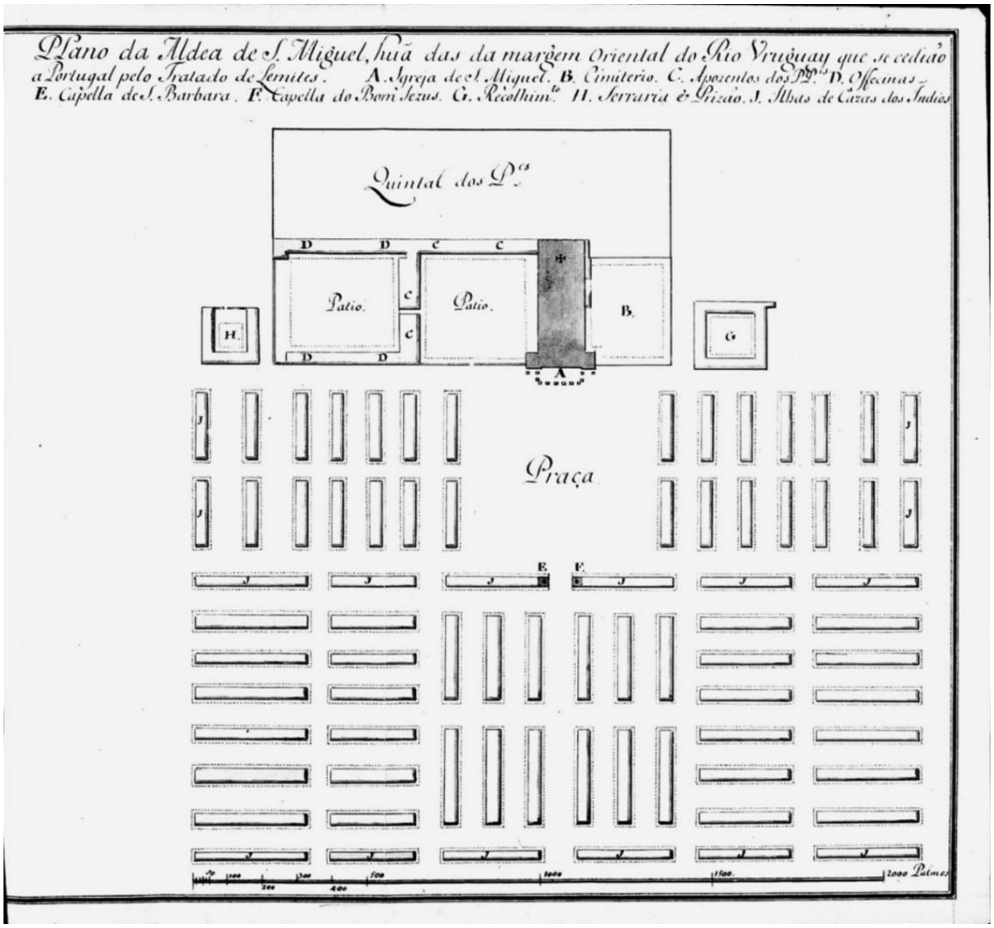
Plano da Aldea de S. Miguel, huã das da margem Oriental do Rio Vruguay que se cediaõ a Portugal pelo Tratado de Limites. A. Igreja de S. Miguel. B. Cimiterio. C. Apozentos dos PP.es D. Offecinas E. Capella de S. Barbara. F. Capella do Bom Jezus. G. Recolhim.to H. Serraria & Prizão. J. Alhas de Cazas dos Indios
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Figure 46: A c. 1759 diagram of San Miguel Mission, Biblioteca Nacional de Brasil, Rio de Janeiro. In the public domain.

Two plans of San Juan Bautista mission document the same urban plan of the fully developed community, but are different in composition suggesting they may have been drafted by Guaraní artists. One is located in the Archivo General de Simancas, and the other in the Biblioteque Nationale de France in Paris. There are also some differences between the two diagrams. For example, the version found in the Biblioteque Nationale de France shows more detail of the river close to the mission community, crocodiles in the river and river craft, abd local birds. Both show a military parade or military operation with men mounted on horses and infantry. At the time of the drafting of the diagrams the mission had a population of about 4,500.

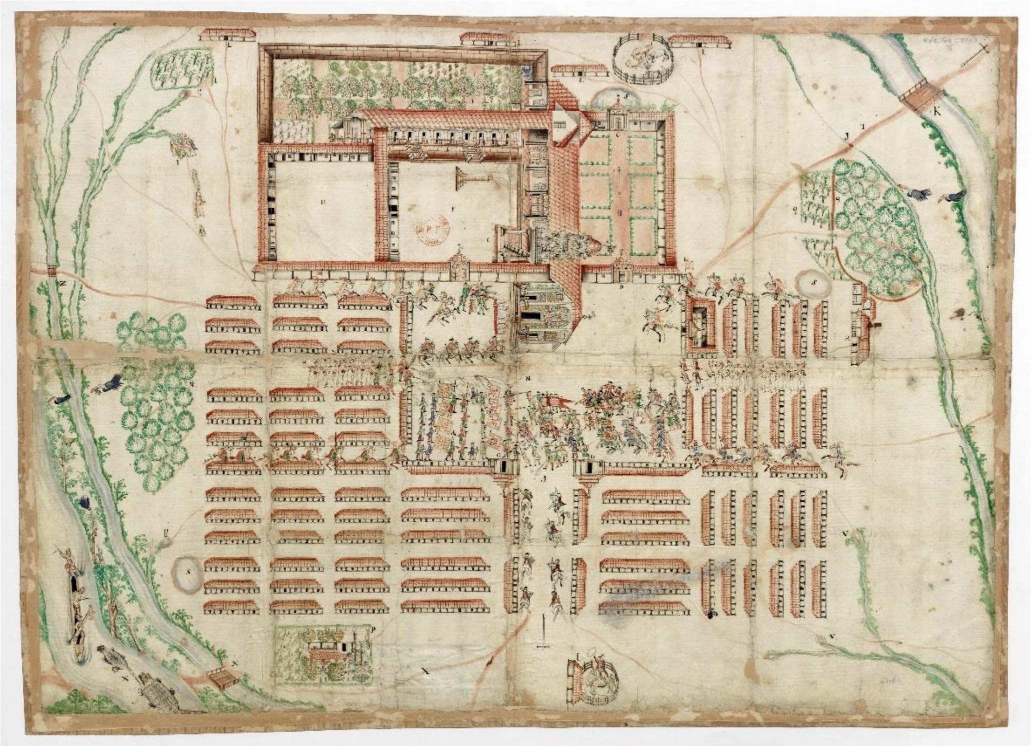


Figure 47: A c. 1753 diagram of San Juan Bautista mission. Biblioteque Nationale de France. In the public domain.

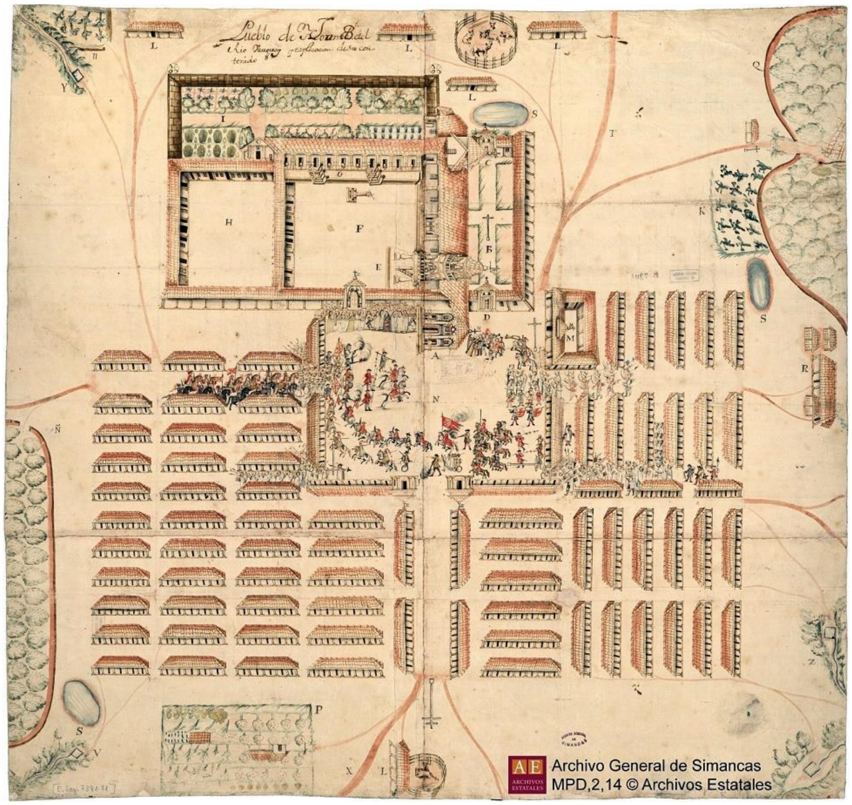
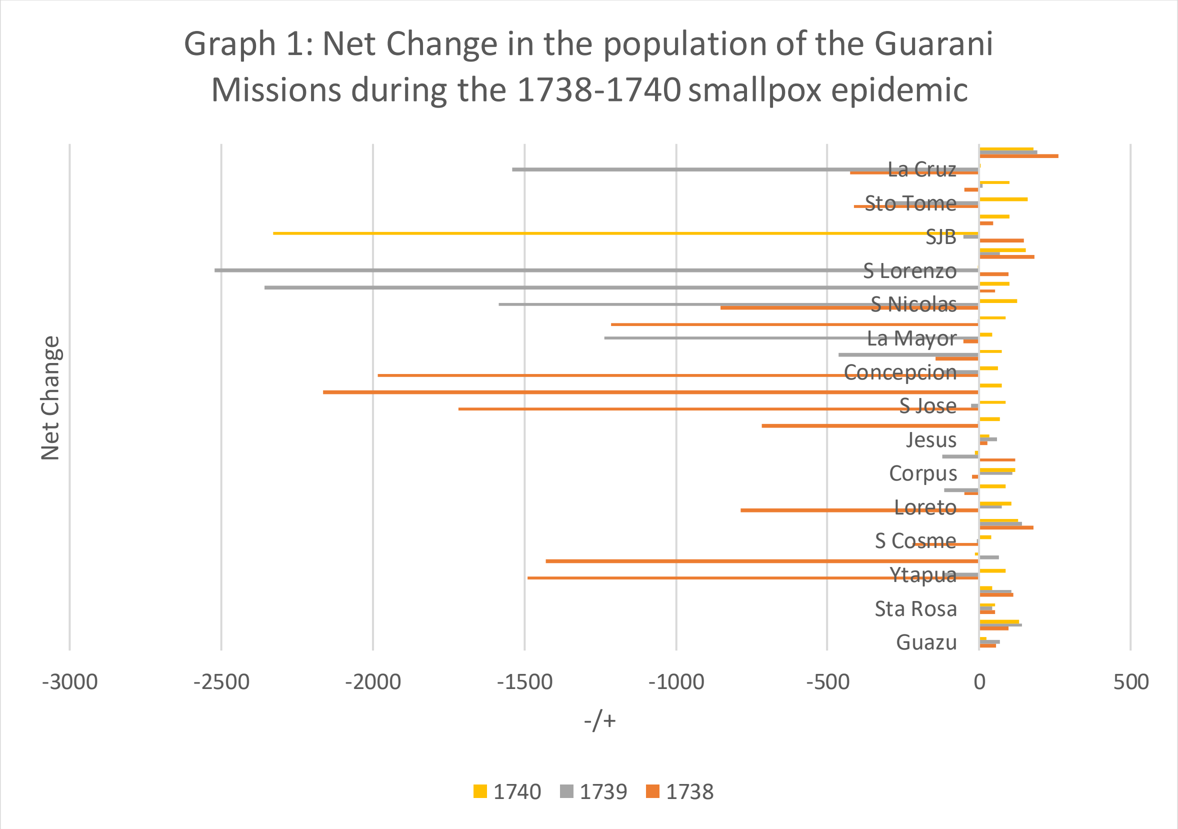

Pueblo de S. Joan Bta del Rio Uruguay y explicacion de su contenido
Archivo General de Simancas
MPD,2,14 © Archivos Estatales

Figure 48: The second version of the plan of San Juan Bautista mission. Archivo General de Simancas. In the public domain.

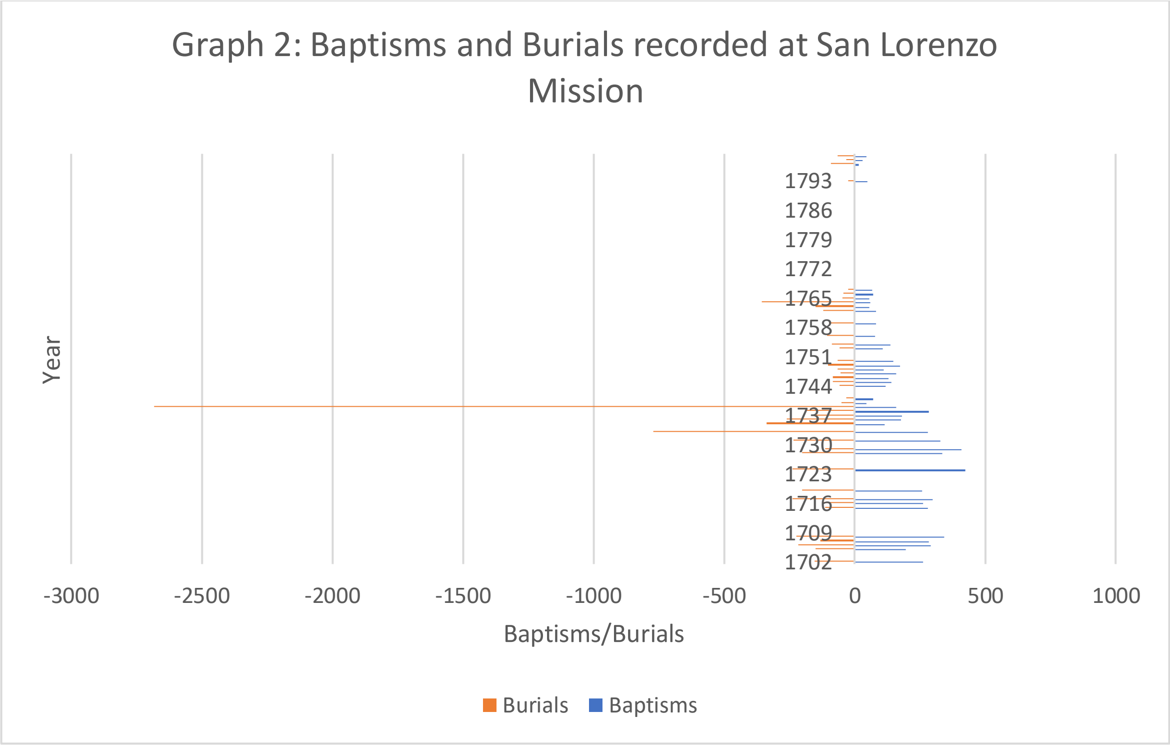
Demographic Patterns on the Guaraní Missions

The mission urban plan played an important role in determining demographic patterns, and particularly of the spread of lethal epidemics of diseases such as smallpox and measles. Large populations lived in spatially compact communities where contagion spread easily, as in the case of the 1737-1740 smallpox epidemic that reached levels of catastrophic mortality in some missions. It was one in a series of outbreaks exacerbated by poor crops and famine between 1733 and 1740 that left more than 90,000 Guaraní dead. Most of the missions experienced a net decline in population during the period of crisis (see Table 5, Graph 1), and in some instances catastrophic mortality during the smallpox epidemic that in some instances claimed the lives of more than half the population of individual mission communities. The population of San Lorenzo mission, for example, dropped from 6,513 recorded in 1732, to 974 at the end of 1739. Mortality during 1739 reached 557 per thousand population.[29]

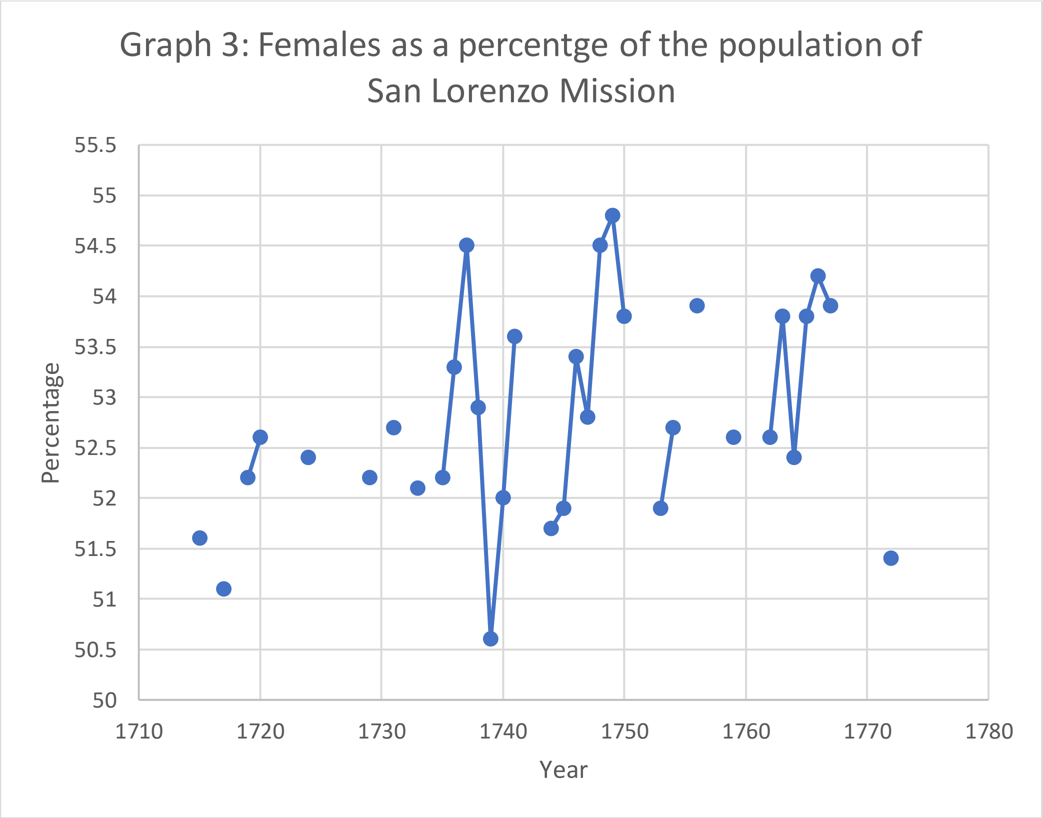

Graph 1: Net Change in the population of the Guarani Missions during the 1738-1740 smallpox epidemic

Source: Table 5.

However, the populations of the missions rebounded or recovered following the epidemic, as shown in the case of San Lorenzo mission where there was an increase in the formation of new families and increased birth rates following the epidemic. In the non-crisis year 1724, San Lorenzo mission had a population of 5,224. The Jesuits recorded 52 marriages, or 10 marriages per thousand population. Following the first epidemic in 1733, the number of marriages recorded at San Lorenzo jumped to 155 or 24 per thousand population. Following catastrophic smallpox mortality at the mission in 1739 that left a population of 974, there was a total of 122 marriages, , or 25 per thousand population.[30] Graph 2 shows baptisms and burials recorded on San Lorenzo mission. Evident is the heavy mortality during crisis years, and particularly in 1739. However, it also shows a pattern of larger numbers of baptisms than burials in non-crisis years.

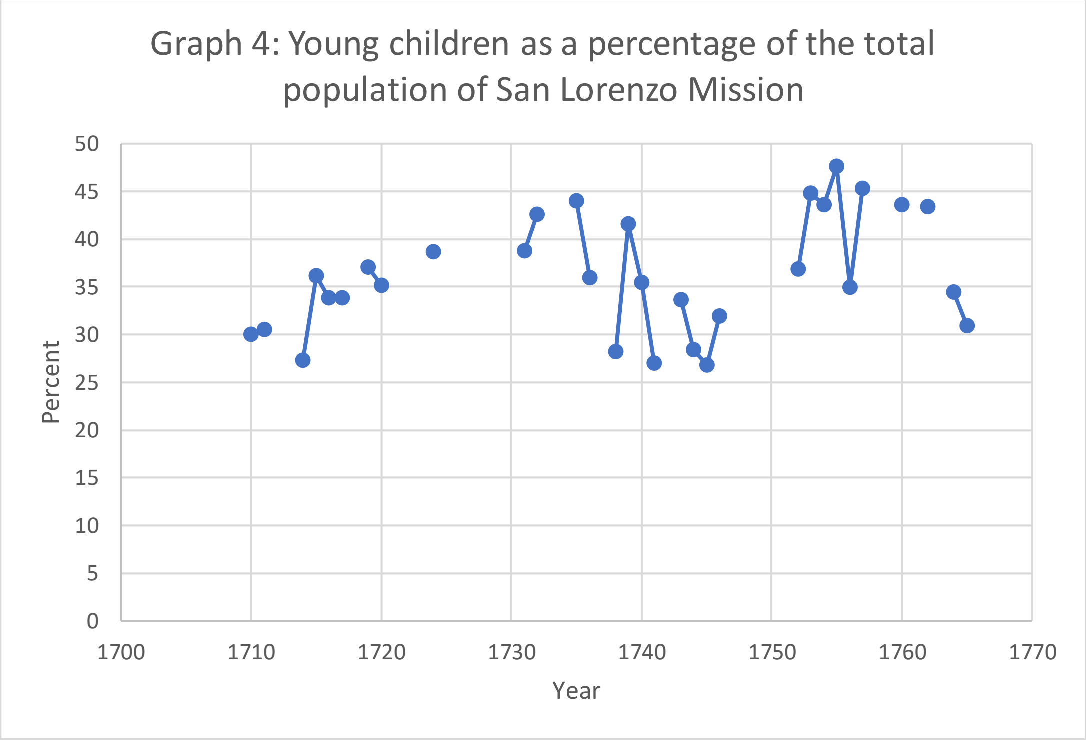

Graph 2: Baptisms and Burials recorded at San Lorenzo Mission

Source: Robert H. Jackson, *A Population History of the Missions of the Jesuit Province of Paraquaria* (Newcastle upon Tyne: Cambridge Scholars Publishing, 2019), 270-271.



Graph 3: Females as a percentge of the population of San Lorenzo Mission

Source: Robert H. Jackson, *The Bourbon Reforms and the remaking of Spanish Frontier Missions (Leiden: Brill Academic Publisher*s, 2022), 227.



Source: Robert H. Jackson, *The Bourbon Reforms and the remaking of Spanish Frontier Missions* (Leiden: Brill Academic Publishers, 2022), 165.

, 165.

Two other factors explain the resilience of the Guaraní mission populations. One was a pattern of a balanced gender structure in the mission population. In other words, the female population generally constituted the majority in the mission populations, as seen in the case of San Lorenzo mission (Graph 3). Females as a percentage of the total population of San Lorenzo dropped in 1739 as a result of heavier smallpox mortality among women and girls. This was evidence of the TH-2 response in the immunological system of women and girls that exacerbates and infections by pathogens such as smallpox and measles resulting in higher mortality.[31] Nevertheless, and despite the heavier mortality, women and girls still constituted the majority, and there was a large enough pool of potential marriage partners to form new families. This pattern was different from that on the California missions discussed below, where heavy chronic mortality among women and girls resulted in a pronounced gender imbalance.

The second factor was the high birth rates among the Guaraní mission populations, and the survival of more young children to adulthood. Graph 4 shows the population of young children under age nine as a percentage of total population. There were high rates of infant mortality, as was also the case of the California missions discussed below. However, more children survived infancy in non-crisis years. Moreover, women tended to marry at a young age soon after puberty, at around age 13. This meant that women had the potential to bear more children during their cycle of fertility.[32] This was also an important factor in the pattern of moderate to high birth rates. In a sample of 20 non-crisis years at San Luis Gonzaga mission, for example, the crude birth and death rates per thousand population averaged 61.2 and 39.6 respectively. In other words, the mission population grew at an average rate of 2.2 percent per year.[33]

1854 Plat Maps and Coastal Survey Maps of the California Missions

The second group of mission diagrams analyzed here document the urban plan of the Franciscan missions of California, that were similar to the Guaraní missions in that the Franciscan missionaries congregated the indigenous populations on new mission communities created from whole cloth. The Franciscan mission urban plan also included European-style housing for the indigenous populations. The diagrams are a series of plat maps prepared in 1854 as a part of the process by the California Bishopric to petition for the return of the mission sites to the Catholic Church. In 1850, the United States government established a special land court in San Francisco to adjudicate titles to lands granted to private individuals in the 1830s and 1840s. The California Catholic Church successfully petitioned for the return of the mission sites.

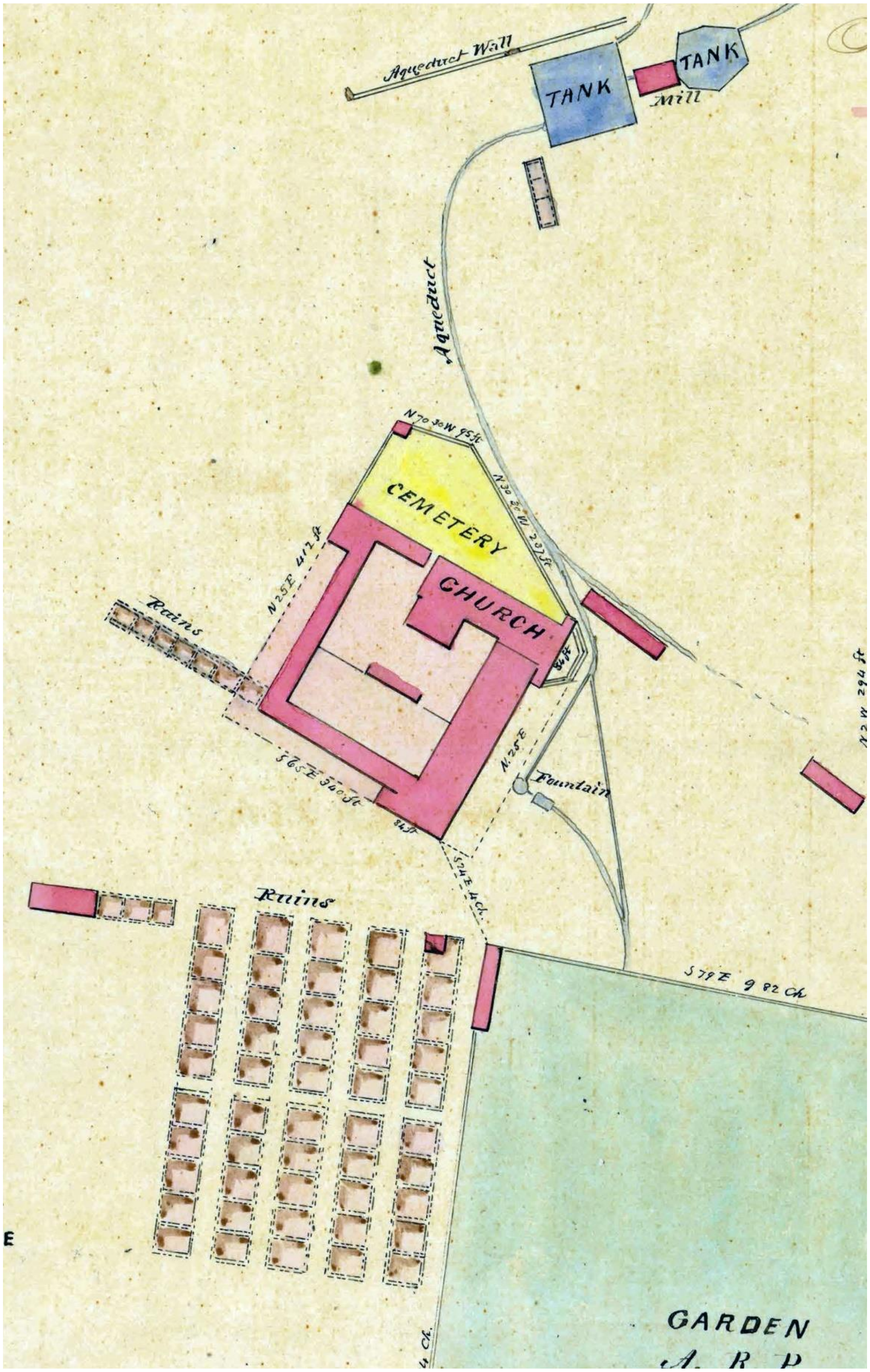
Franciscans from the Apostolic College of San Fernando in Mexico City established and administered the California between 1769 and 1834, and established 21 mission communities. In 1833, the Mexican government ordered the secularization of the California missions, or in other words to transfer the mission parishes to secular clergy and the process also entailed the appointment of civil administrators to administer mission assets. In theory, the Franciscans and later the civil administrators were to administer the mission estates on behalf of the indigenous inhabitants of the missions, but few actually received land, tools, or livestock. Non-indigenous recipients of land grants and the civil administrators themselves pillaged the mission estates, and in particular took mission livestock to stock their own properties.[34] For example, the value of the San Juan Bautista mission estate reportedly dropped from 138,973 pesos in 1834 at the time of the preparation of an inventory as a part of the secularization process, to 7,860 pesos in 1845.[35]

The surveyors hired by the Catholic Church prepared the plat maps in 1854, 20 years following mission secularization. During the period of their administration of the missions, the Franciscans directed the construction of most buildings in the mission complexes of adobe roofed with burnt roof tiles.[36] During the period of civil administration the civil administrators allowed the roof tiles to be removed for buildings erected elsewhere, and once exposed to the elements the adobe structures rapidly deteriorated and particularly the housing built on the missions for the indigenous populations. However, there are several drawings of the fully-developed mission complexes prior to mission secularization. One is the 1827 drawing of the San José mission complex by William Smyth. The drawing shows the mission church and cloister, but also the housing built for the indigenous mission residents. The housing consisted of rows of barracks-like structures similar to the housing on the Guaraní missions. The 1854 San José mission plat map shows that most of the housing had fallen into ruin for lack of maintenance, and only one housing unit remained.[37]

Several of the plat maps recorded details of the fully developed mission complexes as they were twenty years earlier at the time of the implementation of the secularization decree, including housing for the indigenous population. The plat map for Santa Bárbara mission (established in 1786) (see Figure 49) documented an arrangement similar to that shown in the 1827 drawing of San José mission as well as the Guaraní missions. There were eight rows of barracks-like structures with multiple small apartments. The Franciscans reported the construction of 252 housing units at the mission in the years 1798-1807.[38] In contrast, housing at San Miguel (established in 1797) missions consisted of a single long row of small apartments in a “u” shape, and the Franciscans expanded the number of housing units by adding to the existing apartments (see Figure 50). There is a record of the construction of housing at Sana Antonio in 1786, 1791, 1805-1806, 1808-1809, and 1829. At San Miguel the Franciscans reported the construction of housing in 1805.[39]

A second set of maps document the California mission urban plan in the 1850s and 1860s. They are coastal surveys that charted the California coast and coastal waters, and in some instances also documented the towns and ex-mission complexes. One example is an

1853 map of the harbor at Santa Cruz, that also included the mission and town (see Figure 51). The map shows the church and main quadrangle already showing signs of deterioration for lack of maintenance. Adjoining the quadrangles is a long structure built between 1822 and 1824 as housing for neophyte families. A similar long structure for neophyte housing that paralleled that shown in the map had fallen into ruin and disappeared. The configuration of neophyte housing at the mission was similar to that at San Miguel mission. The structure does not appear in the 1854 plat map of the mission, because it was one of the rare instances where former neophytes occupied mission housing, and thus was in private hands when the Catholic Church received title to the mission site.[40]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Aqueduct
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CEMETERY
CHURCH
N 25 E 412 ft
Rains
S 65 E 340 ft
N 25 E
Fountain
Ruins
S 79 E 9 82 Ch
GARDEN

Figure 49: Detail of the 1854 plat map of Santa Barbara mission, showing neophyte housing. In the public domain.

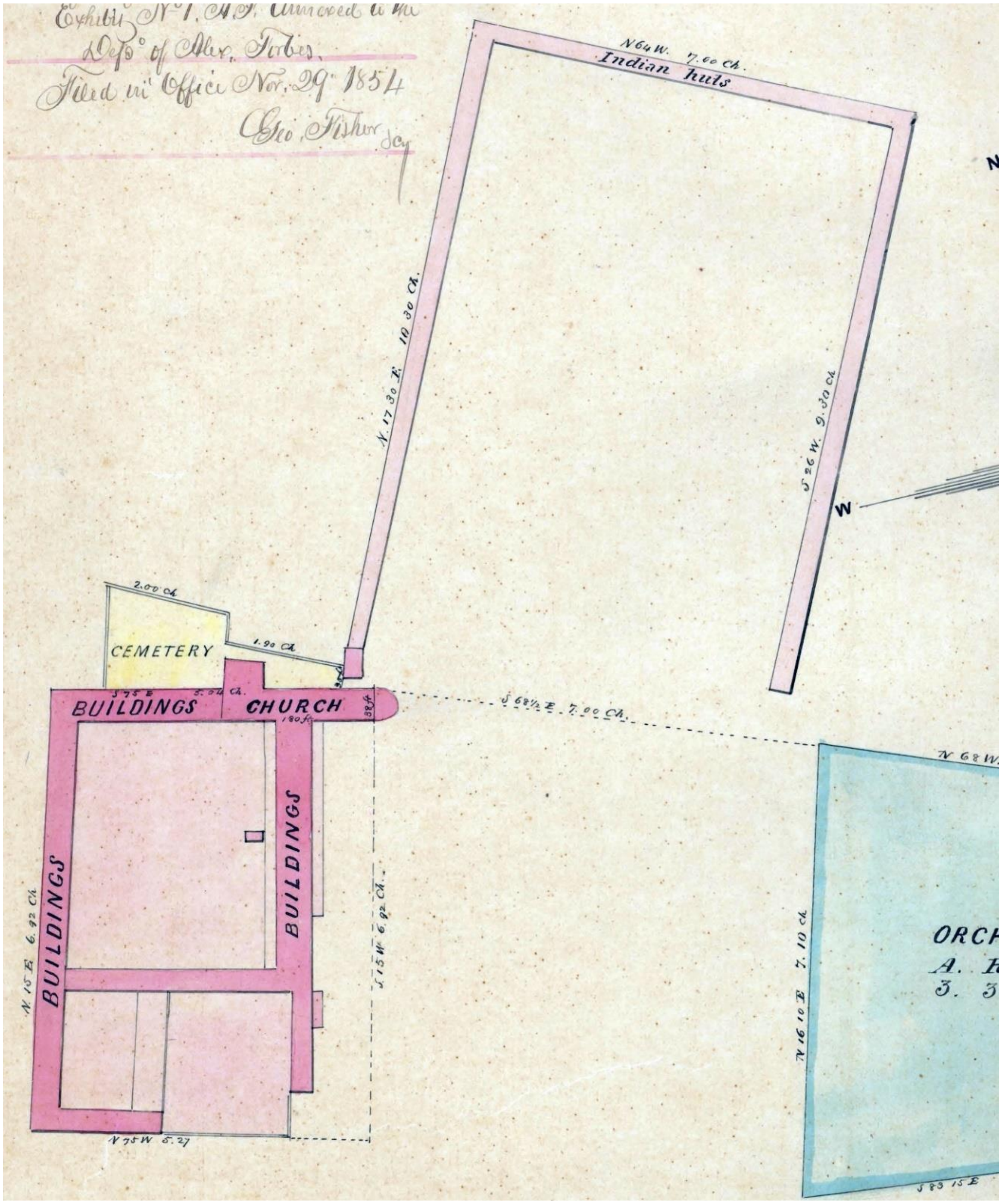
Exhibit No 1. A.F. Annexed to the
Depo of Alex. Forbes.
Filed in Office Nov. 29 1854
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BUILDINGS
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Figure 50: Detail of the 1854 plat map of San Miguel mission, showing neophyte housing. In the public domain.

Following the 1834-1835 secularization of the missions, some ex-neophytes continued to reside in the general area of the mission complexes, although the majority did not occupy former mission structures that were administered by civil administrators appointed by the California governor. An 1855 coastal survey map of ex-mission San Buenaventura (see Figure 52) shows the former mission complex and emerging town. It also shows several "Indian Ranchos" or small settlements of ex-neophytes located in the bed of the nearby river. They most likely worked as agricultural laborers in the fields just outside of the town, and two of the "Indian Ranchos" are shown right next to developed agricultural land. The Franciscan missionaries and later the civil administrators ostensibly managed the mission estates on behalf of the neophytes, but the former mission residents were marginalized and lived on the edge of the communities they created through their labor.

The California mission urban plan documented in the 1854 plat maps and coastal survey maps defined demographic patterns on the California missions, but in ways different from the Guaraní missions. In both cases the missionaries congregated indigenous populations on new communities, but the California mission populations did not grow through natural reproduction as was the case on the Guaraní missions. Periodic epidemics that occurred once a generation or roughly every 20 years caused catastrophic mortality on the Guaraní missions. However, the mission populations "rebounded" or recovered and grew following the epidemics. The Guaraní mission populations evidenced a pattern of a balanced gender structure with females constituting the majority. Following epidemics there were an increased number of marriages and the formation of new families as evidenced in increased numbers of marriages, and high birth rates. Guaraní men did not face problems encountering marriage partners.[41]

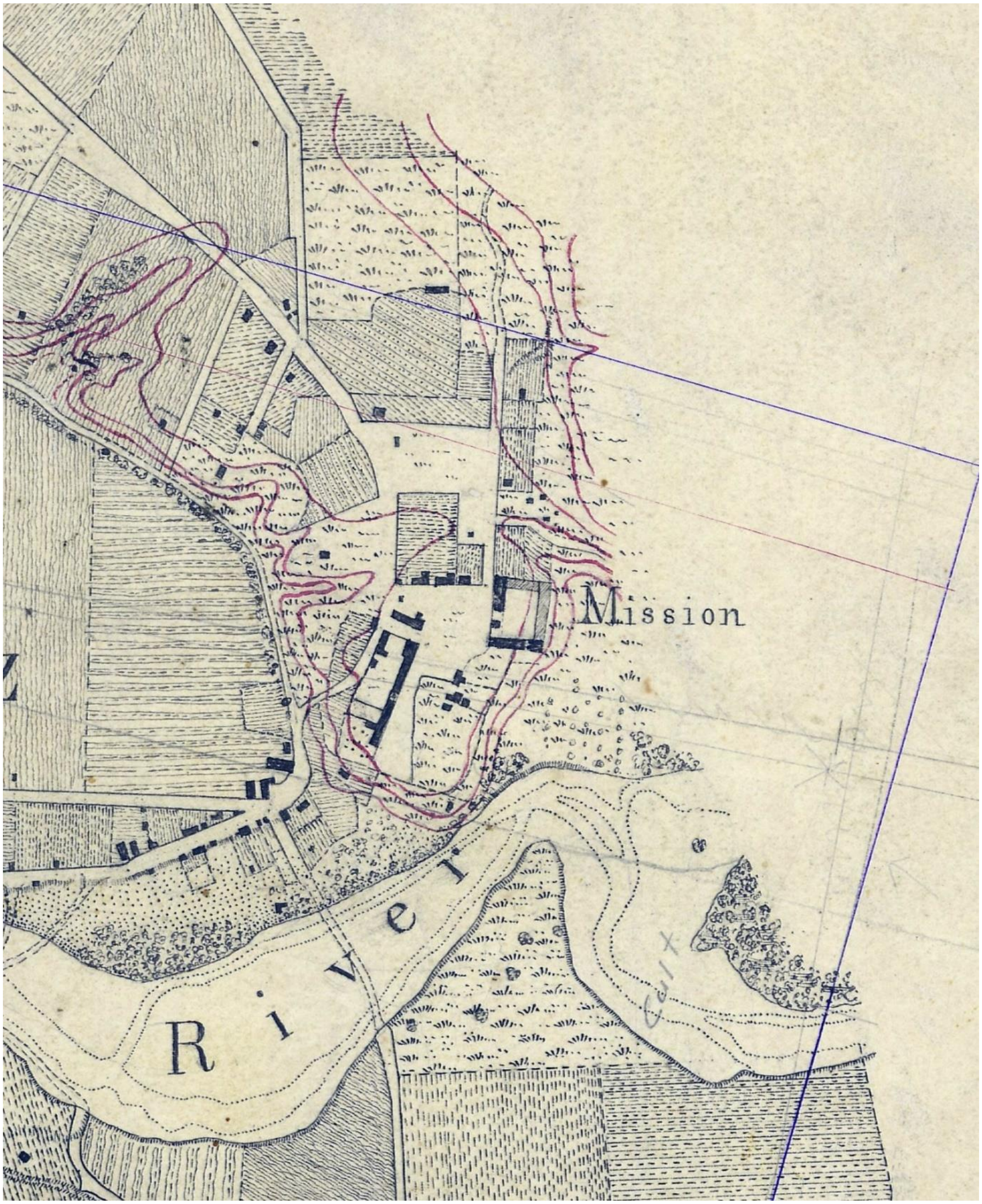

Figure 51: An 1853 coastal survey map that shows the remains of the Santa Cruz mission complex. U.S. Coastal Survey, “Map of Santa Cruz Harbor and Vicinity 1853,” NOAA's Historical Map & Chart Collection. In the public domain.

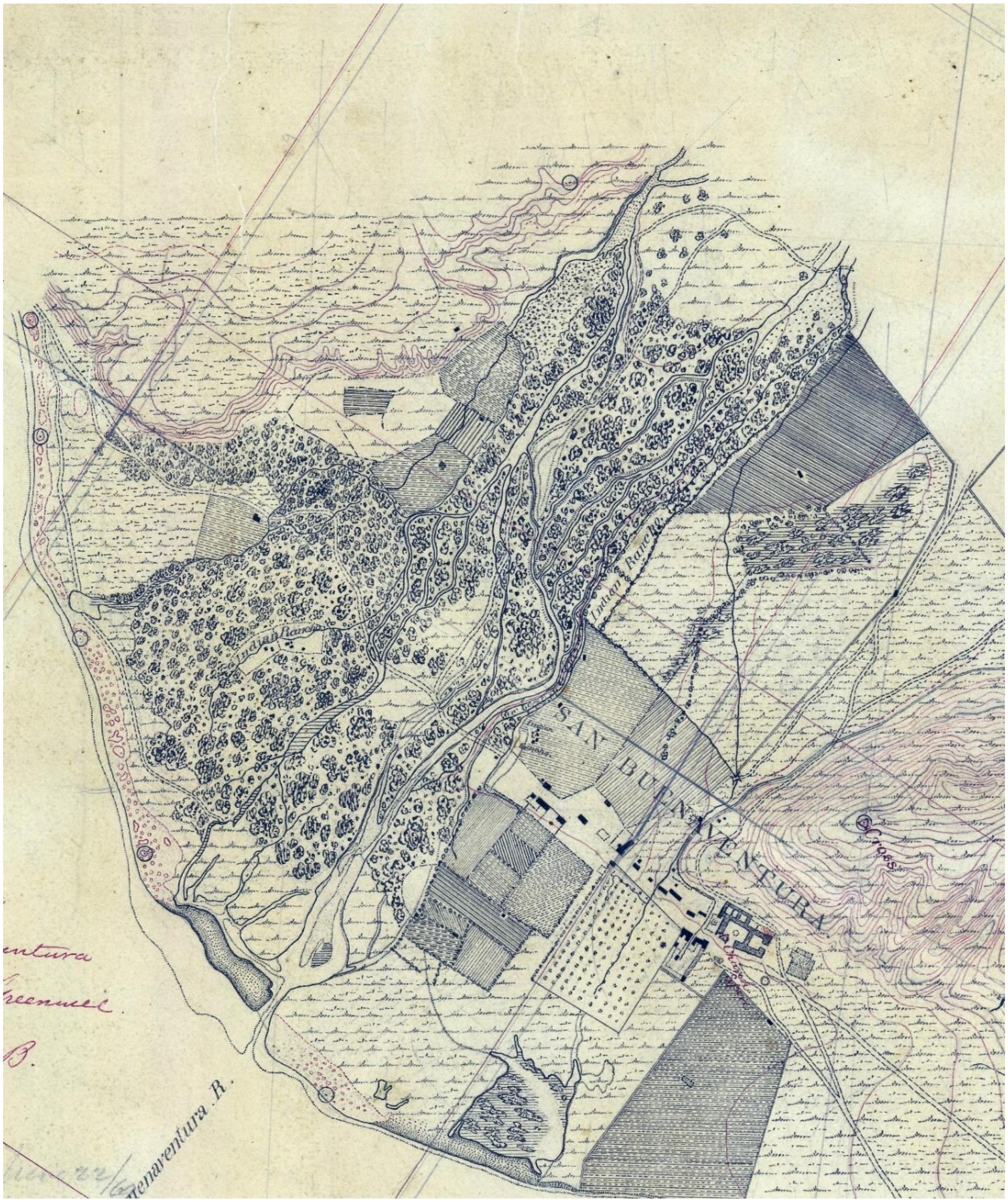
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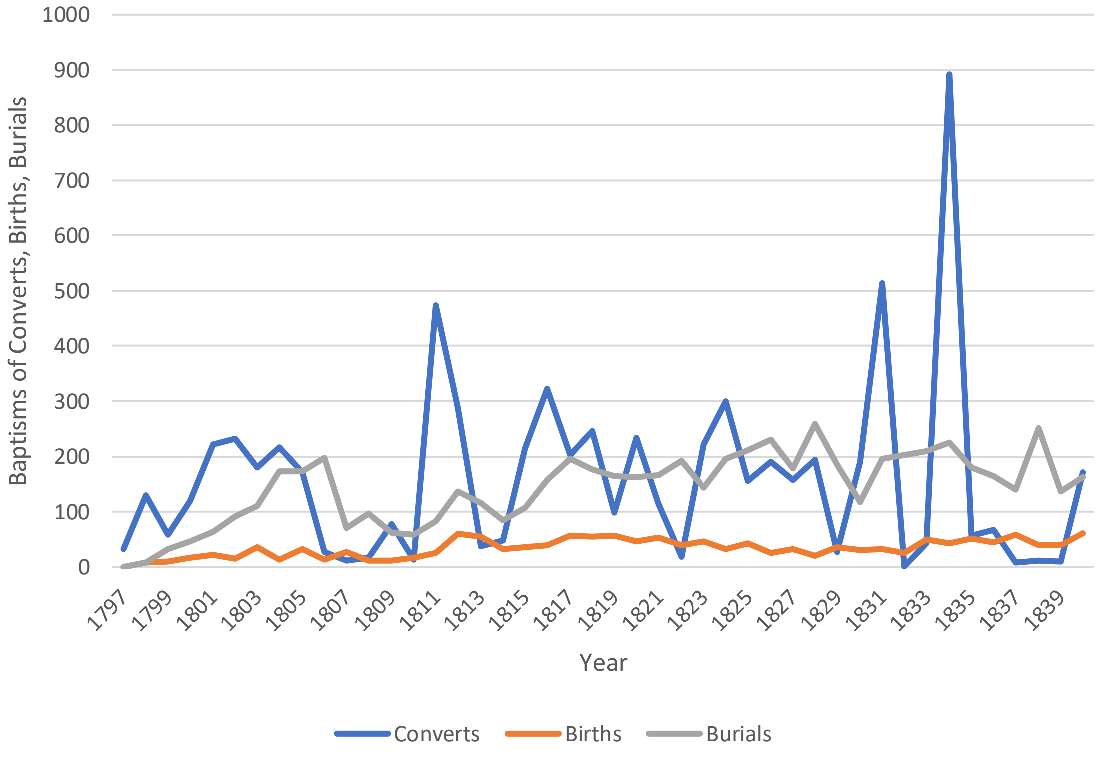
Figure 52: An 1855 coastal survey map of ex-mission San Buenaventura that also documents several “Indian Ranchos” located in the bed of the nearby river. U.S. Coastal Survey, “Map of a Part of the Coast of California From San Buenaventura Southward to River Santa Clara 1855,” NOAA's Historical Map & Chart Collection. In the public domain.

Demographic patterns on the California missions were very different. The missions were relatively geographically isolated. Few epidemics spread to the missions, and there was chronically high mortality and particularly among young children, women of infant mortality and mortality among girls and women. Syphilis contributed to the high mortality, and especially among newborn children infected by the mother through the placenta. The Franciscans treated syphilis with mercury pills, a poison. Another important factor was inadequate medical and prenatal medical attention, and poor hygiene. The Franciscans were obsessed with the sexuality of the indigenous peoples, and in a policy of social control incarcerated single women and older girls at night in conditions of poor sanitation in unhygienic dormitories. This practice contributed to high mortality. By the early nineteenth-century a gender imbalance developed in the mission populations, and had become worse by the time of secularization. Population figures give the appearance of periods of growth, but only expanded during periods of active recruitment and congregation of indigenous peoples from outside of the mission communities. The populations then dropped as the number of baptisms of converts declined. At the point of secularization, the populations of most of the missions had already begun to decline.[42]

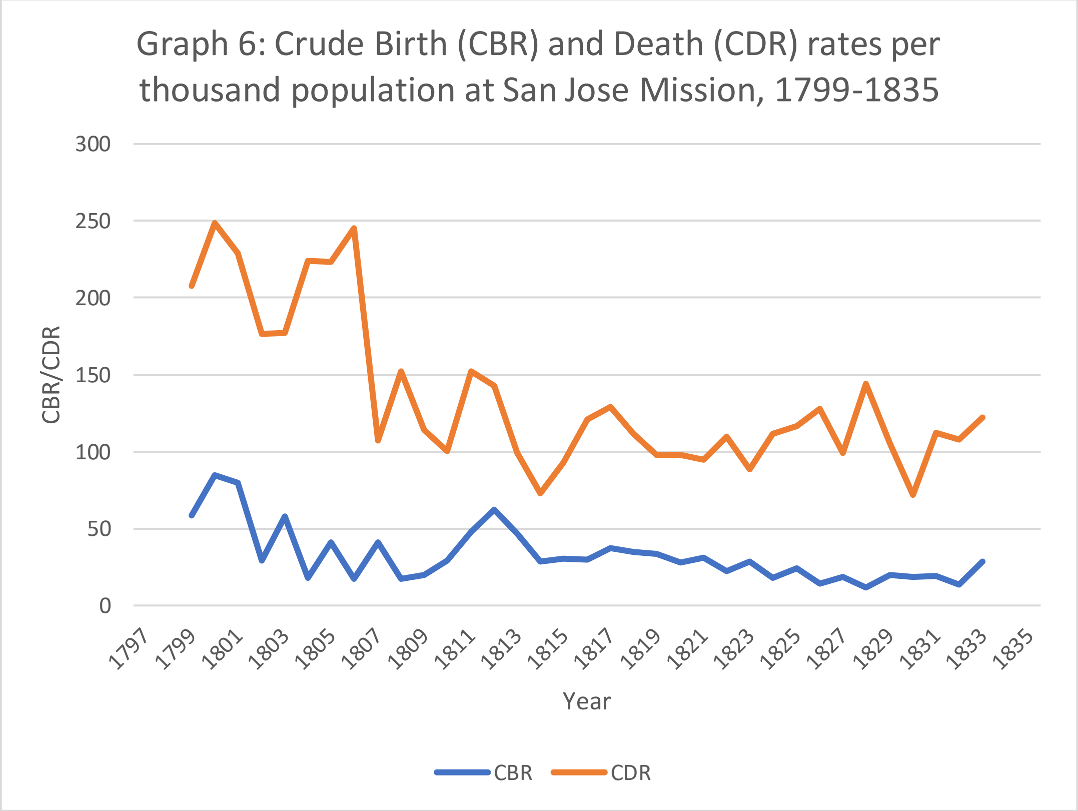
These patterns can be visualized in four case studies of baptisms and burials and crude birth and death rates on San Jose mission (established in 1797), Santa Cruz mission (established in 1791), San Carlos mission (established in 1770), and San Francisco mission (established in 1776) summarized in Graphs 5-12. All four cases show the ebb and flow of the congregation of non-Christians on the missions, and death rates higher than birth rates. It should also be noted that San Francisco mission, which was a major port, suffered catastrophic mortality in excess of 400 per thousand population during an 1806 epidemic, which was the highest death rate record on the California missions.[43] The epidemic may have spread to the mission from a member(s) of the expedition of Nikolai Petrovich Rezanov, who came to California in search of food for the Russian-American Company settlements in Alaska, and particularly the settlement at Sitka. The Russians were in San Francisco from March to May of 1806.[44]

One manifestation of demographic collapse on the missions was extreme gender and age imbalances as seen in the case of Santa Cruz mission. In the years 1791 to 1832, the Franciscans baptized 1,133 girls and women. In 1832, the female population was 87, or a mere 31 percent of the total (see Table 6). Men could not easily find sexual partners, and a manifestation of this was the increasing number of widowers unable to find a sexual partner following the death of a spouse.[45] The number of widows was between two and three percent of the population while the number of widowers, on the other hand, totaled 77 in 1828 which was 21 percent of the population.[46] The gender imbalance can also be visualized in the case study of the decline in the female population on five missions established among the indigenous communities collectively known today as the Chumash (see Graph 13). The consequences of high infant mortality rates can be visualized as the number of children under the age of ten in relation to the total population at Santa Cruz mission (see Graph 14). These patterns were different from those of San Lorenzo mission discussed above.

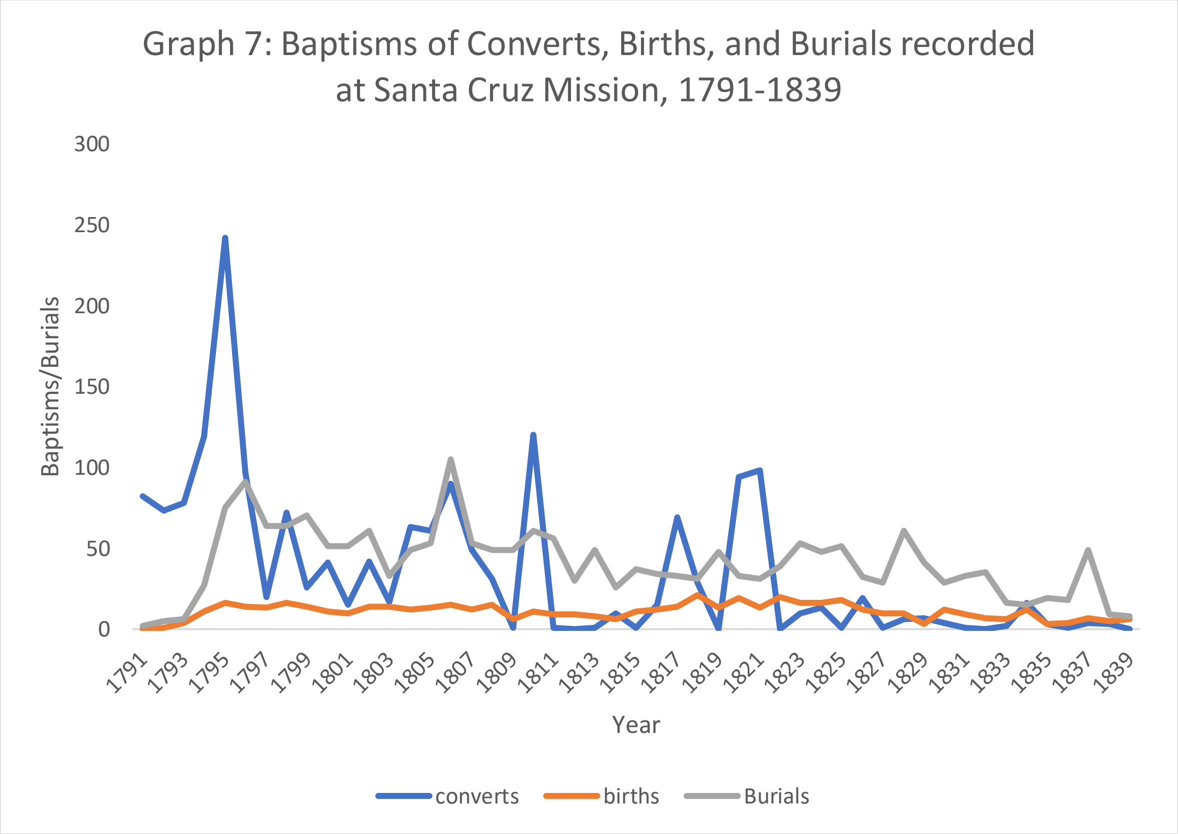
Graph 5: Baptisms of Converts, Births, and Burials recorded at San Jose Mission, 1797-1840



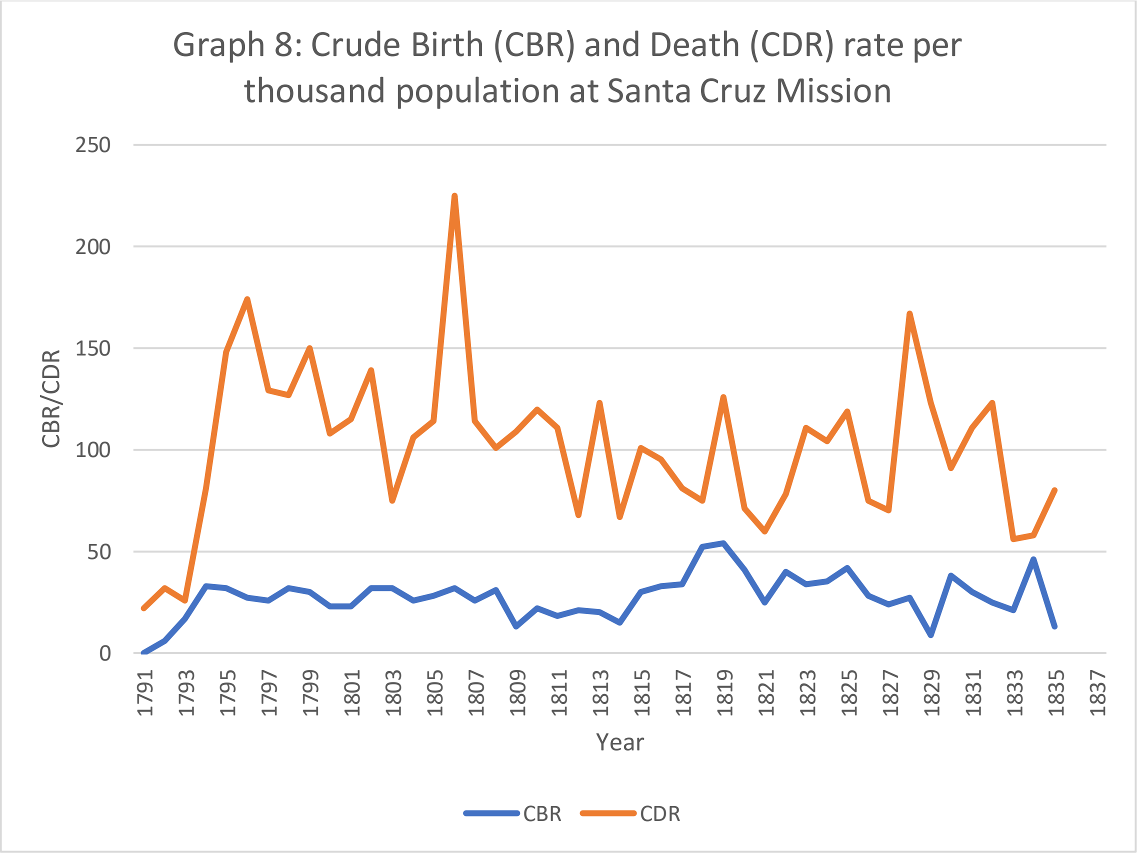
Source: Robert H. Jackson, *The Bourbon Reforms and the remaking of Spanish Frontier Missions (Leiden: Brill Academic Publisher*s, 2022), 322-324.



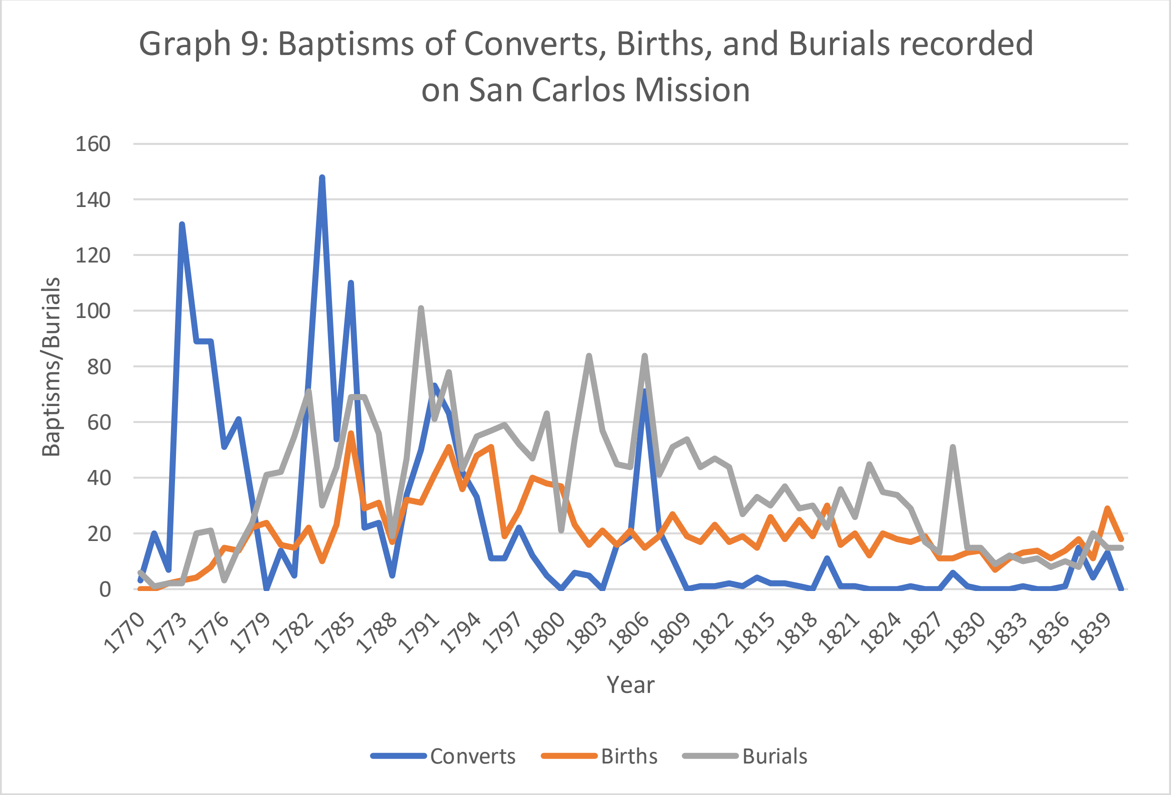
Source: Robert H. Jackson, *The Bourbon Reforms and the remaking of Spanish Frontier Missions (Leiden: Brill Academic Publisher*s, 2022), 322-324.



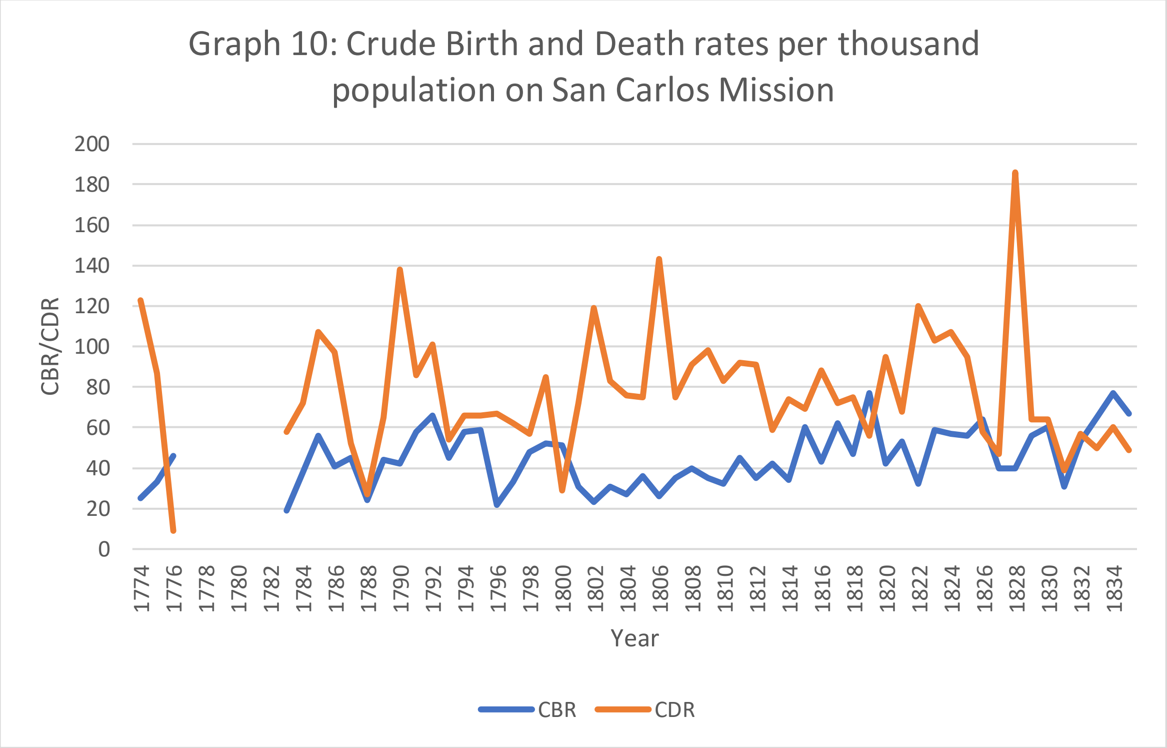
Source: Robert H. Jackson, *The Bourbon Reforms and the remaking of Spanish Frontier Missions (Leiden: Brill Academic Publisher*s, 2022), 319-320.


Graph 8: Crude Birth (CBR) and Death (CDR) rate per thousand population at Santa Cruz Mission

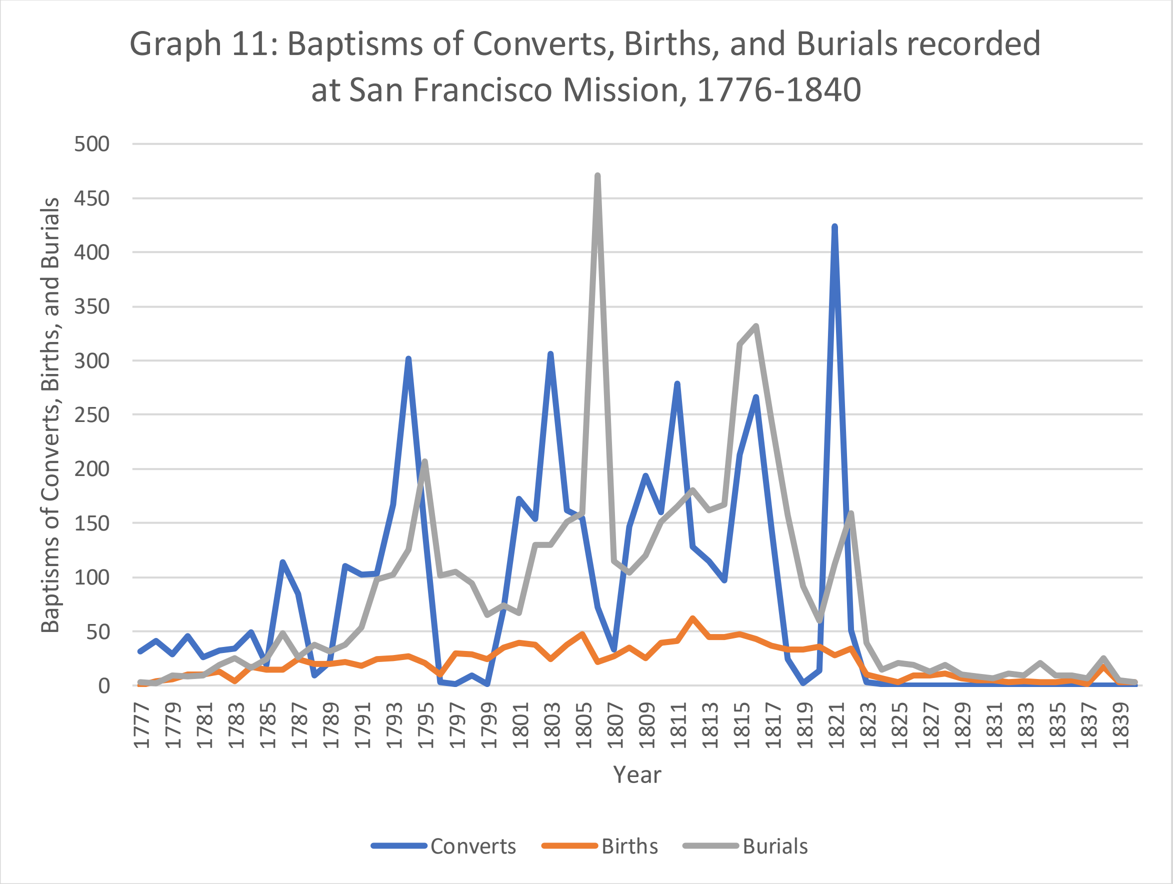
Source: Robert H. Jackson, *The Bourbon Reforms and the remaking of Spanish Frontier Missions (Leiden: Brill Academic Publishers*, 2022), 319-320.



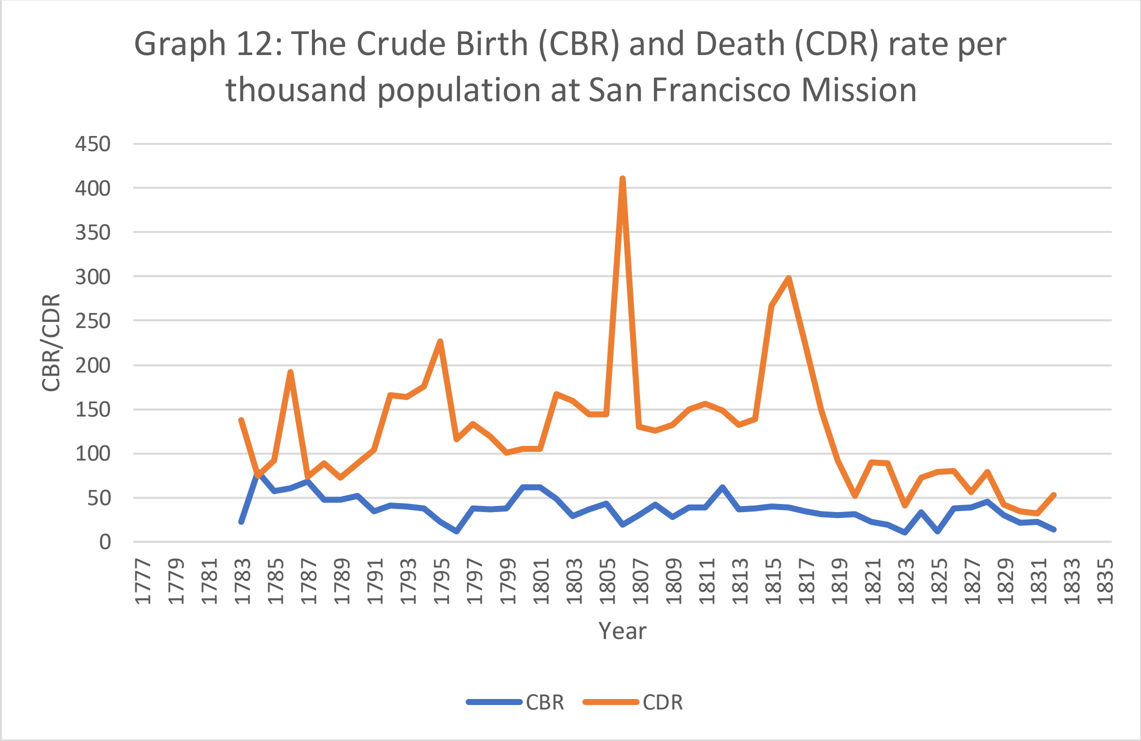
Source: Robert H. Jackson, *The Bourbon Reforms and the remaking of Spanish Frontier Missions (Leiden: Brill Academic Publishers*, 2022), 305-307.



Source: Robert H. Jackson, *The Bourbon Reforms and the remaking of Spanish Frontier Missions (Leiden: Brill Academic Publisher*s, 2022), 305-307.

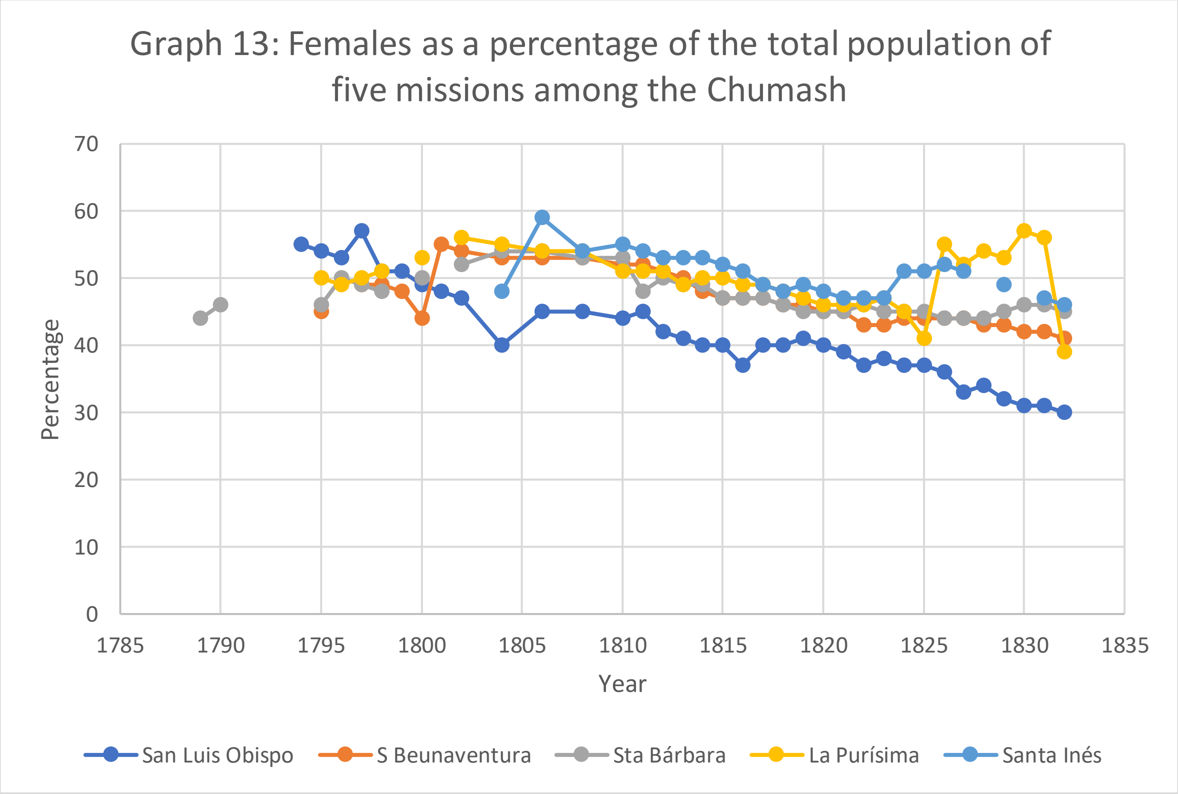


Source: Robert H. Jackson, *The Bourbon Reforms and the remaking of Spanish Frontier Missions (Leiden: Brill Academic Publisher*s, 2022), 313-315.



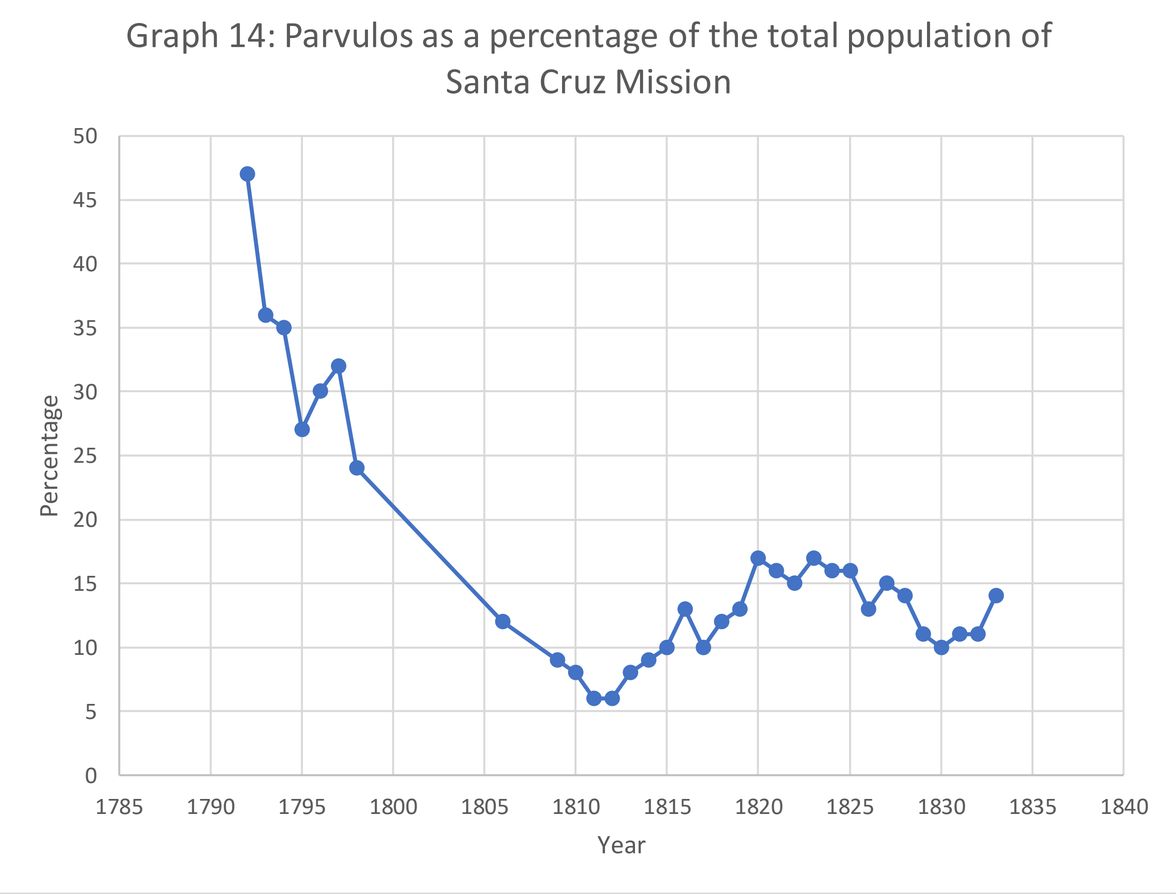
Graph 12: The Crude Birth (CBR) and Death (CDR) rate per thousand population at San Francisco Mission

Source: Robert H. Jackson, *The Bourbon Reforms and the remaking of Spanish Frontier Missions (Leiden: Brill Academic Publisher*s, 2022), 313-315.



Graph 13: Females as a percentage of the total population of five missions among the Chumash

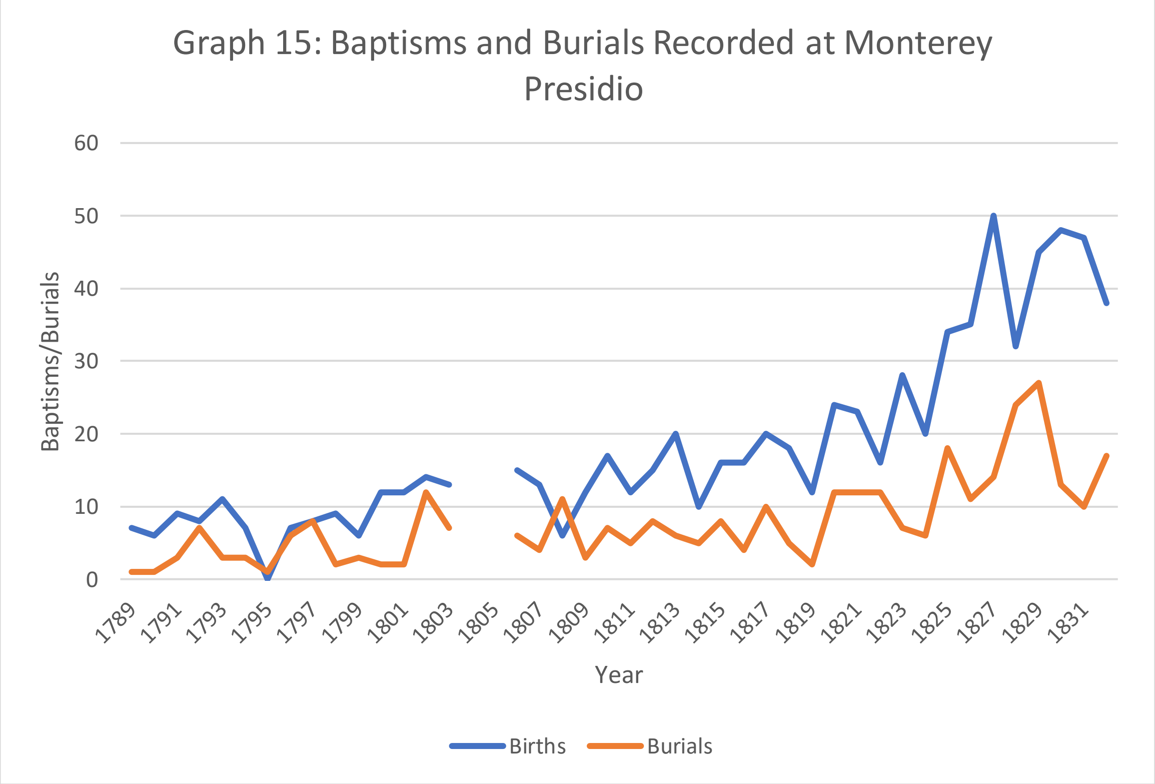
Source: Robert H. Jackson, *The Bourbon Reforms and the remaking of Spanish Frontier Missions (Leiden: Brill Academic Publisher*s, 2022), 215-216.



Graph 14: Parvulos as a percentage of the total population of Santa Cruz Mission

Source: Robert H. Jackson, *The Bourbon Reforms and the remaking of Spanish Frontier Missions (Leiden: Brill Academic Publisher*s, 2022), 227.

The demographic patterns of the non-indigenous soldier-settler population in California that lived on the four presidios (San Diego, Monterey, San Francisco, and Santa Barbara) and three pueblos (San Jose, Los Angles, Branciforte) established in California were different from patterns on the missions.[47] This can be visualized in the case of the population of Monterey Presidio (established in 1770), where the number of births was consistently higher than that of deaths. In contrast to the missions, the presidio population experienced growth through natural reproduction (see Graph 15), life expectancy was higher, and. most children survived to adulthood, all different from demographic patterns on the California missions.[48]



Source: San Carlos Mission Baptismal and Burial registers, Monterey Diocese Archive, Monterey, California.

Conclusions

The contemporary mission diagrams offer a unique picture of what the fully-developed mission complexes looked like, the different architectural elements that constituted the complexes, and the sophistication of the mission urban plan that was an important element of the program of social engineering implemented on the missions. The new mission communities were to be developed on the grid plan and employ European architectural norms, and particularly as regarded housing for the indigenous peoples brought to live on the missions. Different architectural elements also reflected social policies implemented by the missionaries. One was the cotiguaçu where widows and orphans were housed. The missionaries were concerned about the sexuality of indigenous peoples, and promoted European ideals of sexuality and family formation. Widows who could not find a new husband were to be segregated from the general population to avoid the possibility of their having sexual relations outside of marriage. Similarly, the Franciscan missionaries in California were equally obsessed with indigenous sexuality, and had dormitories built for unmarried women and girls in an effort to limit sexual relations to couples joined by Christian marriage. The poor sanitation and unhygienic and crowded conditions in the dormitories contributed to a pattern of high mortality among women and girls, and a gender imbalance in the mission populations that became pronounced by the 1820s and 1830s.

The policy of congregating indigenous peoples on new communities and housing them in European-style housing in spatially compact villages had demographic consequences. Thousands of Guaraní lived in mission housing in an urban plan that facilitated the spread of contagion. Periodic epidemics reached catastrophic mortality levels, but the mission populations rebounded or recovered following outbreaks. Despite heavy epidemic mortality the mission populations did not evidence gender or age imbalances, and following outbreaks there was a pattern of the formation of new families as evidenced in increased numbers of marriages and high birth rates. On the California missions, on the other hand, the mission urban plan, housing arrangements, and the use of dormitories for unmarried women California mission populations evidenced a pattern of chronic mortality and death rates that were generally higher than birth rates, and age and gender imbalances.

The first missionaries in central Mexico in the sixteenth century, on the other hand, established their missions in existing indigenous communities, although there were also instances where indigenous officials, royal officials, or the missionaries themselves relocated or combined existing communities in the policy known as congregación. The matrix of the indigenous communities fit into a larger conceptualization of a sacred geography, with alignments and sight lines to sacred mountains and of astronomical events such as solar events. The largely sedentary indigenous populations experienced demographic changes during the sixteenth century following the Spanish conquest. However, , there are questions regarding estimates of the size of the population at contact, and sixteenth-century demographic patterns. Well documented case studies of demographic change, such as those discussed here, provide insights to better understand what occurred during the sixteenth century in central Mexico.

Table 1: Visitas and Number of Tributaries of San Agustín Xilitlán in 1571

Community	Ethnic Group	Tributaries	Reservados
Xilitlán	Hñahñu/Otomi	103	4
Tazioloxilitlán	Náhuas	59	4
Tlazozontal	Hñahñu/Otomi	144	7
Quetentlán	Hñahñu/Otomi	41	1
Tlaletlán	Náhuas	72	4
Taxopen	Náhuas	44	5
Tamancho	Hñahñu/Otomi	48	3
Tlacho	Náhuas	32	2
Tancuco	Náhuas	24	2
Ziplatlán	Náhuas	15	0
Tilaco	Hñahñu/Otomi	20	3

Source: Robert H. Jackson, "The Chichimeca Frontier and the Evangelization of the Sierra Gorda, 1550-1770," *Boletin: Journal of the California Missions Studies Association* 28:1-2 (2011-2012), 120.

Table 2: Visitas of the Doctrina of Metztitlán listed in the *Suma de Visitas*

In the Barranca de Metztitlán	In the Sierra
Aguacatitlan	Xococoquipan
Huiznauaca	Nonoalco
Tepeacapan	Yzmolintla
Cotlatepexic	Yztacoyotla
Nacxitlan	Elosuchitlan
Tenango	Çaqualtipan
Yztatetitlan	Almolone
Quatequizqui	Cahueztipan
Tonatlan	Teucuytlahuacan
Miaguatlan	Coatlilan
Chimalpupucatlan	Xilotlan
Atecuxco	Chapula
Xiuico	Tentlan
Tiangueztempa	Xuchimilco
Ayotuiapa	Tepehuizco
Huiztecula	Tlacolula
	Tezcuitlaco
	Macuilachco
	Pahuatitlan
	Ocotlan
	Maçahuacan

	Macuilsuchitl
	Çietlan

Source: René García Castro (coordinador y editor), *Suma de visitas de pueblos de la Nueva España, 1548-1550* (Toluca: Universidad Autónoma del Estado de México, Facultad de Humanidades, 2013), 213.

Table 3: Communities in the Province of Huaxtepec listed in the Matricula de Tributos

Community	Modern Name
Huatepec	Oaxtepec, Morelos
Xochimilcalcinco	Xochimilcatzingo, Morelos
Quauhtlan	Cuautla, Morelos
Ahuehuepan	San Pedro Ahuehuepan, Morelos
Anenecuilco	Anenecuilco, Morelos
Olintepec	Olintepec, Morelos
Quahuitlyxco	Cuauhtlixco, Morelos
Companco	?
Huicilan	Huitchila, Morelos
Tlalticapan	Tlaltizapan, Morelos
Coacalco	Oacalco, Morelos
Yzamatitla	Itzamatitlan,Morelos
Tepotzlan	Tepotzlan, Morelos
Yauhtepec	Yautepec, Morelos
Yecapichtla	Yecapixtla, Morelos
Tlayacapan	Tlayacapan, Morelos
Xaloztoc	Jaloxtoc, Morelos
Tepacinco	Tepalcingo, Morelos

Ayoxochapan	Axochiapan, Morelos
Tlayacac	Tlayecac, Morelos
Tehuizco	?
Nepopualco	Nepopualco, Morelos
Atlatlahucan	Atlatlahucan, Morelos
Totolapan	Totolapan, Morelos
Amilcingo	Amilcingo, Morelos
Atlhuelic	Atlihuayan, Morelos

Source: “La Matrícula de Tributos,”*Arqueología Mexicana*, Edición Especial 101, 28-29.

Table 4: Visitas of Totolapa, Tlayacapa, and Atlatlahuca

	Tlayacapa		
Totolapa (1579)	1571	1579	Atlatlahuca (1579)
Nepopualco	Xocoyacan	Hizquitepeque	Texcalpán
Quauhnanacatzingo	Teapoyucan	Cuitlapilla	Tepetlixpán
Metepeque	Atepexic	Atocpan	Tonalá
Atongo	Atlteapotitlan	Tezontlitlan	
Quilotepeque	Nonoxala	Nonopala	
Teuhixco	Texoacan	Zacatiliuhcan	
Chalchiuhtepeque	Atocpa	Xocoyocan	
Quamilpan	Tlaliuacpan		
	Cuillapilco		
	Texinacanico		
	Inquitepec		

	Texozoco		
	Zacatiliuncan		

Source: René Acuña, ed., *Relaciones geográficas del siglo XVI: México. Tomo 3* (México, D.F.: Universidad Nacional Autónoma de México, 1986), 159-160; Luis García Pimentel (ed.), *Relación de los Obispados de Tlaxcala, Michoacán, Oaxaca y otros lugares en el siglo XVI: manuscrito de la colección del Señor Don Joaquín García Pimentel*. México, D.F.: En casa del editor, 1904), 120.

Table 5: Net Change +/- in the Population of the Guaraní Missions, 1733, 1735-1740

Mission	1733	1735	1736	1737	1738	1739	1740
Guazú	-1076	15	5	56	55	68	23
La Fé	-2472	-1	51	-50	98	143	131
Sta Rosa	-2153	-4	19	42	52	44	52
Santiago	-86	76	37	95	114	107	43
Ytapúa	-604	-17	27	-272	-1491	-122	89
Candelaria	-50	-24	-14	-2	-1429	67	-15
Stoa Cosme	-192	-27	-154	0	-221	-6	39
Sta Ana	-758	53	-187	56	180	140	128
Loreto	-723	-459	-1182	-10	-786	75	108
SI Miní	-247	-320	-437	38	-48	-115	88
Corpus	-306	-346	-178	40	-23	111	118
Trinidad	-227	34	-48	-197	118	-122	-14
Jesús	-154	=10	-24	-292	28	60	35
San Carlos	-91	-31	-30	-56	-716	-2	69
S José	-201	16	-159	92	-1718	-25	88
Apóstoles	-179	34	67	2	-2163	2	76
Concepción	-86	61	5	-12	-1982	-118	62
Mártires	-289	-84	-11	3	-142	-463	75

La Mayor	-323	-130	-169	-25	-53	-1235	44
SFX	-329	-24	-182	27	-1215	-5	89
S Nicolas	=304	-187	-496	15	-853	-1583	125
San Luis	-669	-122	-112	18	53	-2357	101
S Lorenzo	-491	-218	-82	31	96	-2521	-4
San Miguel	150	109	83	135	184	70	155
San Juan	-289	40	-19	114	148	-53	-2329
Sto Ángel	-142	-67	-18	64	48	0	99
Sto Tomé	20	77	3	44	-414	-309	160
SF Borja	-212	138	25	105	-48	13	101
La Cruz	-602	116	114	34	-424	-1540	5
Yapeyú	-407	115	283	37	261	191	179
Yapeyú	1731 181	1732 -32	1734 -227				

Source: Catalogo de la Numeración Annual de las Doctrinas del Río Paraná/del Río Uruguay. Ano de 1738, CA; Robert H. Jackson, *Demographic Change and Ethnic Survival Among The Sedentary Populations On The Jesuit Mission Frontiers of Spanish South America, 1609-1803: The Formation and Persistence of Mission Communities in a Comparative Context* (Leiden: Brill Academic Publishers, 2015), 213-215, 217-220; Robert H. Jackson, *The Bourbon Reforms and the remaking of Spanish Frontier Missions* (Leiden: Brill Academic Publishers, 2022), 151.

Table 6: Female population at Santa Cruz Mission as related to total population and the total number of baptisms of females

Year	Population	Female Population	Females % of Population	Total Baptisms to date
1797	495	238	47	378
1813	398	139	35	789
1814	388	139	36	796

1820	461	175	38	950
1823	474	182	38	1,039
1824	461	184	40	1,060
1825	429	161	38	1,067
1826	428	167	39	1,087
1828	364	114	31	1,102
1832	284	87	31	1,133

Source: Robert H. Jackson, "Disease and Demographic Patterns at Santa Cruz Mission, Alta California," *Journal of California and Great Basin Anthropology* 5:1 (1983), 42.

Notes

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[1] For a discussion of a late eighteenth-century effort at social engineering on frontier missions, see Robert H. Jackson, *The Bourbon Reforms and the remaking of Spanish Frontier Missions* (Leiden: Brill Academic Publishers, 2022).

[2] See Lucia Mier y Terán Rocha, *La primera traza de la ciudad de México 1524-1535,* 2 vols. (México, D.F.: Fondo de Cultura Económica, 2005).

[3] A detailed two volume study documents the excavations and history of evangelization. See Ronald Spores, and Nelly M. Robles García (Eds), *Yucundáa: La ciudad mixteca y su transformación prehispánica y colonial* (México, D.F.: Instituto Nacional de Antropología e Historia, 2017).

[4] See Robert H. Jackson, *Frontiers of Evangelization: Indians in the Sierra Gorda and Chiquitos Missions* (Norman: University of Oklahoma Press, 2017), 15-45.

[5] Robert H. Jackson, *Conflict and Conversion in Sixteenth Century Central Mexico: The Augustinian War on and beyond the Chichimeca Frontier* (Leiden: Brill, 2013), Table 5, 43.

[6] Ibid, 144.

[7] Ibid, 133, 141.

[8] Ibid, 136.

[9] René García Castro (coordinador y editor), *Suma de visitas de pueblos de la Nueva España, 1548-1550* (Toluca: Universidad Autónoma del Estado de México, Facultad de Humanidades, 2013), 213.

[10] Ibid, 213.

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[11] Francisco del Paso y Troncoso, *Papeles de la Nueva España. Segunda Serie Geografía y Estadística Tomo III Descripción del Arzobispado de México Manuscrito en el Archivo de Indias en Sevilla Año 1571* (Madrid: Tipografico "Sucesores de Rivadeneyra, 1905), 102-110.

[12] Ibid, 103.

[13] Artigas, *Capillas abiertas aisladas de México*, 52-64.

[14] Ibid, 39-51.

[15] Juan B. Artigas, "Metztitlán, Hidalgo. Los edificios de la Villa: El convento de la Comunidad, El Cabildo Indígena de Metztitlán, arquitectura civil, El convento de los Santos Reyes," *Cuadernos de Arquitectura Virreinal* 7 (marzo de 1989), 9-55.

[16] Ibid, 9-10.

[17] Luis Azcue y Mancera, *Catalogo de construcciones religiosos del Estado de Hidalgo*, 2 vols. (México, D.F.: Talleres Gráficos de la Nación, 1940), vol. 1, 315.

[18] Artigas, *Capillas abiertas aisladas*, 93-105.

[19] Robert H. Jackson and Fernando Esparragoza Amador, *A Visual Catalog of Sixteenth Century Central Mexican Doctrinas* (Newcastle upon Tyne: Cambridge Scholars Publishing, 2016), 589.

[20] Leonardo Amezcua Ornelas, *El Códice de Acámbaro y El Sincretismo Religioso en el México del Siglo XVI* (Acámbaro: Editorial "Puente de Piedra, 2015), 47-78.

[21] For the background to the conflict in the region and treaty making see Jeffrey Alla Erbid, Jr., *Where Caciques and Mapmakers Met: Border making in Eighteenth-Century South America* (Chapel Hill: University of North Carolina Press Books, 2020); Robert H. Jackson, *Regional Conflict and Demographic Patterns on the Jesuit Missions among the Guaraní in the Seventeenth and Eighteenth Centuries* (Leiden: Brill Academic Publishers, 2019).

[22] "Dibujo de un Pueblo de Indios Guaranis," Archivum Romanum Societatis Iesu, Paraq. 14. A notation on the diagram states that it dates to after the mixed boundary commission of 1754.

[23] Ibid.

[24] Hugo Storni, S.J., *Catalogo de los Jesuitas de la Provincia de Paraguay (Cuenca del Plata), 1585-1768* (Rome: Institutum Historicum S.I., 1980), 203.

[25] Jaime Oliver, S.J., Breve noticia de la numerosa y florida Xplizanda Guarani. Archivum Romanum Societatis Iesu, RomeParaq. 14.

[26] Luis Antonio de Souza Botelho, "Cartas Topograficas do continente do sul e parte meridional da America Portugueza com as batalhas que o Mmo. E Exce. Conde de Bobadella ganhou aos Yndios das Missoens do Paragua. Recopilladas pello Gov[ernad]or e Cap[it]am Gen[er]al de S. Paullo Dom Luis Antonio de Souza Botelho." The title of the diagram is: Plano da Redução de São Miguel Arcanjo. Biblioteca Nacional de Brasil, Rio de Janeiro.

[27] "Diario das tres partidas de demarcaçâo da America em virtude do tratado do limites ajustado entre as doas coroas de Espanha e Portugal [1759], Biblioteca Nacional de Brasil, Rio de Janeiro.

[28] Robert H. Jackson, *A Population History of the Missions of the Jesuit Province of Paraquaria* (Newcastle upon Tyne: Cambridge Scholars Publishing, 2019), 259.

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[29] *Ibidem*, 270-271.

[30] *Ibidem*, 87-88.

[31] Robert H. Jackson, *Demographic Change and Ethnic Survival Among The Sedentary Populations On The Jesuit Mission Frontiers of Spanish South America, 1609-1803: The Formation and Persistence of Mission Communities in a Comparative Context* (Leiden: Brill Academic Publishers, 2015), 82-83.

[32] *Ibidem*, 88.

[33] *Ibidem*, 86.

[34] Robert H. Jackson and Edward Castillo, *Indians, Franciscans, and Spanish Colonization: The Impact of the Mission System on California Indians* (Albuquerque: University of New Mexico Press, 1995), 87-106..

[35] Ibid, 99.

[36] For a summary of building construction on the California missions see Ibid, 142-168.

[37] Robert H. Jackson, *A Visual Catalog of Spanish Frontier Missions, 16th to 19th Centuries* (Newcastle upon Tyne: Cambridge Scholars Publishing, 2018), 521.

[38] Jackson and Castillo, *Indians, Franciscans, and Spanish Colonization*, 164.

[39] Ibid, 160, 163.

[40] G. Cleal, 1854, "Mission Santa Cruz," The Bancroft Library, University of California, Berkeley.

[41] For a discussion of demographic patterns and the effects of epidemics on the Guarani missions see. *Demographic Change and Ethnic Survival Among The Sedentary Populations On The Jesuit Mission Frontiers of Spanish South America, 1609-1803: The Formation and Persistence of Mission Communities in a Comparative Context* (Leiden: Brill Academic Publishers, 2015)*; A Population History of the Missions of the Jesuit Province of Paraquaria* (Newcastle upon Tyne: Cambridge Scholars Publishing, 2019).

[42] For a more detailed discussion of demographic patterns on the California missions see Robert H. Jackson, *Indian Demographic Decline: the Missions of Northwestern New Spain, 1687-1840* (Albuquerque: University of New Mexico Press, 1994), 83-116; Robert H. Jackson, *The Bourbon Reforms and the Remaking of Spanish Frontier Missions* (Leiden: Brill Academic Publishers, 2022), 210-233.

[43] Ibid, 314.

[44] Richard E. Pierce, ed., *Rezanov Reconnoiters California,1806* (San Francisco: The Book Club of California, 1972), vii-xix.

[45] Jackson, *Indian Demographic Decline,*113.

[46] Jackson, *The Bourbon Reforms*, 225-226.

[47] For a more detailed discussion of the demographic patterns of the soldier-settler population of California see Ibid, 253-265.

[48] Ibid, 253-265.