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The Missions of San Antonio, Texas.
Architecture as a holistic representation of the environment

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Abstract: *This paper analyzes the development of San Antonio missions' cultural landscape to address the dialectic relationship between urban models created for the New World, European ideologies, and the role and contributions of the Indigenous population. During the 18 century, the need to improve the Christianizing of the Americas, associated with the urge to defend the territory of the Viceroyalty of New Spain, prompted Franciscan missionaries to open new settlements in Texas. Five of these are still standing in the current metropolitan area of San Antonio. The region's marginal location and the site's strategic position favored the growth of such Franciscan Missions under the protection of the Spanish Crown. The territory, in itself fertile, was re-shaped through substantial infrastructural and technological innovations. A complex system of artificial canals allowed the development of agricultural fields – the* ejidos*, or common lands – characterized by high and regular productivity, being able to feed the Mission population. Furthermore,* rancherías *(i.e., ranch lands) were established and designed for gazing. The local native population, commonly known as Coahuiltecos, rapidly converted from a nomadic, hunter-gatherer lifestyle to begin farming. The construction of fortified villages was the core of these newly founded communities. They had the specific role of controlling the territory and shaping Indigenous people's customs to be integrated within the novo-Hispanic society. The Mission settlements originated utilizing specific layout principles, hybridizing European models, such as the ones of medieval abbeys and architectural and military treatises. These settlements embody one of the most successful examples of Franciscan utopia.*

Keywords: *San Antonio, missions, acequias, novo-Hispanic society, cultural landscape.*

The current metropolitan city of San Antonio, Texas (U.S.), extends over a relatively large area, once characterized by agricultural fields belonging to an urban center – the Villa San Fernando – and the five Franciscan missions established in the area. The original urban civil settlement was founded as a *villa* in 1731 by migrants from the Ca-

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nary Islands (*Isleños*). It was founded next to an existing *presidio* and in the vicinity of two already established Franciscan *misiones*, which increased to five in the same year. Placed one next to the other along the San Antonio River, the five missions acted as a bridge between natives and settlers, introducing Indigenous people to European customs and beliefs. Missions also had the role of supporting the *Virreinato* in defending the Spanish borders as military outposts.

The cultural landscape that took shape in this area embodies a unique frontier social, economic, and infrastructural system with peculiarities and differences from typical Novo-Hispanic settlements. In particular, the San Antonio missions represented an extraordinary case of interweaving between European and Indigenous cultures. For these reasons, since 2015, the vestiges of the missions have been included in the UNESCO World Heritage List.

Shaping the land

Concerns about French colonization in Louisiana in the early 1700s and encroachment into Texas in 1685 by Robert Cavalier (1643-1687) la Salle's expedition, led the Spanish government to strengthen its hold on Texas[3]. On 13 June 1691, the first *entrada*, made of Spanish explorers and Franciscan missionaries (from the Alcantarine family), came across a river valley inhabited by a *rancheria* of Payaya Indians[4]. Fray Damian Massanet renamed the place 'San Antonio' in honor of the saint whose feast fell that day[5]. The expedition's diaries described the natural beauty of the land, with broad plains – «the most beautiful in New Spain»[6] – and with river bordered by many trees such as cedars, willows, cypresses, osiers, oaks, cottonwoods, mulberries, and many vines[7]. A few years later, in 1709, another *entrada*, one of the Espinosa-Olivares-Aguirre expedition, intended to initiate contacts with the indigenous population and prevent them from establishing trade relationships with the French[8]. It reached the San Pedro Springs on April

3. Cruz 1988.
4. Quirarte 2002, p. 17.
5. "San Antonio: The City of St. Anthony", *St. Anthony Messenger Magazine*, 2004 (Americancatholic.org).
6. Chabot 1937, pp. 10-11.
7. Tous 1930, p. 5.
8. Cruz 1983.

13, 1709. Franciscan Friar Isidro Félix de Espinosa's (1679-1755)diary described the site and named the two springs San Pedro Creek and the San Antonio River with one of the copious springs raised near a populous *ranchería* of Indians.

Hydrological factors, predominantly proximity to potable water, exerted a definite influence on the specific choice of sites – featuring all with streams and springs by the earliest European settlers.

A few years later, in 1718, a first mission was opened along the San Antonio River. It was dedicated to San Antonio de Valero, named for New Spain's viceroy, Baltasar de Zúñiga y Guzmán, 1st Duke of Arión, 2nd Marquess of Valero (1658-1727)[9].

The exact location of the original first mission settlement, which had to utilize the river's waters to irrigate the fertile fields nearby, is still debated. Brigadier Pedro de Rivera y Villalón (†1744) witnessed the settlement's inception. He arrived in San Antonio in 1717 accompanied by the engineer Álvarez Barreiro to check the status of the outer defenses, and Barreiro offered his assistance in building the mission[10]. To provide sustenance to the settlers and the soldiers assigned to the *presidio*, the construction of an artificial irrigation system was started, comprising dams, gates, and canals – known as the *acequias* system. The artificial canals allowed both to fence the fields and practice extensive farming, taking advantage of the vastness of the territory. In addition, *sacas de agua* (or *desagues*) improved the resilience of the water system, preventing floods or unexpected droughts. This hand-dug, gravity-flow, small-scale, farmer-managed irrigation endeavor can be considered the first social act of cooperation involving Spaniards, missionaries, and natives (1719).

Ideally suited to the sub-tropical Mexican Gulf climate, the *modus operandi* of constructing artificial gravity-based watercourses was introduced by referring to well-established Spanish examples. Even in the European peninsula, hot summers and mild winters with irregular rainfall have always characterized the succession of seasons. Such climatic conditions prompted the Arabs who settled there during the Middle Ages to implement engineering solutions to improve environmental conditions (the term *acequia* is derived from the Arabic *alsaqiya*). This legacy survived in the Andalusian cities after the 15th-century *Reconquista*[11] and,

9. Baltasar de Zúñiga Guzmán Sotomayor y Mendoza, 1st Duke of Arión and Marquess of Valero (1716-1722).
10. Moncada Moya 2020, pp. 13-14.
11. Moreno Olmedo 1965.

although not addressed in Renaissance treatises of the early 16th century, it became widespread throughout the New World due to its obvious effective operating convenience[12].

As a result, San Antonio's natural watercourses – such as the homonymous river, the current San Pedro Creek, and the more peripheral Alazán Creek – were augmented with numerous artificial canals (named *Acequias Madre*). These canals quickly became the principal infrastructure serving the civil and the Indigenous communities, the latter living in the missions. They were farmer-managed, requiring community activity to construct, keep clean, maintain, and apportion water for the residents' use[13].

The first component of the *acequia* system to be constructed would have been «a device to contain and direct the water into the channel, such as a diversion dam»[14]. The *Acequias Madre* would have extended from this structure. The *Acequias Madre* was also intersected by secondary distribution canals, creating a vast capillary network of collectors turning the surrounding territory into fertile farmlands. The canals' slopes had to be carefully calculated so the water would flow continuously without becoming stagnant but at a slow enough rate not to cause erosion.

A gradient of 0.5% – such as the one featured in the Espada *acequia* – was ideal for a slow and steady flow. Water flowing in such a capillary canal network could be controlled and diverted to specific fields through *compuertas* (i.e., sluice gates).

Water from the *acequias* irrigated the land, organized into *labores* (i.e., fields) large blocks of farmland. Within each *labor*, the land was further subdivided into *suertes* (i.e., lots), with the allocation of these smaller sections determined by a drawing of lots. This kind of organizational structure was common in historical agricultural communities to efficiently manage the distribution of land resources. While labores focused on private cultivation and ownership, in the Novo-Hispano land management system, the *ejidos* (or common land) aimed at promoting communal welfare and preventing land concentration. Both concepts reflect the complex interplay between communal and individual rights to land. Rules addressing water control and distribution

12. Porter 2009, pp. 31-32.
13. Rivera 1998, p. 98.
14. Cox 2005, p. 32.

were incorporated into the early laws governing all Spanish territories in the New World. Early land grants included, together with the property, irrigation rights, with a standard water allowance of two days of water, as specified in early deeds, known as a *dula*[15].

The *acequia*'s efficiency depended on the river's lushness and the rational organization of the canals to avoid unnecessary waste. In this sense, the time-honored Spanish tradition led here, as in the rest of the American possessions, to the structuring of the missionaries' settlements by successive aggregations along the course of the river, as can be seen from the geographical position of the various sites that were gradually occupied.

The smooth operation of such a landscape design and the strategic location along one of the main traffic routes towards unexplored North America favored the success of the settlement, immediately leading to the foundation in 1720 of another mission dedicated to San José y San Miguel de Aguayo[16].

The slow but steady process of cultural appropriation and transformation of a natural landscape can be better understood by comparing a 1730 cartographic map (which shows the situation of San Antonio around 1722) and a later representation of the area in 1764 (*figs*. 1-2).

In particular, the 1729-1730 plan, although not correctly proportioned, is extremely helpful in understanding the various landscape features of this early settlement. The location of the various already established communities can be seen, with the Mission of San Antonio de Valero on the east side of the San Antonio River and the first location of Mission of San José y Miguel de Aguayo at the confluence of the arroyo de San Pedro and the river. The notes clarify that the «presidio de S.[an] Antonio» was squeezed between the «Rio de San Antonio» and the «Rio de San Pedro» surrounded by «tierras aptas para lavor sacandoles riego». The *presidio* was protected on both sides by the two watercourses, which merged into one majestic river further south and could easily protect the agricultural area behind it, concretizing a productive, self-sustaining territorial organization. The southern fields seemed to be adequately protected in case of attack or siege. Also, the plots north of the *presidio* could be easily defended due to the close-by

15. Almaraz 1989, p. 15.
16. Leutenegger 1975, pp. 3-8.

presence of the military outpost. In addition, the plan shows an artificial canal built on the north of the fortress for a *lengua* (about 6 km), linking the two natural watercourses, clearly creating a line of defense against the attacks and delineating a buffer zone for the *presidio*.

The farm fields extended «para [cultivar] maiz y frigo de una lengua à cada Acequia». Thanks to their proximity to the fortress, they provided food and participated in military defense strategies. The absence of trees allowed efficient surveillance, which was very useful in that area, given the constant hostile raids conducted by both the Apache Indians and the French troops (usually coming from the east)[17].

The landscape generated by the system of the *acequias* was indeed part of the very survival of the early settlement: a relevance soon increased by the political-administrative role attributed to these canals as boundary markers between the properties.

The 1729-1730 plan was a document created to prepare for the arrival of other communities in the area. The Spanish Crown sought to increase the civilian population, a project that was finally carried out in 1731 with the arrival of settlers from the Canary Islands[18] (the first arrival dates back to 9 March of that year). The program was interrupted the following year due to the high costs involved[19].

Several valid reasons pushed for settling in San Antonio and investing in its development. In addition to the lush nature (absent elsewhere in Texas) and the safety provided by the presidio, the site was one of the main stops of *El Camino Real de los Tejas*, which linked the remote region of East Texas – where the Spaniards attempted to halt French expansion from Louisiana – with the rich Mexican center of Zacatecas, where it connected with the *Camino Real de las Provincias Internas*[20]. Furthermore, other routes moved from here toward the still unexplored California.

The Franciscan friars from the Collegio de la Santa Cruz de Queretaro used to good advantage of San Antonio's strategic location, abundance, and safety by relocating in 1731 three additional missions, which had already been established in the westernmost parts of East Texas: Mission San Francisco de los Tejas was renamed San Francisco de la Espada, while Mission San José de los Nazonis took the name

17. Velázquez 2016, p. 112. The attacks took place in 1685, 1714, and 1719.
18. Parsons 1983.
19. Serrano Alvarez 2013, p. 243.
20. Dominguez 1989.

San Juan Capistrano. Lastly, Mission Concepción, founded in 1716 near the village of the Hainai population (part of the Caddo-speaking Hasinai confederation), moved along the San Antonio River at the confluence of San Pedro Creek and the river[21].

In relocating the missions, Franciscans adopted a novel settlement strategy: rather than being erected close to Indian villages, isolated and unprotected, in the case of San Antonio, the missions were located in sites close to the main communication routes and far from indigenous settlements.

The pipeline system observed in the 1729-1730 plan, which served to develop and defend the early settlement, was therefore expanded along the river to create a chain of five Missions and the *villa* San Fernando. The interrelated settlements stretched for about 15 miles along the San Antonio River, with the implementation, in different periods, of eleven main *acequias* used by various groups of people.

The Missions' acequias

The chain of the five mission settlements grew slowly due to site-specific challenges, such as Apache attacks, constraints in finding construction materials, and the absence of specialized master masons to erect the main buildings. The 1764 plan, drafted by Luis Antonio Menchaca (1713-1793), shows the development of this system of *presidio*/*villa*/*misiones* settlements.

The 1764 map depicts both of the area's principal water sources. The San Antonio river spring, known as "Blue Hole," was drawn as a circle and had a carretera nearby; the *ojo of the arojo de San Pedro* is also clearly marked as a circle, bordered by many trees and lush vegetation. Each mission had its principal waterway, modified and extended over time according to needs.

Mission San Antonio de Valero *acequia* diverted on the east side of the river, south of its spring and approximately two miles north of the Mission's site, at a point recently identified at what is now the Witte Museum[22]. The dam, crossing the river, was a stacked stone structure

21. Early 2006, p. 89; Ivey-Fox 1999, p. 5.
22. McKenzie 2017.

and its configuration can be seen in an 1865-68 plan by city engineer Gustave Freiesleben (*fig*. 3). This acequia is considered one of the oldest acequia and its overtime implementation irrigated the most extensive farmland of the entire area.

It probably started in 1719, when Mission San Antonio was settled on the river's west bank; in 1727, Mission San Antonio had a two-and-a-half-mile-long irrigation ditch, as described by Brigadier Rivera. This earliest *acequia* is most probably the one depicted in the 1764 map: from the intake, the *acequia* ran southward, supplying farmlands – later known as *Labor de los adaisenos* – along its west banks. The *acequia* continued running southward, passing the mission's complex and rejoining the river nearby at the great bend.

The 1772 inventory, describing in detail the mission's property, provided relevant information also of the agricultural lands: this «mission has three farms, each of a league long; all three are fenced with poles, and there is plenty of irrigation by mean of deep irrigation ditch which receives water almost from the very origin of the [San Antonio] river and runs it in division throughout the area of said fields. One of the farms is presently planted of late corn»[23]. Féliz Almaráz claimed that the three *labores* of San Antonio de Valero extended north of the *plaza* along the river's east bank until the dam diverted the water into the *acequia*. Southward, the farmland ended just below the mission's complex, in an area later called *La Villita*[24].

Therefore, none of San Antonio's mission southern *labores* are depicted in the 1764 map. Evidently, the *Acequia Madre* was expanded southward only at a later time. In the last three decades of the 18th-century – traditionally considered a period of decadence – the *Acequia Madre* de Valero was expanded southward to reconnect to the river in the current King William neighborhood. In addition, on the east of the mission's compound, a compuerta de reparto was created to distribute the water of the main ditch into an eastern and a western branch. The two branches joined again into one stream. Before joining the river, the *acequia madre*'s southern branch featured additional secondary ditches, irrigating additional south-eastern fields, such as the *Labor de Afuera*, implemented in early 1792 when fourteen Caddo-speaking

23. Almaraz 1989, p. 31.
24. *Ibidem*.

Adais families moved here from east Texas. On the southeast, the *Labor de los Mochos* distributed, during secularization, to the 14 family heads and unmarried adults of the mission[25].

The maximum length of the *Acequia Madre* de Valero as depicted in later documents – such as the 1912 Rullman map – was 2,5 kilometers in length, and the other later and lateral additions extended the total length of the system to approximately 16 kilometers (including later additions)[26]. The ditches mainly were 'unlined', having a consistent size, approximately 2 meters wide with a depth of 1 to 1,5 meters. In some locations, like in the southern extension, the ditch walls could have been lined with quarried limestone blocks varying in thickness from 25 to 35 centimeters and in length from 27 to 104 centimeters[27].

The south branch of *Acequia Madre* de Valero crossed the long-established neighboring wide Concepción *Acequia* through a canoa, a hollow log, that was later replaced, likely during the mid-1800s, with a stone aqueduct[28]. There is no detailed information on the technical solutions utilized where the two acequias crossed to ensure the necessary slope for both channels.

If the southern branch of the *Acequia Madre* de Valero was created only after 1778, the *acequia* serving Mission Concepción was another of the earliest acequias. It was pre-existing in the 1731 Mission Concepción foundation, made in the 1720s for the first site of Mission San José[29]. The existing canal was a decision-making factor in selecting the Concepción mission's location, and it was immediately re-utilized when the relocated mission was established on the site. This channel began on the east side of the river, at one of its highest points, with a diversion dam hooked to a 5-acre island, later known as Bowen's island, which became rich in pecan and fruit trees, wild mustang grape vines and flowering magnolias. The 1772 Missions' inventory describes this dam – *presa* – as «completely made of stone [...] with an intake area of water that is made of stone and lime. It is five quarters high and one vara wide»[30].

25. Cox 1997. The term mochos may be an archaic, derogatory term for a common soldier (Burkholder 1976).
26. Cox 2005, p. 22.
27. Cox 1997.
28. *Ibidem*, p. 30.
29. Ivey 2018, pp. 252-253. Cf. Ivey-Fox 1999, p. 2.
30. Almaraz 1989, p. 36.

At Mission San José, the *acequia* providing water for irrigation of the fields and for the use of mission inhabitants, originated at a dam on the river south of Mission Concepción at the ford for the Mission Road crossing. The dam thrusted upstream into the river, diverting the water to the west bank. Here, a channel snaked southward in a curved path along the shallow contours of the terrace east of the road. The *acequia* was designed to irrigate only the land between the channel and the San Antonio River and thus established the limits of the mission *labores*. Just below the dam, the *acequia* divided into the *acequia media*, the middle *acequia* – branching to the east – and into the *acequia de afuera*, the outside *acequia*, continuing south on the west edge of the fields, with high efficiency of water supply to the fields north, east, and south of the mission.

As of 1764, the *acequia* had already extended south, considerably beyond the mission's compound, until the riverbank opposite the fields of San Juan Capistrano[31]. In the vicinity of the mission's compound, the *acequia* ran along the north side of the mission buildings and then in an arc around its east side. Side channels may have supplied water for the Indians and friars. Governor Jacinto de Barrios Leal y Jáuregui (fl.1751-1759) report in 1758 described a stream of flowing water and a bathing pool for each row of houses around the plaza, still unfortified[32].

The San José *Acequia* was in operation by 1724, with irrigation fields to the point that the mission produced an excess of corn. The fields slowly increased as the mission improved: in 1749, an area of about 51 acres was planted; by 1755, this had risen to about 79 acres with half a *fanega*[33] of additional fields planted. In 1757, a new section of *acequia* was cut, more than 83 meters long, and a new field of a little more than 105 acres was opened.

The excavation of the canals of Mission San Juan and Espada began in 1731, immediately following the Missions' foundations. It took some time until they became operational: the San Juan *acequia* was completed by February 1740 because of disease and frequent clashes with Apache Indians. It was built along the river's east bank, with its intake almost directly opposite the present site of Mission San José. A

31. *Ibidem*.
32. Habig 1968, p. 504.
33. A *fanega* correspond to 8.81 acres (3,5 hectars). Almaraz 1989, p. 15.

90-meter-long diversion dam was constructed of large river cobbles, hydraulic lime mortar and mixed with caliche. It projected from the west bank to direct water into the channel. The *acequia* stretched for more than 5 kilometers until reaching the mission. The 1764 map clearly shows this *acequia*'s location in relationship with the mission's compound. An additional southern branch, approximately four kilometers long, was added later, providing water for the Mission's lower labores, as large as the upper ones.

Farthest downstream was Mission San Francisco de la Espada. The *acequia* for Mission San Francisco de Espada began at a dam spanning the river midway between Missions San José and Mission San Juan, diverting water into the channel along the western side of the San Antonio River. The Espada dam is currently the last surviving and functioning of the Spanish colonial dams. It was constructed of limestone and lime mortar and arched downstream of the river flow. The Mission Espada *acequia* measures 9 kilometers from the Espada dam to its outflow into the San Antonio River. It was broken into two segments near the mission – the *acequia media*, the middle *acequia*, and the *acequia de afuera*, the outer *acequia*. Both are primarily unlined dirt ditches around 2 meters deep. Later, an eastern branch, approximately four kilometers long, was added to irrigate additional fields. At two and a half kilometers down the Espada *acequia* in the 1730s, it was necessary to construct a massive long stone masonry arched aqueduct to convey water across a natural creek – the Piedras Creek (*fig*. 5-6).

The aqueduct was described in 1772 as a conduit of lime and stone of thirty-eight varas in length (32.30 meter-long), six in height (5.18 meter-high) with a «punta de diamante» (indicating the buttress to divert water), and «dos ojos» (or arches), which allowed the creek's currents to pass[34]. The Espada aqueduct is considered the only Spanish-era surviving aqueduct in the southwest of the United States, and the Espada *acequia* is currently the most intact of all the *acequias*. They are both relevant contributing features to the UNESCO World Heritage Designation.

34. Fray Juan José Sáenz de Gumiel, *Inventory of the Mission San Antonio de Valero: 1772*, translated by Benedict Leutenegger, Austin, Texas Historical Commission, Office of the Texas State Archeologist, Special Report, 1977, vol. 23, p. 7.

The site of each of the five San Antonio missions was determined because of the adaptability of the surrounding lands to irrigation[35]. This particular hydrologic factor is quite different from mere proximity to water. Here, the primary considerations in the site choice were the proximity to the irrigable land, potential takeoff points for the irrigation system, and specific topographic features to create an adequate slope for gravity-based water channels. In addition, thanks to the long-lasting European waterways building tradition, peculiar construction and site challenges, such as crossing streams along the *acequia* path, could be easily overcome.

In addition to hydrological factors, another important consideration would have been the agricultural potential of the land to be farmed, which may have been based both on the irrigation and the naturally occurring vegetation and soils. The three upper missions, San Antonio de Valero, Concepción, and San José were surrounded by large areas of what today would be classified as "Prime Farmland", with the soil featuring an ideal combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other crops with minimum inputs of fertilizer, pesticides, and labor, and without intolerable soil erosion[36]. The *labores* of the southern two missions, San Juan and Espada, were created on land that today would be identified as "Unique Farmland", primarily appropriate for producing specific high-value food and specialty crops. The Frio clay loam of this area is noted as the most suitable for pecans. However, the lower missions' *labores* have been farmed continuously until today – for two and a half centuries – and have produced a large variety of traditional crops, with a telling effect on the successful operation of what was once the missions' land.

The construction of the *acequias* allowed the growth of San Antonio's agricultural economy. The missions housed the native converts, providing shelter from attacks and dangers. They organized as independent communities developed according to idyllic schemes such as the *Rhetorica Christiana* (1579), proposed by Diego de Valadés (1533-1582)[37] where farming was promoted through a conscious land administration.

35. Brownlee *et alii* 1959, p. 4.
36. https://efotg.sc.egov.usda.gov/references/public/VA/PrimeandUniqueFarmlands.pdf (2024-02-12).
37. Cruz Gonzalez 2018, p. 54.

Missions and civil settlements: similarities and differences

During the first half of the 18th century, San Antonio Missions' settlements appeared as unfortified *pueblos*, roughly following the Laws of Indies. Due to the continuous attacks of other Indian populations – Apaches or Comanches – all the missions' compounds were reorganized to become fortified, providing the Indigenous residents an effective defense independently from the nearby *presidio*. The 1764 Menchaca map depicted the missions' compounds as compact settlements, probably built based on the examples of Novo-Hispanic military models[38]. The Franciscans' beliefs of ideal communities informed the mission complexes' image, which had regular perimeters and were based on elementary geometries (the square and the rectangle) to organize the internal blocks and the various production activities efficiently. Some of the principal and tallest masonry buildings (such as the church and the *Convento*) were placed in proximity to the compound's walls; others – such as the granary or the neophytes' dwellings – were eventually embedded in the external walls to create a solid fortified enclosure.

The compounds' walls and corner bastions often overlooked the countryside, while church towers served as watchtowers. Featuring a monumental scale and designed following counter-reformation principles, the churches dominated the entire mission compound, performing multiple community tasks simultaneously. Churches were the places to pray, but they were also the locations where community assemblies took place and were places for refuge in case of need. Built using stone masonry construction – mostly made of different types of limestone[39] – churches and conventos also featured the implementation of masonry vaults, which also reduced the risk of fire (which was very dangerous and probable).

In 1731, the *Isleños* settled, and the progressive work in the fields began to bear fruit, providing a successful social balance. They dug communal *acequias* and built dams diverting water from the San Antonio River to irrigate their *labores*, gardens, and orchards. Upon their arrival, the *Isleños* first received the *solares* for homes and orchards around the main plaza of the community of San Fernando de Béxar and irrigated

38. Lombardi-Benincampi 2023.
39. Ewing 2008, pp. 50-54.

farmlands south of the new town between the river and the *arroyo de San Pedro*. *Vecinos* (i.e., settlers) of all backgrounds grew garden vegetables, beans, chiles, potatoes, and maize for their subsistence and later produced enough surplus maize to create a local market[40].

The typical *cuadricula* of 16th-century Spanish American foundations, with the main *plaza*'s four corners pointing to the four cardinal points, had to be adjusted in Texas to the specific peripheral condition of the region. The 1730 *Plano de la población*, drawn by Joseph de Villasenor, of the newly founded center of *Villa* San Fernando de Béxar was designed as a regular grid, devoid of fortifications (*fig*. 7). Although relevant modifications were made to this plan – the orientation and site location were changed and the blocks' layout reduced in number and location – the civil settlement continued to be unfortified throughout the 18th-century[41]. Compared to the neighboring missions, this is a surprising fact. However, if we consider the *villa*'s geographical position between the *presidio* and Mission San Antonio de Valero, it appears the crucial role played by the missions' settlements because they contributed to the protection of the area, working in synergy with the natural defense offered by the river of San Antonio.

If there was a close relationship between various settlements along the San Antonio River, conflicts could arise due to the divergent interests of the inhabitants. Self-appointed as an *élite*, the newcomers *Isleños* eventually came into conflict with the missions, demanding privileges and attention from the authorities[42]. Their overbearing attitude undermined the initially stable relations with the friars. After all, the civil population and religious orders depended on the Spanish Crown, and all were involved in the broader Christianization project the Church of Rome promoted. These frictions are confirmed by some moments of crisis, such as when in 1736, Fray Mariano Francisco de Dolores y Viana – minister in San Antonio de Valero – had the bridge across the river of San Antonio removed to prevent the soldiers stationed there and the population living in San Fernando de Béxar from reaching the mission to take part in the Eucharistic celebration[43]. The San Fernando's parish priest also complained that the tiny and dilapidated

40. Poyo 2018, p. 20.
41. Reps 1965 [1980], pp. 27-31, 34-36.
42. Poyo 1991, pp. 41-58.
43. Habig 1968 [1997], pp. 48, 272.

presidio chapel was inadequate as a town church until the governor ordered in February 1738 that a church would be built as prescribed in the Laws of the Indies on the town *plaza* of San Fernando.

By the middle of the 18th century, the political situation in San Antonio was stable. Thanks to the missionaries' efforts, the clashes between natives and European settlers had somehow diminished, and the expansion towards Colorado had slowly enshrined the Spaniards' control over the area.

In 1772, the reorganization of the northern defense of New Spain – formalized in the *Reglamento e Instruccion para los Presidios que se han de formar en la linea de frontera de la Nueva Espana* – made San Antonio de Béjar the new provincial capital of Texas, with the permanent residence of the governor. Due to the arrival of 60 families of former residents of Los Adais[44], the *Villa* population increase required additional space and a reorganization of the urban area (*fig*. 8). The 1777 new urban project of *Villa* San Fernando was proposed. The city appeared unfortified, arranged within a quadrangular perimeter to contain courtyard houses for a preset number of 100 families. Such layout followed the model of an 'enclosed city', with an unusual precinct made of rows of trees along moats surrounding the entire settlement. Also, the central plaza featured rows of trees along its four sides. Incorporating public 'green' belts into the urban design was an innovative strategy since the Novo-Hispanic city lacked public 'green' infrastructures until the second half of the 18 century[45].

The interest in the presence of the green axis within the urban core grew with the conception of the public space as a place for leisure, social interaction, and place-making.

If in Europe the street was conceived as an expansion of the dwelling, becoming par excellence the public space, beyond the Atlantic such a public role was given, in the 16th century, to the central *plaza*, based on the guidelines provided by the 1575 Laws of Indies[46]. The church dominated the central *plaza*, featuring the city's main institutional buildings. The central square had the specific role of fulfilling political and cultural representation goals and being the physical and symbolic core of the surrounding built and rural environment. A

44. Early, 2004, p. 104.
45. Reps 1976 [1979], p. 6; Mattos-Cardena 2004, p. 81.
46. *Ibidem*.

shared, public, open space was one of the primary elements for the ideological construction of a civil settlement, and it was also present in the missions, as certified by the capillas apiertas. However, while the rigid Spanish urban layout, based on the mandatory Laws of Indies, had very little modification, in the missions, the space for the community was considerably modified overtime in an attempt of synthesis or a search for syncretism aimed not so much at domination but at the coexistence of different cultures.

The settlements' articulated organization of the 18th-century cultural landscape of San Antonio was shaped by its role as a military outpost. Like in the rest of the Ibero-American regions, such as the late 18th-century Californian settlements, the *pueblos*, *presidios*, and *misiónes* were the critical elements of the territorial government in San Antonio, this system becomes profoundly interconnected and interdependent, framing a unique model of hybridization[47]. Initially, Franciscan utopian ideals shaped the missions' landscape as autonomous and autarchic communities. Over time, the missions' urban design, due to the continuous raids of belligerent Indians, moved away from the models of the laws of the Indies and was based on the hybridization between humanist ideas and European military treatises.

The *villa*, *presidio*, and *misiónes* of San Antonio became an integrated continuum to define a high-performing network[48]. Their interdependent relationship is confirmed by the Baroque architectural transformations the missions undertook in the middle of the 18th century. The linear design imposed by warlike reasons, with specific defensive needs, was combined with the models of medieval abbeys, conceived as independent centers, obviously updated according to the customs of that time. The urban space characterizing the city was also applied in the mission layout, establishing their unique identity that, on one side, led the Spaniards to understand the missions and their role; on the other side, the missions showed the natives a European living environment. During the 17th century, ideas regarding the importance of urban space in modeling the behavior of citizens and recognizing a link between social customs and house form had become prominent in urban design texts

47. Ettinger 2007, p. 161.
48. Poyo 2018, p. 16.

in Spain[49]. Without suggesting a direct influence of these texts on the architectural layout of the missions, it would seem fair to assert that these ideas were an underlying factor in the imposition of a newly built order[50].

However, the rich decoration of the façades of the San Antonio Missions' churches and the design quality of the layout do not seem to be found in the *Villa* de San Fernando. General pauperism imposed by the economic difficulties probably limited the local grandeur of the *villa* and its more representative buildings, such as the 'Governor palace'. Instead, in Missions' settlements, the emphasis on the Indigenous people's catechesis produced churches with a monumental scale and rich and articulated iconography. Missions, in fact, were dedicated to «infidelium conversioni, ac omnium animarum saluti, & Sanctae Romanae, & Universalis Ecclesiae dilatationi, ubique indefesse insereviatur»[51]. These were the ideas expressed in the *Breve Sacrosancti apostolatus officium* promulgated by Pope Innocent XI Odescalchi (1676-1689) in the spring of 1682: an act with which the pontiff authorized the Franciscans to open a new «seminariorum, seu Collegiorum hujusmodi» in the Spanish overseas viceroyalties[52]. Through the papal Congregation of Propaganda Fide, the Catholic church directly implemented a capillary action in the catechization process at a global scale[53]. In New Spain (Mexico), the Colegio Apostólico de Propaganda Fide de la Santa Cruz de Santiago de Querétaro was founded by the Alcantarine fathers of the Franciscan Order in 1683 as the first papal headquarters in the Americas[54]. From here, the Franciscan friars moved toward the Spanish Crown's northern domains to evangelize those uncontaminated territories, such as Texas and California. In San Antonio, four missions were under the care of the Quereteran friars. Another important college was also founded in 1704 under the auspices of the one of Querétaro, the Colegio de Propaganda Fide de Nuestra Señora de Guadalupe de Zacatecas, which was the one in charge of Mission San José y Miguel de Aguayo.

49. Fraile 1997, pp. 26, 57, 117.
50. Ettinger 2007, p. 182.
51. Perusini 1752, p. 273.
52. Leutenegger 1979, p. 11.
53. Mattos-Cardenas 2004, p. 81.
54. Rubial Garcia-Escandon 2012, p. 1017.

The missions conceived as «haciendas»

In her Ph.D. thesis, *The Indians of the San Antonio Missions, 1718-1821* (1980), Meredith Keithly Schuetz culled information to vividly describe daily life in the missions, analyzing the missions' social structure. Her work was expanded by a government report, *Historical and Cultural Landscape Study of the San Antonio Missions* (1982), in which various authors address essential topics associated with the material culture. Among these are the availability of archival materials, the environmental ecology, agricultural methods, the economy of the missions, and Indian tools and artifacts[55]. The analysis of such documentation reveals the territories' careful governance implemented by the Franciscans.

Missionaries and the indigenous population were bound by the system of *encomienda*. The king charged the trustees or *encomenderos*. As a condition of their grant, Franciscan missionaries – as *encomenderos* – had to provide «protection, conversion, and civilization» for the natives who owned the land.

The San Antonio missions, although fortified with a clear defensive role[56], at the same time functioned as real *haciendas*. *Haciendas* were, first of all, self-sufficient production units, producing all the foods needed for its operation, together with the commercial items: agricultural products as well as meat and dairy products to feed its residents/workers; draft and pack animals for farm labor and transport, and the production of leather, wool, sebum, wood, and charcoal for supplying all necessities of the community[57].

The high-performance functionalization of the settlements, advocated by the friars, was therefore implemented not only through a representative architecture and in the education of the converts but also in the management and implementation of economically competitive, resilient, self-sufficient, and eventually wealthy communities: idyllic communities reflecting the Franciscan monastic utopia, which was constantly present in the evangelization of the New World[58].

Successful agriculture was essential to the success of a mission, especially in a hot-humid climate like the one in South Texas. In the

55. Hinojosa 1990, p. 9.
56. Lombardi-Benincampi 2023b.
57. Habig 1968 [1997], p. 50.
58. Lara 2004, p. 57.

San Antonio missions' farmlands, the documented abundant production of corn, potatoes, beans, chiles, and – to a lesser extent – other crops testifies to a thorough organization of the agricultural output aimed both at satisfying the needs of the residents' varied, healthy, and complete diet and to produce the surplus that could have been sold or traded[59]. Agricultural success depended on the indigenous population's acquired knowledge, skill, and labor.

In 1722, it was noted that sugarcane could be grown in Texas if the frost was not too early[60]. In the missions, sugarcane was therefore grown to become one of the major crops at Mission San José[61] as a result of the creation of a new section of *acequia* in 1757, where two tablas (about 21 acres) of sugar cane were planted, using 106 long rows of cane.

Sugar was grown and treated on-site. Governor Barrios y Jauregui noted the presence of a sugar mill at Mission San José, which Fray Marmolejo described in 1755. The sugar production was carried out in a sugar mill, a jacal 15 varas long and 6½ varas wide (12,5 meters long and 5,5 meters wide), with a thatched roof made of tulle or native cane; the site of the jacal has not been determined. Inside was wooden machinery for crushing the cane, three cauldrons for boiling the syrup, and a trough for conducting the syrup from the mill to the vats. The sugar mill and boilers in use in the 1750s continued operation until 1794 at an unknown location.

The 1794 *Ymbentario*, drafted by Fray Manuel Muñoz on occasion of Mission San José partial secularization, provides another detailed description of the sugar industry operation and tools: «Un dicho [molino] en corriente para moler cafta. Un fondo de metal con peso de trese arrobas nueve libras con payla de cal y canto para cocer el caldo de la cafta de Castilla para hacer piloncillo. Un perol grande de cobre para lo mismo con peso de seis arrobas, seis libras. Quinientas y cinquenta y quatro formas para piloncillos. Se entregaron y recibieron dos cientos siete mil ciento ochenta y seis caftas de castilla en ciento ochenta y seis surcos que ocupan quatro tablas»[62].

59. Report Historical and Cultural Landscape Study of the San Antonio Missions (https://digital.utsa.edu/digital/collection/p15125coll10/id/10901).
60. James & Juarez 1995, p. 11.
61. Solís 1767 [1931], p. 50.
62. Habig-Leutenegger 1981.

The presence of 554 wood moldings for making piloncillo and the large amount of sugar cane in the site demonstrates that its large production had to go beyond the community's needs. Piloncillo (also called panela, rapadura, or chanaca in other regions of Latin America) was a conical-shaped brown sugar "cube" of approximately 200 grams in weight and with a smoky caramelly and deep dark flavor. Like in other regions of 18th-century New Spain, sugarcane byproducts, such as the piloncillo and the liqueur aguardiente, were some of the major products – together with cattle – that were able to gain acommercial value, to be integrated into the local and extra-regional trading circuits. Also, corn, beans, and cotton (row and manufactured) were highly used as commercial products; instead, other products, such as garden fruits and vegetables, eggs, or chickens, were eventually used for smaller-scale commerce or barter.

Corn harvest and other grain were stored in the missions' granaries. Granaries are, therefore, architectural types that embody communities' connection with their agricultural landscapes. Their function as a location for food storage makes them the most important structures for sustaining life on a mission.

Each of the San Antonio missions had a rectangular-plan granary built in stone masonry – eventually vaulted like Mission San José's case. Their location to the settlements was wisely chosen, using the layout of European monasteries as a reference. In the case of early granaries, like the ones of Mission San Antonio de Valero or Mission Concepción, the granary was built as a part of the convento compound, eventually located in the monastery's second courtyard, which was dedicated to craftsmanship and production. Later, the granaries were placed along the external walls of the missions' compounds and also had a defensive purpose, like in the case of Mission Espada and Mission San José.

The 'enlargement' of the granary at Mission San José reveals the crucial role of efficient management of the territories, as well as how the directions to plant wheat together with corn, given in 1777 by Theodoro de Coix, was immediately translated into a renovation of the associated infrastructure: at San José, the renovation of the 'storage' of the community wealth was carried out to guarantee better conservation and refining of the diversified agricultural products. In

response to another order of the Viceroy issued in 1779 to establish wheat farming at all the missions, wheat cultivation was extensively introduced in 1789. Most of the San Antonio Missions built flour mills[63].

At Mission San José a grist mill was mentioned for the first time in the 1794 inventory written by Father Muñoz: «un molina para moler trigo en corriente con la falta de una cortina» (i.e., a water-powered mill to grind wheat, lacking a curtain) whose remains were found during an excavation in 1934.

In addition, the documented presence of fruit trees in the *huertas* close to the Missions' compounds certifies the search for a balance between the Americas' food traditions and the European ones and showcases some of the ingredients embodying a *mestizaje gastronómico*: a complex integration, which intertwined the customs of Texas indigenous people, two-centuries of Novo-Hispanic agricultural know-how and cuisine as well as newly imported European technical knowledge and worldview.

Cotton was grown in missions' fields and the Missions' flock of sheep provided wool. Rural life, agricultural production, and the successions of seasons marked the time and the activities of the indigenous communities of the Missions.

Indigenous people had to embrace a different conception of connection with the land, introduced by the Franciscan friars, that required intensive labor in the farmlands and the *rancherias*. The harvesting of farmland products and the agricultural seasonal cycle were seen by the religious as an act of the manifestation of God. Thus, religious buildings played another key role in the life of these newly funded Novo-Hispanic communities: More specifically, the solar alignments identified within the churches of the Missions' compounds could also be connected to a specific desire to measure time, both associated with the liturgical time and with the seasonal cycle of the year – tied to agricultural production, essential to the survival of a neo-agricultural society. Religious ancestral local practices tied with the worship of the Sun, the Cristian Easter rebirth, and nature's Spring revival were intertwined in developing the Missions' holistic vision[64].

63. James & Juarez, pp. 2-23. Cf. Habig 1968 [1997], p. 100.
64. Lombardi-Benincampi 2020; Lombardi-Benincampi 2021.

Products original of the Americas	Sowing period	Harvest period	Products introduced by the Europeans	Sowing period	Harvest period
Corn	May	From August to December	Wheat (from the late 18th century		June-July
Pumpkin (calabaza)			Rice		
Chile		From August to September	Olive		
Beans	Fall-Winter Season Cycle: September Spring-Summer Cycle: June	Fall-Winter Season Cycle: December Spring-Summer Cycle: August-September	Lentils		
Potatoes	March	September	Lima Beams		
Avocado			Chickpeas/Garbanzo		
Peanuts			Oatmeal		
Pecan			Coffee		
Cocoa*			Cherry		
Pineapple			Cucumber		
			Peaches (1500s)		June - July
Tobacco			Apple		
Tomatoes			Oranges		
Vanilla			Lemon		
			Pears		
			Banana		
			Melon		
			Sugarcane	May-June	End of October
			Cabbage		
			Vine		
			Onion		
			Garlic		
			Zaffron		
			Cotton	March-April	August-December
Turkeys			Beef		
			Chicken		
			Pork		
			Horses		

Whereas the farmlands supplied the Missions' settlements, locally created manufacturing activities provided the needed work tools for farming, triggering positive, virtuous production circles to lead to autarkic, autonomous, and, eventually, prosperous communities.

In addition, all missions needed sitios de ganado mayor to raise livestock, such as cattle, horses, donkeys, and mules[65]. Eventually, other farm animals – like hogs, sheep, and goats were also raised. The *rancherías* – or *ranchos* – were developed at a greater distance. These small, isolated clusters of houses, similar *haciendas* – for instance, in their layout – developed in central New Spain around agricultural production and animal husbandry[66]. Each Mission's land included, at a greater distance, other types of rural settlements, such as the *ranche-*

65. Almaraz 1989, p. 15.
66. Ettinger 2007, pp. 16, 171.

rias, which were directly managed by the Indigenous people. *Rancherias*, which, together with the farmlands, were composed of primarily landed estates or latifundium under the control of the Missions. The interconnection between Rancho de Atascoso and San José Mission or between Rancho de las Cabras and Espada Mission fully exemplifies such center/periphery relationship, reproducing in the Americas the European traditional dialectic città/contado (city/countryside), a synergic link of mutual dependence.

Fray Gaspár José de Solís visited the Rancho de Atascoso in 1768; he counted ten droves of mares, four droves of asses, thirty sets of harnesses, 1,500 cattle, 5,000 sheep and goats, and all the necessary farming implements, such as plowshares, hoes, axes, and bars[67]. The 1745 visit of Fray Francisco Xavier Ortiz described the pastureland of Mission San Antonio de Valero as a big ranch east and north of the Mission, with about 2,300 head of cattle, 1,317 sheep, and 304 goats[68].

The 1772 inventory of Mission San Antonio de Valero describes its *rancho* – 'La Mora' – located 18 or 20 leagues from the *pueblo* (settlement). The *rancho*'s structures consisted of three stone houses of sufficient size with good wooden roofs for every comfort, but also the rancho counted about 4,000/5,000 cattle. Also, other cattle were pastured closer to the missions for weekly supply[69].

Mission Conception's associated *rancho* was called 'El Pasthle' (*Paistle*) and was located 12 leagues (50 kilometers) in an easterly direction, probably near present-day Seguin. The 1772 inventor reported that this *rancho* had houses made of stone that were abandoned in 1767 due to attacks by hostile Indians who took all the horses. Francisco Sanchez reported that in 1767, the *rancho* had 1,200 cattle. Of paramount importance to the livestock industry of several missions was the Rancho Monte Galvan, from which the Franciscan received «weekly rations of meat from two or three heads of cattle» Mission Concepciòn, Mission San Antonio de Valero, and Mission San Juan Capistrano shared rights on this *rancho*. This ranch had «a spacious corral made of pole fencing. Next to Monte Galban, there is another corral»[70].

67. https://www.tshaonline.org/handbook/entries/rancho-del-atascoso (2024-02-12).
68. Habig 1968, p. 50.
69. Almaraz 1989, p. 31.
70. Leutenegger 1976.

The Missions' cultural landscape as a critical driver for heritage protection and promotion

The historic landscape features of San Antonio became, during the 20th century, a fundamental reference for developing a conservation awareness, debate, and methodological process, specifically addressing what was called the 'Spanish' heritage. The conservation debate stemmed initially from the interest in preserving iconic places associated with the War of Independence of Texas (1835-1836). It soon shifted to include other Novo-Hispanic sites, in which buildings were only one of the components of a broader cultural landscape.

The water infrastructure of the *acequias*, although mostly progressively dismantled during the 19th century, continued to be considered one of the reasons for San Antonio being a «charming place», with «clear crystal spring, with rising in volume from unknown, mysterious depths, deep translucent pools and bubbling brooks, a swirling river of pure living waters and the arborous accompaniments of foliage»[71]. The 1890 Corner guidebook devoted a whole chapter to the 'Acequias or Ditches", with the author making the case that San Antonio owed its very existence to the correct estimate that early settlers put upon the value of the valley's water and their quick appreciation of the facilities for its distribution.

The *acequias* systems of San Antonio de Valero and Concepción Missions, the first to be built, were the first to be severely affected and progressively dismantled, starting from the transitional period between Spanish sovereignty and Mexican independence, due to the urban expansion and the political decisions made by the city council. The location and condition of Concepción presa were considered, in the development of the urban center of San Antonio, a potential cause of floods when recurrent rain storms occurred. The pastor of San Fernando Cathedral also proposed its removal[72].

In the area, only Mission Espada and Mission San Juan *acequias* system remained active over time, used to irrigate its fertile farmlands. The Espada *acequia* operated regularly until the 1880s, when it fell idle. A few years later, in 1895, the water rights owners along the Espada ditch organized a private company to exploit the irrigation po-

71. Corner 1890, p. 41.
72. Almaraz 1989, p. 36.

tential of the old *acequia*. In order to do so a first restoration initiative of the *acequia* was carried out: they cleaned, widened, and deepened the ditch, repaired the diversion dam, and changed the canal's course. At the end of the last century, farmers in the Espada system were so fortunate to be able to grow an average of one bale of cotton per acre. In addition, truck farmers raised various vegetables «in the greatest profusion» on Espada lands from early spring until the first frost[73].

In the 1920s, interests in the city's cultural heritage coalesced into the San Antonio Conservation Society. The Society was founded in 1924 by thirteen women, led by the charismatic Emily Edwards (1888-1980)[74]. The Society's contribution was pivotal in raising awareness and promoting the historical and cultural significance of the Novo-Hispanic Cultural Landscape. The missions were considered significant for their foundational role in interweaving indigenous and European cultures and developing the unique cultural landscape of San Antonio. Its most impactful legacies are the various initiatives to safeguard the 18th-century remains of the Spanish missions and their landscape, rediscovering also and interpreting agricultural and material culture. Pivotal was the purchase and 'restoration' of a dilapidated vaulted stone masonry building at Mission San José that once served as the mission's granary. The granary restoration, carried out by the architect Harvey Paul Smith (1889-1964), was followed by the reconstruction of the San José Indian Quarters and the San José Grist Mill, whose physical evidences were lost over time.

The memory of the grist mill was lost over time, mentioned only in the 1794 inventory drafted on the occasion of the mission's partial secularization. The reservoir was accidentally found in 1934 during the cleaning of the nearby *acequia*. The whole structure was excavated, and findings included enough elements – such as the stone-lined plastered cistern and the mill race – to allow its reconstruction[75]. The efforts of the architect Harvey Smith and the engineer Ernst Schuchard, together with other craftspeople, with the economic support of the Colonial Dames of America, the Pioneer Flour Mills, and other benefactors culminated in its reconstruction sometime in 1937.

73. Taylor 1902, p. 54.
74. Even today, The Conservation Society of San Antonio still aims to promote the protection of the city's heritage by supporting preservation and restoration initiatives and research projects and being actively engaged in the community.
75. Fisher 2016.

The granary restoration was the first of many projects that opened the stage for creating the first State Historical Park in Texas: Mission San José State Park was inaugurated in 1941, a few years after the 1935 Historic Site Act.

The National Historic Sites Act was first introduced in the House of Representatives by the Texas Democratic Congressman Fontaine Maury Maverick (1895-1954), a native of San Antonio. Maury's paternal grandparent was Samuel Maverick (1803-1870), one of the signers of the Texas Declaration of Independence (1836). Maury was, therefore, a strong proponent of the political, historical, and cultural significance of the sites associated with the major battles of Texas independence – such as the famed battle of the Alamo (1836) – and the San Antonio missions, in general. Politically, he showed his engagement in emphasizing the significance of the historic sites of the country's West, associated with Spanish colonization, to counterbalance the preservation of Anglo-Saxon and Eastern architectural heritage, which was already widespread in the nation. Therefore, the conservation of San Antonio's Spanish heritage was critical to proudly place Texas in the larger discussion of the nation's cultural roots. Preventing the collapse of individual monuments was not enough since the context and its 'atmosphere' were also significant aspects of these sites. Immediately after the enactment of the Historic Sites Act, Maverick formally pushed for the nomination of the San José Mission as a National Historic Site. Mission San José was the first permanent National Park Service area established in Texas and was one of ten national historic sites in the country[76].

The San Antonio Conservation Society shifted in the 1950s to actively protect the environment of the Missions' farmlands and water infrastructures. Already in 1937, the Society purchased a 0,6 hectares strip of land that contained the 200-year-old arched stone masonry aqueduct that carried water to San Francisco de la Espada Mission[77]. A few years later, in 1957, the Society acquired 10 hectares of pecan bottomland near the acequia of Mission San Juan Capistrano to preserve the area's environment by commercial development. The San Antonio River channelization started in 1954, involving 50 kilometers of the

76. James & Juarez 1995.

77. https://www.saconservation.org/who-we-are-2/saved-properties/#1519420107429-288d566d-56d0 (2024-02-12).

San Antonio River to protect the area from continuous flooding. Such infrastructural work altered the relationship between land and humans, wiping out the traditional river ecological system, among which the acequias dams. The Society therefore joined local landowners in filing a water rights and water flow lawsuit against the San Antonio River Authority. The suit was won in 1962, resulting in a restructuring of the floodgates to maintain the river's water flowing into the San Juan Acequia[78]. The Acequia Park was established, including former farmlands of San Juan, and Espada and, in 1966, its aqueduct was designated a National Historic Landmark. The Acequia Park was one of the major areas included in the San Antonio Missions National Historical Park, created in 1978 by the United States Congress. The National Park Service, since 1983, is managing the Park, which includes the four lower missions and part of their acequia and farmlands[79].

In the city, instead, various fragments of obliterated acequias, buried in its urban fabric, were found since the 1930s, eventually sparking limited restorations or larger investigations80. The 1966 National Historic Preservation Act marked an important paradigm shift in heritage conservation and interpretation for the 'physical evidence'[81] of San Antonio's historic water infrastructure that shaped its cultural landscape. The mandatory archaeological evaluation of all federally funded projects, prescribed by the 1966 Act, is a critical tool for uncovering and preserving forgotten tracts of *acequias*.

During the 1968 construction of Hemisfair Park, a branch of the Alamo *Acequia Madre* was uncovered, rebuilt, and designated a historic landmark, on the occasion of the 250th anniversary of the city's founding. The San Antonio Acequia system was also declared a National Historic Civil Engineering Landmark, thanks to the initiative of the local branch of the American Society of Civil Engineers.

To conclude, eight of the eleven *acequias* built in the territory of San Antonio disappeared, embedded in the city's urban form[82]. The others are now part of the San Antonio Mission National Historical Park[83] and

78. https://www.saconservation.org/who-we-are-2/saved-properties/#1512332836088-f7b6b264-68ae1ef5-68470d98-c949 (2024-02-12).
79. Thurber *et alii* 1993, p. 331.
80. Cox 2005, p. 72-75.
81. Brandi 1963, p. 9.
82. Cox 2005, p. 18.
83. Kitchens 2017, pp. 174, 176, 190.

are contributing components of UNESCO World Heritage Sites. The National Park Service, in charge of the management of the Park, continues to develop protection action and restoration of the irrigation ditch system to this day.

Conclusions

Mission settlements introduced Western civilization customs and technologies to uncontaminated lands already inhabited by indigenous groups. The San Antonio missions promoted the development of agriculture and introduced indigenous people to European cultivation practices. This resulted in an irreversible transformation of the cultural landscape of the region. It is still debated if missions' endeavors pursued effective cultural interweaving, respectfully responding to the place's environmental conditions and integrating local pre-existing practices. It is doubtless that the San Antonio Missions represented a driving force for the formation of the place's cultural identity, as it is today. The historic landscape included *misiones*, *presidio,* and *villa*, and the rural landscape was one of the main components. Such a landscape was made of farmlands, irrigated by artificial canals – the *acequias* – and the *rancherias*.

Currently, the historic urban landscape of San Antonio is still shaped by the different and complex physical and cultural factors established during the Novo-Hispanic period, when the agricultural irrigation system of the *acequias* and the organizing function of the river played a major role in the settlements' layout.

The city's urban areas along the San Antonio River – from the area that includes Brackenridge Park toward the North to the southern part of the city until the Mission of San Francisco de la Espada – still preserve important and widespread traces of the Novo-Hispanic period. In the more densely built urban core, these traces are not only famed historic landmarks, such as the Alamo – included in the UNESCO World Heritage site list –, the Spanish governor's palace (1722), and the local cathedral of San Fernando (1738-1750), but also the unique characteristic morphology of the city blocks and the street patterns. The study of urban morphology interprets the city as a 'palimpsest',

identifying how the agricultural landscape patterns and the 18 century blocks of the *Villa* San Fernando are still embedded in the built fabric. Urban morphology study is also a critical tool for the development of management plans as appropriate technical tools and regulatory frameworks, inspired by urban conservation principles, in line with UNESCO guidelines.

In the southern part of the city, Mission Espada and San Juan still preserve highly intact their associated Novo-Hispanic *acequias*' landscape forms. The land use, however, changed over time, with a change of ownership and agricultural productivity. Here, functional vernacular structures that historically served rural communities, such as granaries or mills, are highly contributing components to the local material culture, historic food production, and culinary tradition. They should all be considered as an unicum with the surrounding landscape. Here, a process of rediscovery and interpretation of the historic land use and ancestral practices could help the reconnection of the people of today with the people that in the past inhabited these places.

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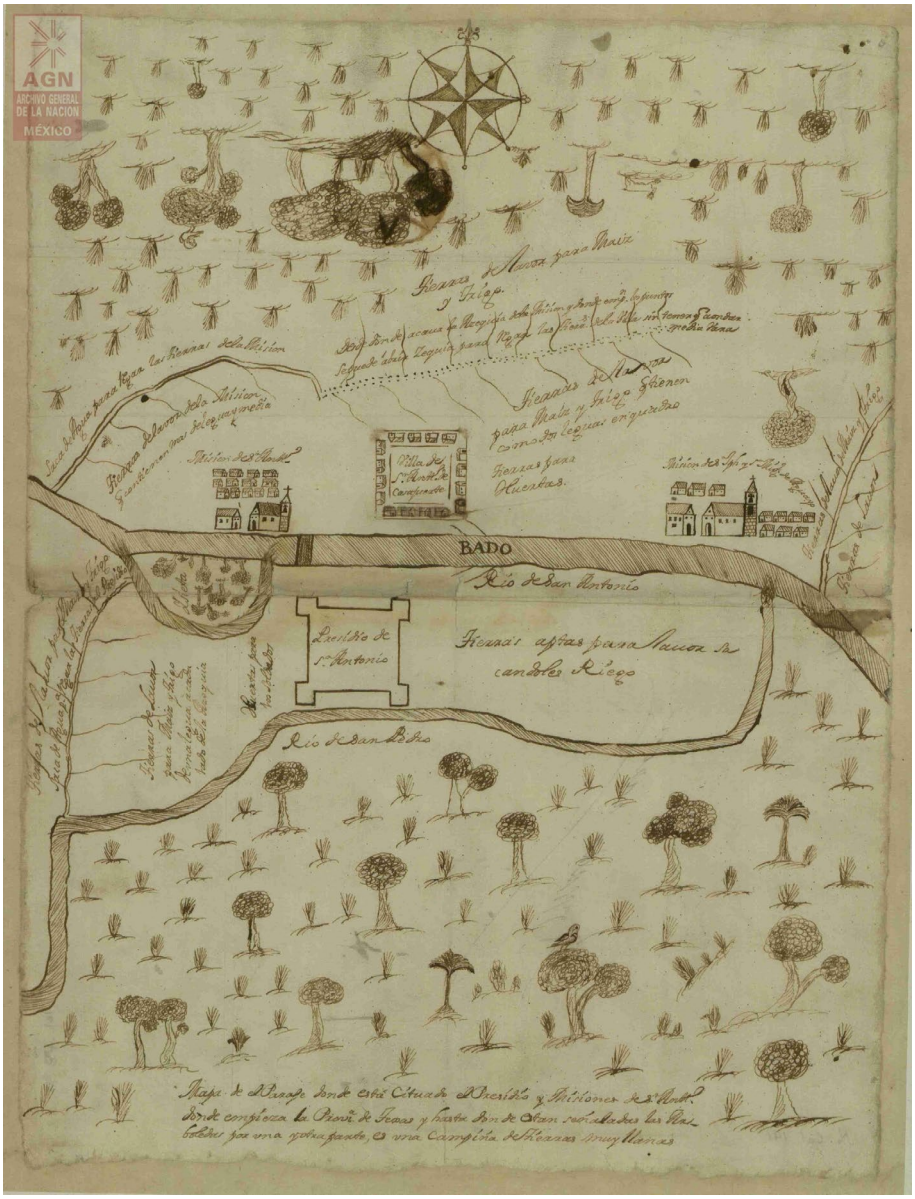


Fig. 1 – Marques de San Miguel de Aguayo, Map of the place where the presidio and the Missions of San Antonio are located, where the Province of Texas begins and here the trees are marked on both sides, and it is a countryside of very flat lands*, 1730 (Archivo General de la Nacion, Mexico, Provincias Internas, volume 236). At the Map far left, the* acequias *for the new* presidio *and the Mission San Antonio de Valero are shown. They watered farmlands on both sides and had helped the fence of the sites.*

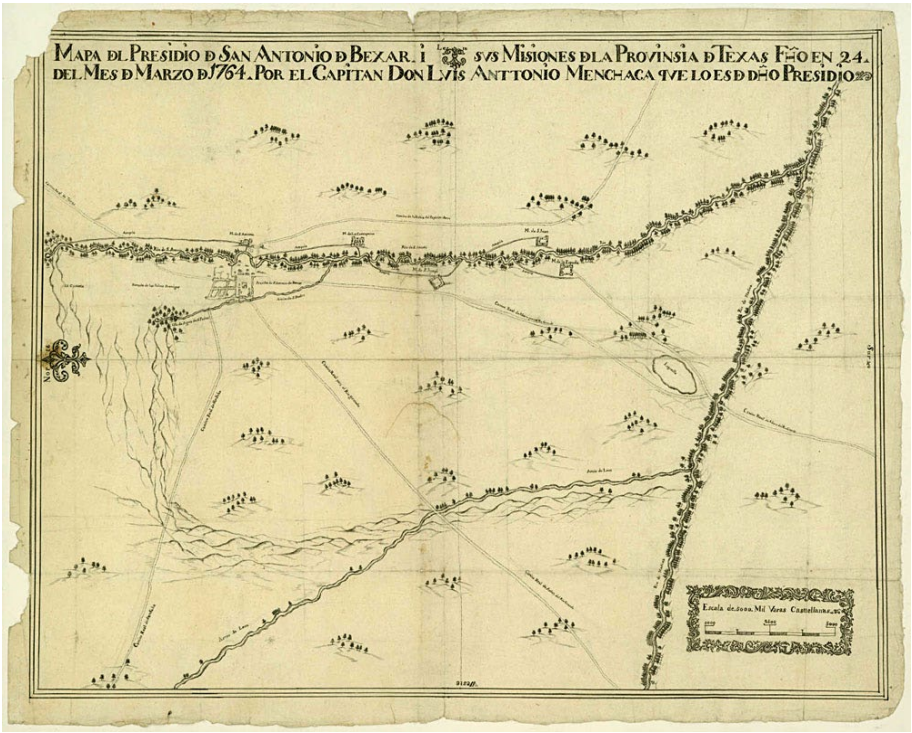


Fig. 2 – Luis Antonio Mechaca, Map of the presidio de San Antonio de Bexar, its Missions of the province of Texas*, 1764 (© Carter Brown Museum). This document is extremely important to understand the 18th-century land use. The* acequias *serving the five Missions are clearly marked together with both the springs of the San Antonio river and San Pedro Creek.*

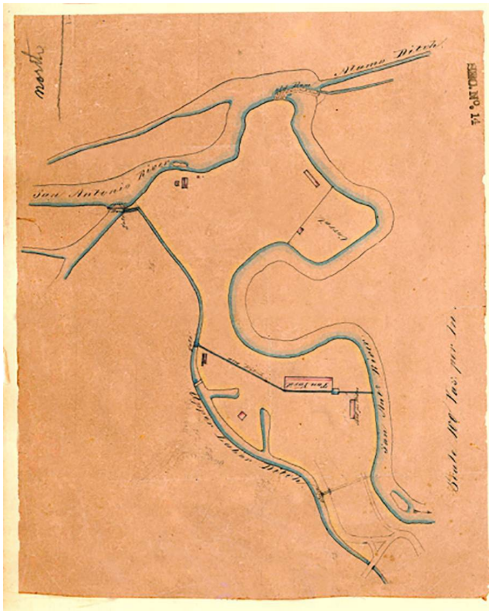


Fig. 3 – Map by Gustave Freisleben, 1867 (Image courtesy of City Engineer's Office, City of San Antonio, Texas, Municipal Archives 1865-1868 Confederate Tannery Sketch Map). On the drawing's top right the curved dam structure of Mission San Antonio de Valero Acequia Madre *is clearly depicted. It is also shown the city's* labor de arriba *with its dam and its* saca de agua*.*

Fig. 4a – San Antonio (Texas), Remnants of a stone compuerta*, or sluicegate, in a functioning* acequia *at mission San Francisco de la Espada (photo, 2024).*
Fig. 4b – San Antonio (Texas), Reconstructed compuerta*, or sluicegate, near mission San Juan (photo, 2024). Reconstruction was made using contemporary materials such as reinforced concrete and metal.*

Fig. 5a – San Antonio (Texas), Functioning acequia *at mission San Franciesco de la Espada (photo, 2024).The overgrown acequia is flanked by a small road reflecting a traditional land use pattern.*
Fig. 5b – San Antonio (Texas), Restored acequia *at mission San Juan along a bike trail part of the recently San Antonio river ecosystem restoration project (photo, 2024).*

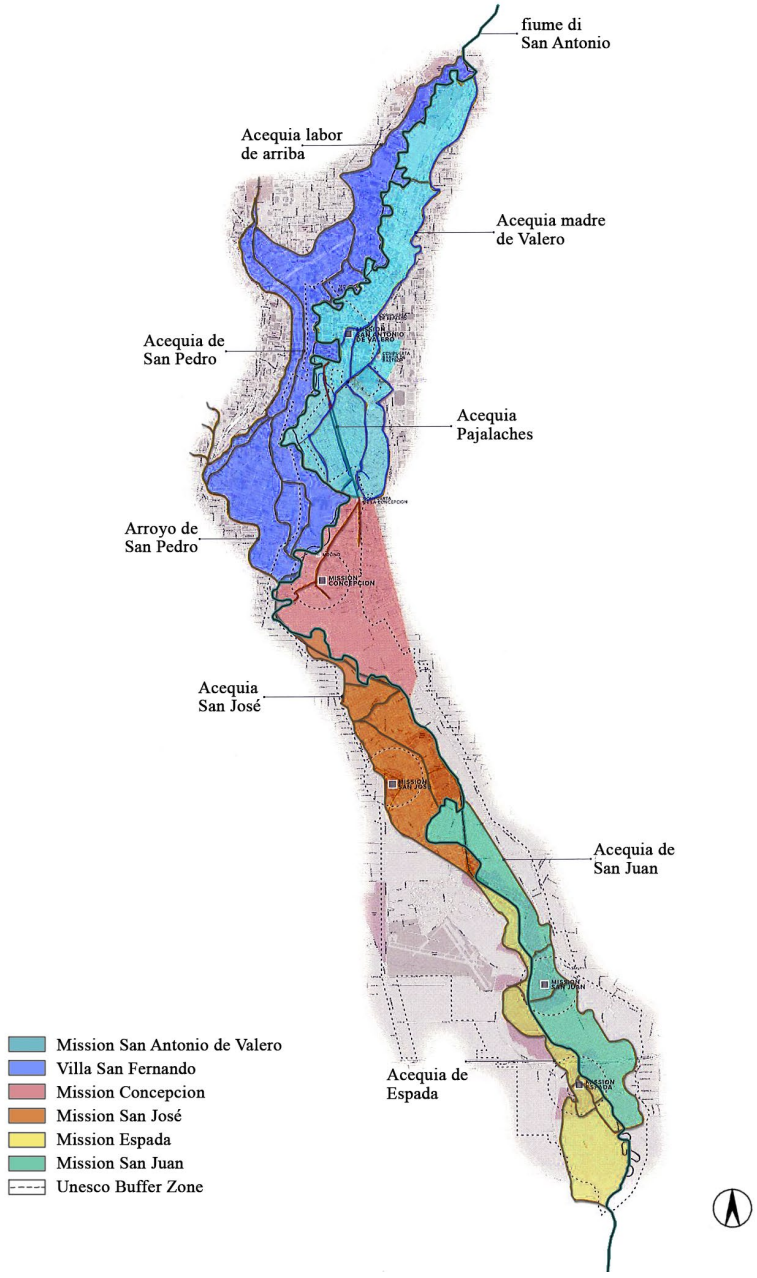


Fig. 6 – San Antonio (Texas), territorial organization just prior the 1794 secularization. Highlighted in different colors are the farmlands of each mission and the ones of Villa *San Fernando (Authors' elaboration).*

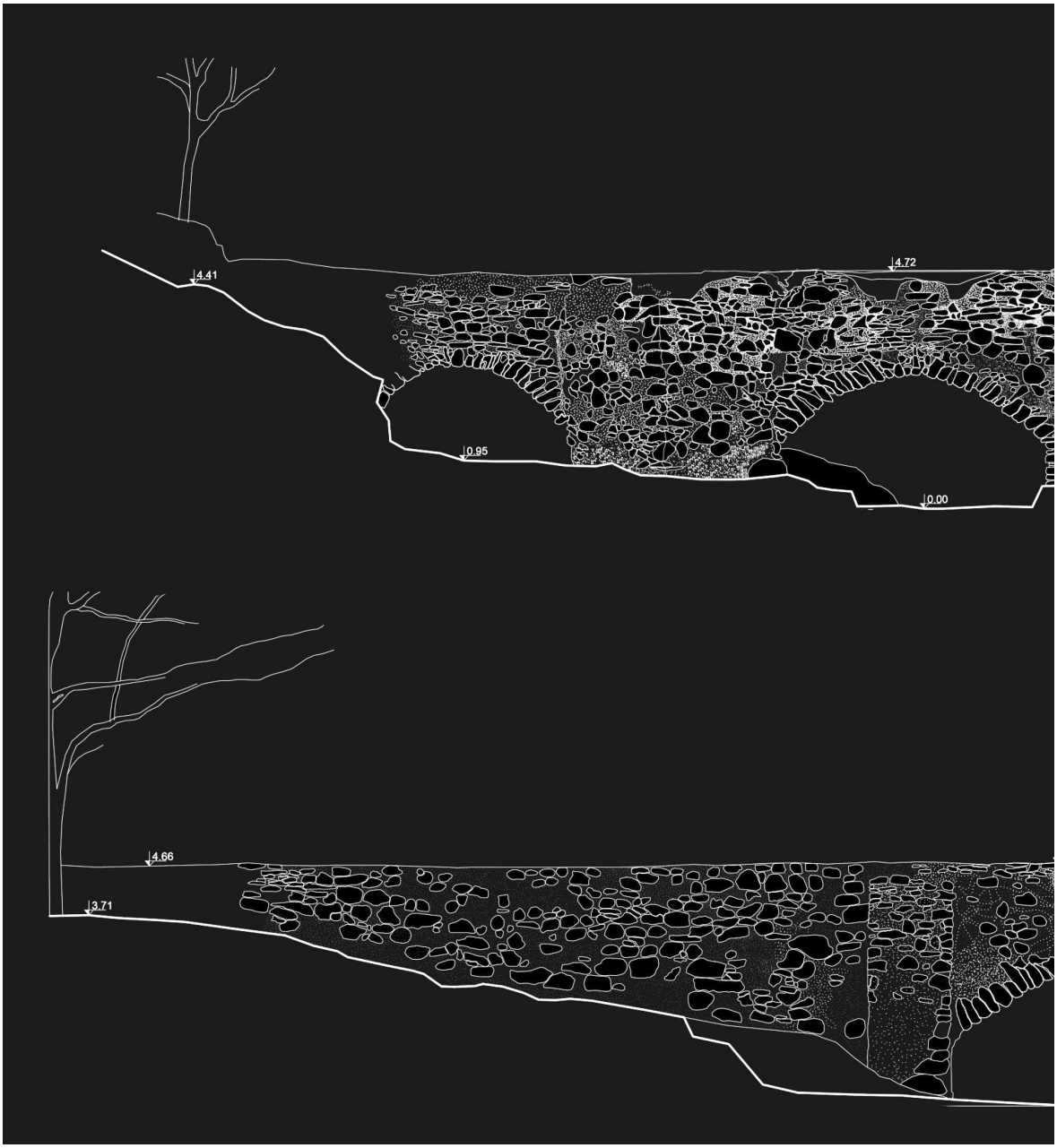
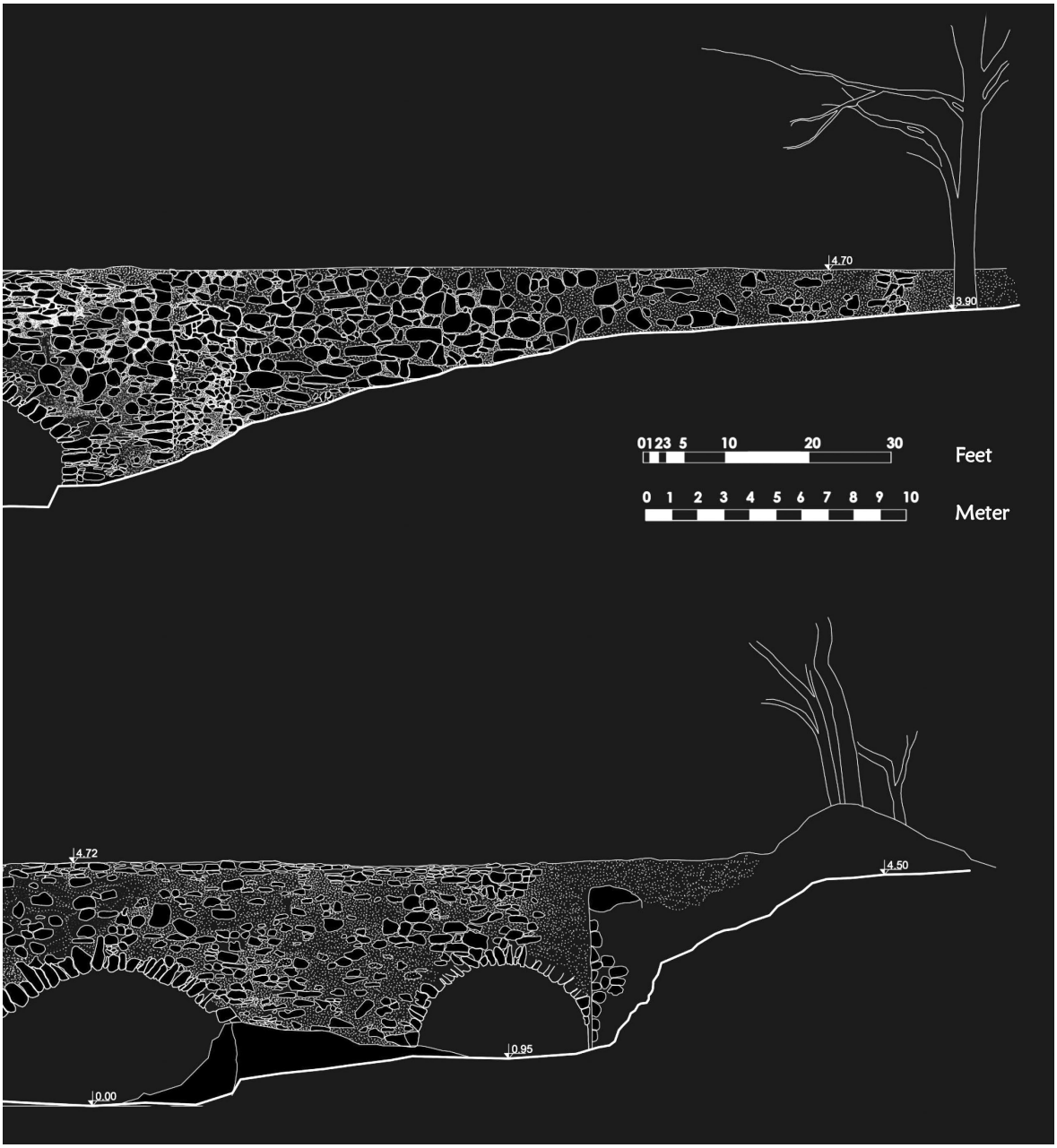


Fig. 6 – North and South elevations of the stone masonry arched Espada aqueduct in San Antonio (Texas). The acqueduct allowed the crossing of the Espada acequia *with the natural water feature of Piedras creek (drawing by Ydnechachew Maru's master thesis, 2021).*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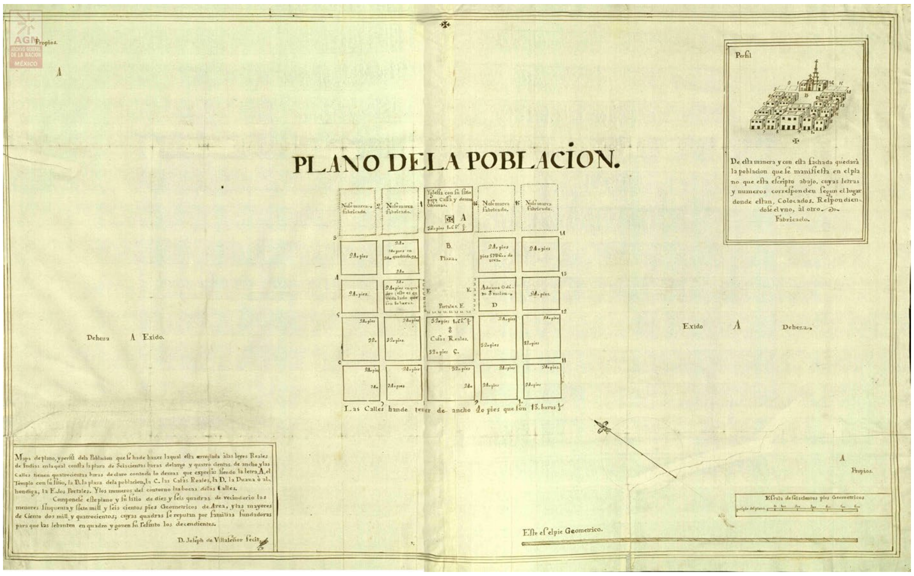
0 1 2 3 5 10 20 30
Feet
0 1 2 3 4 5 6 7 8 9 10
Meter
4.72
4.50
0.95
0.00

Fig. 7 – San Antonio (Texas), Mission Espada Aqueduct at the end of 19th century, photograph of Ernst Wilhelm Raba (SACS Library, San Antonio, TX). The aqueduct was described in 1772 as a conduit of lime and stone of thirty-eight varas in length, six in height with a «punta de diamante» (indicating the buttress to divert water), and «dos ojos» (or arches), which allowed the creek's currents to pass.

Following page:

Fig. 8 – Joseph de Villasenor, Map of the plan and 3D profile of the settlement of the Villa San Fernando which had to be built according to the Royal Laws of Indies*, 1730 (Archivo General de la Nacion, Mexico, Provincias Internas, volume 326).*

Fig. 9 – Symmetric settlement of San Antonio (Texas) surrounded by trees and a ditch, 1777. The innovative plan, oddly featuring urban green elements, included one hundred houses with their own patios. In the central plaza *the Casas Reales was located on the opposite side of the Church (Reps 1965 [1980]).*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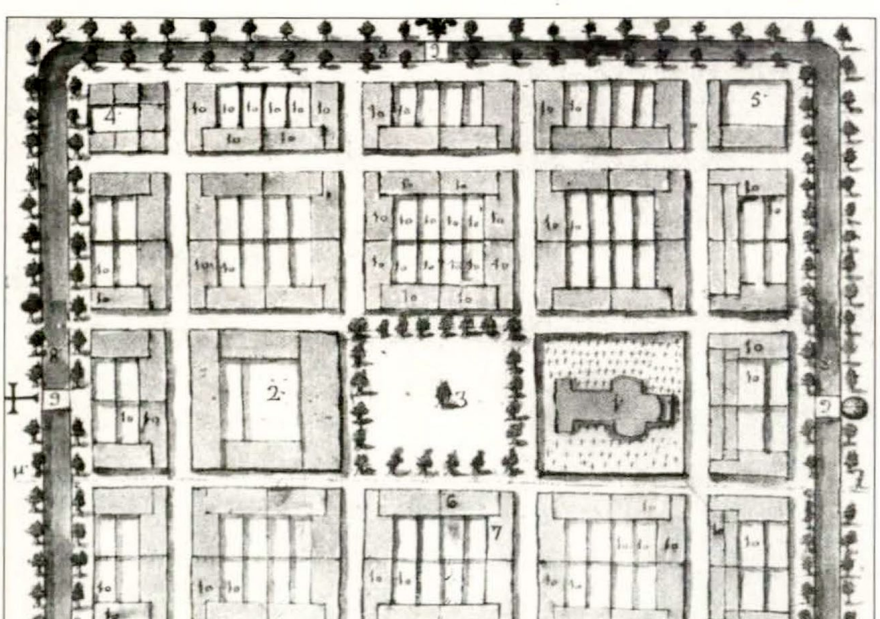


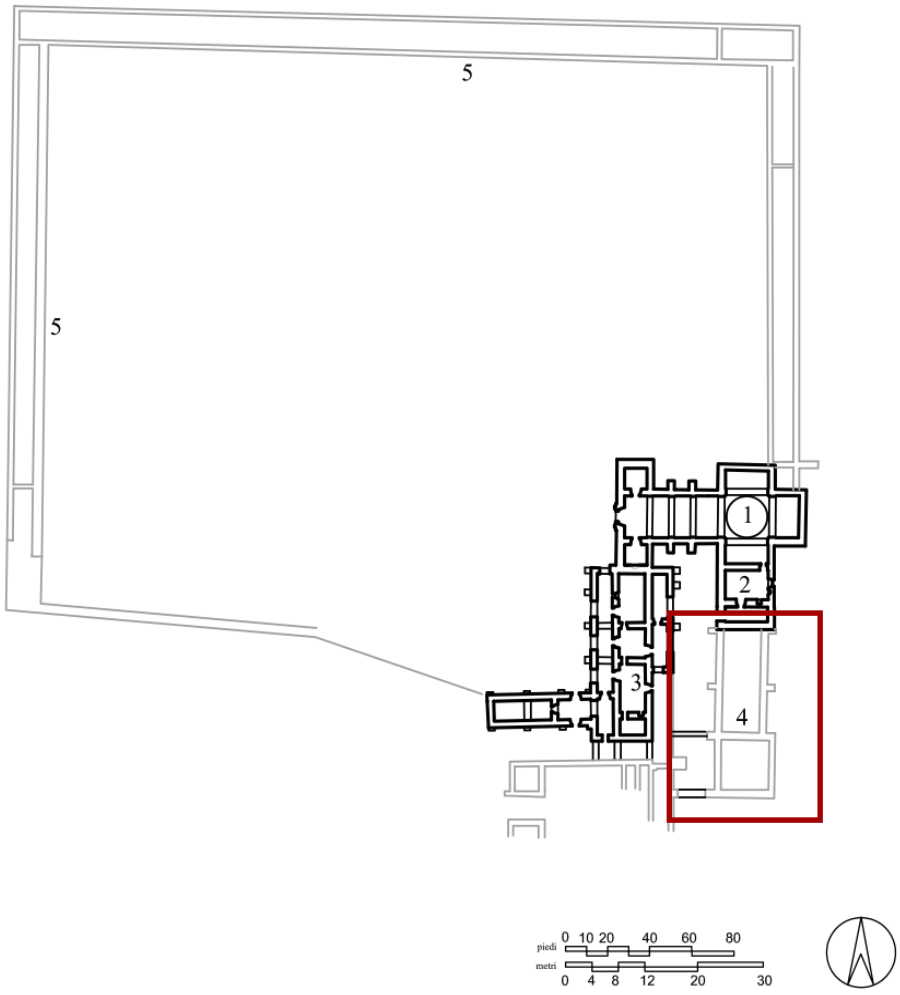
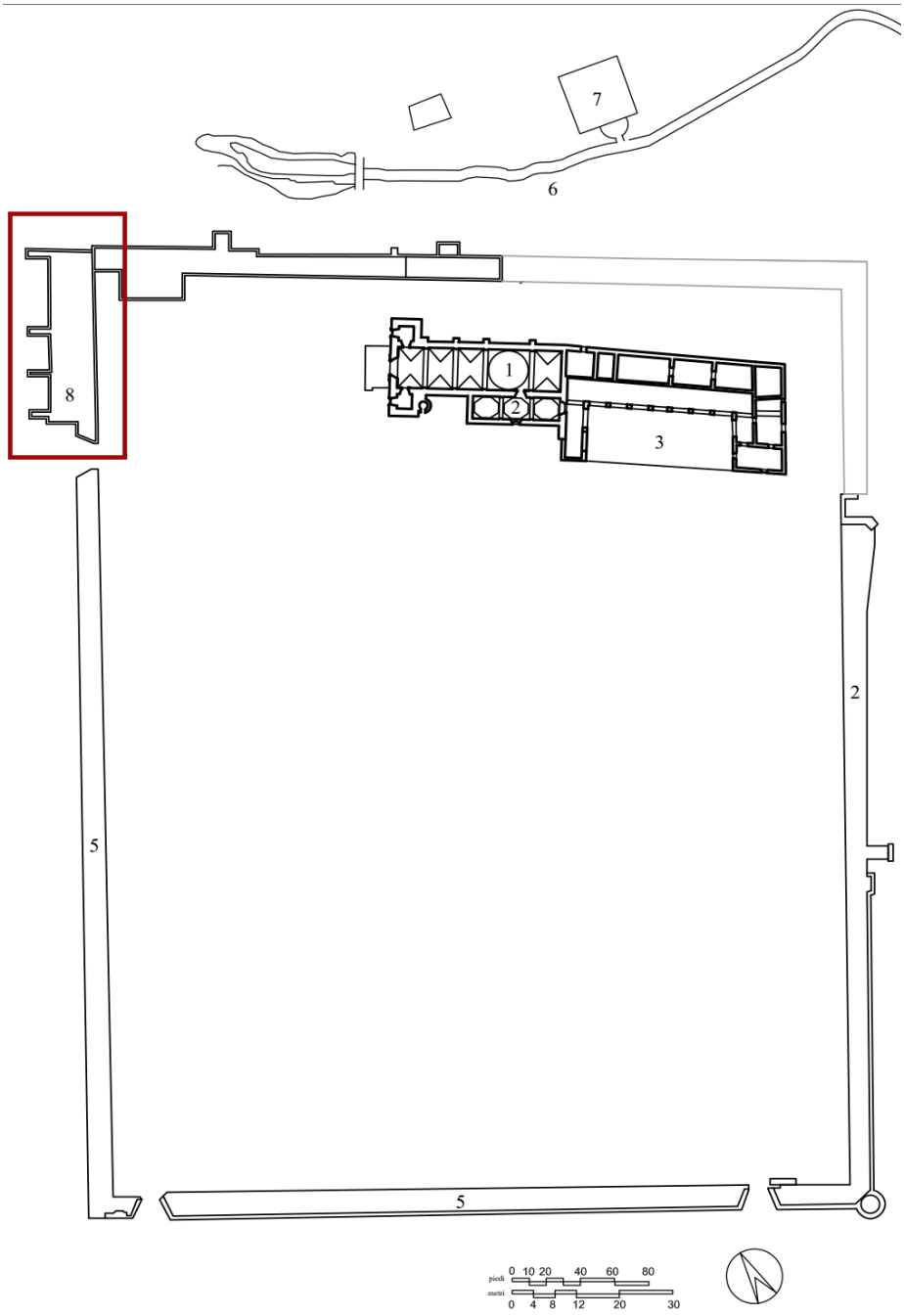


Fig. 10 – Plan of Mission de la Purissima Concepción de Acuna (San Antonio, Texas, US). The granary (marked in red) was conceived as a part of the Convento*. 1. Church; 2 . Sacristy; 3. Convent; 4. Foundation walls of constructions no longer existing; 5. hypothetical Mission wall.*

Following page:

Fig. 11 – Plan of Mission San José y Miguel de Aguayo (San Antonio, Texas, US). The granary (marked in red) was part of the compound walls, its roof was therefore used as a defensive outpost. 1. Church; 2 . Sacristy; 3. Convent; 4. Gate; 5. Mission walls with local houses leaning against the walled enclosure; 6. Acequia; 7. Mill; 8. Granary.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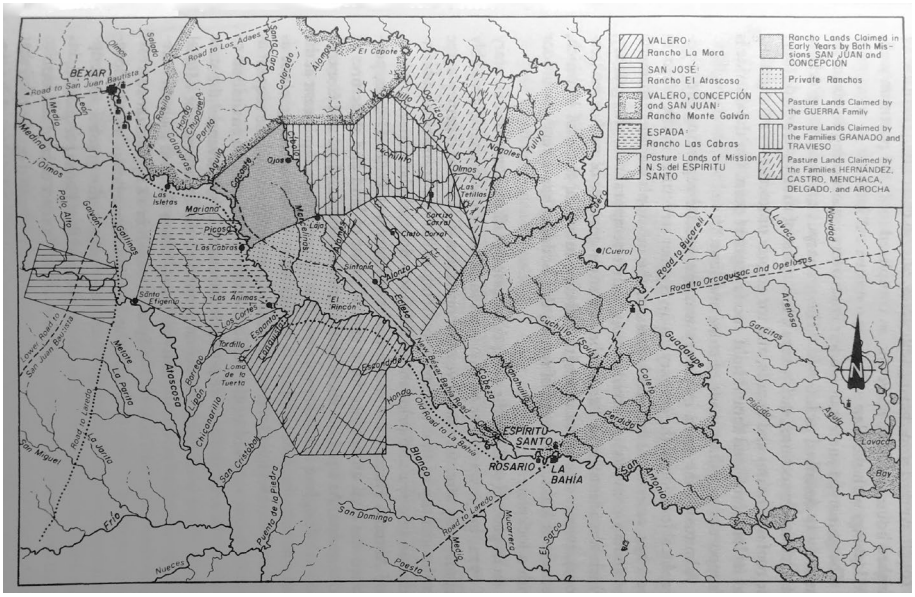

Fig. 12 – Map of the 18th-century rancherias *associated with the Texas missions (Alamaraz 1989).*

Fig. 13 – A section of the Acequia Madre *of Mission San Antonio de Valero behind the Irish flats located on the north Alamo street of San Antonio, 1938 (UTSA library).*