

# Workshop school program of Calpan:

A modern translation of Franciscan order principles



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Master of Interior Architecture: Adaptive Reuse



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IMAGE 1.MAIN FACADE SAN ANDRES CALPAN MONASTERY

## I. ABSTRACT

Many religious buildings have faced inevitable underuse or in most cases being abandoned, resulting in a loss of religious heritage deriving from a rampant secularization. Many times, this loss of heritage has led to a negative impact on the social development of its surroundings. The necessity to find a purpose different than the one for which the religious buildings were originally conceived and to accommodate new functions in them is an ancient technique that has been practiced for hundreds of years. A practice experiencing a mayor boom most notably after countries have experienced historical revolutions. As adaptive reuse projects became a more common approach for the re-urbanization of historical buildings, in most of the countries where these buildings are listed as monuments, incorporating reversible adaptations became a requirement.

Therefore, this paper will explore examples of former monasteries as clear case studies of adaptive reuse. Together with the case studies, the architectural fundamentals of Luis Barragán and the characteristics of vernacular techniques and materials were analyzed to be efficiently applied to the adaptive reuse project for the Franciscan monastery of San Andrés Calpan located in the state of Puebla, Mexico. Even though the XVI century monastery played an important role in Mexican history, nowadays, after several different uses and internal reconfigurations, it has faced years of underuse attesting to an undeniable decay. This project aspires to reactivate the monastery as the social nucleus of the community, by recovering its historical and cultural heritage and introducing a program which aims to provide training on traditional skills and thereby offering a way out of the vicious cycle of lacking opportunities.

The study is elaborated as a thesis project for the international master's degree in architecture focused on adaptive reuse at Hasselt University in Hasselt, Belgium, with the advice of Prof. ir. arch. Nikolaas Vande Keere and Dra. arch. Karen Lens.

*Key words: monastery, heritage, adaptive reuse, disassemble, adaptable, sustainable, compatible, reversible, conservation, vernacular, reconfiguration.*

## II. INTRODUCTION

“Anything that can contribute to the fragile continuity between the contemporary situation and past architectures is worth the effort. It is only by understanding and reflecting on the past that architecture can continue to be a relevant social and artistic discipline.” Adam Caruso in ([Plevoets & Cleempoel, 2019](#))

During the last years a sociocultural evolution has distanced people from religious life. As a consequence, religious communities have decreased considerably, causing the abandonment of many of their religious buildings due to unsustainable maintenance costs. Many of them with high historical and architectural value ([Plevoets & Cleempoel, 2019](#)). In the course of history, the world has experienced how some of these buildings have witnessed many different transformations in their function and composition, to fit new purposes, such as military barracks, arms storage, courthouses and prisons. Other religious buildings, without equivalent luck, have faced a cruel demolition due to poorly planned urban developments that prioritize streets, shops and housing complexes over historical heritage.

Some remaining buildings, for instance monasteries, often located in strategic places within urban areas, have interesting and malleable characteristics ([Lens, Plevoets, & Van Cleempoel, 2013](#)). These characteristics offer architects a unique opportunity to provide added value to their neighborhoods through an adaptive reuse program. An adaptive reuse program, supported by the previous internal changes the building already experienced before, during its lifetime, that may vary from their internal organization to changes in their architectural style. This program facilitates a sustainable alternative to rescue religious and cultural heritage ([ibid.](#)).

The conquest of Spain over Mexican territory (formerly known as New Spain) led to the establishments of new religious settlements with the main goal of evangelization and civilization of the indigenous population ([Sergio, 2016](#)). The strategic location of Calpan provided the religious Franciscan order an ideal place to settle a monastery. The monastery of San Andrés Calpan was founded in 1548, deeply rooted in the Franciscan order principles of teaching disciplines in order to overcome social disparities. As a consequence, the monastery became the nucleus of knowledge and religion in the community of Calpan ([ibid.](#)). Subsequently, after many years of religious use and due to its fortress-like architecture, the monastery was used as military barracks during the Mexican war of reformation and later on during the Mexican revolution. This militarized use that was given to the monastery caused it to undergo various modifications and interior reconfiguration of spaces.

### a. PROBLEM STATEMENT

After being the witness of historical revolutions and changes in Calpan’s society, nowadays, the building is remarkably underused, except for its sacristy room, resulting in a loss of its religious heritage and significance as the nucleus of the community. The Franciscan order developed its site as a space for meeting, dialogue, and debate as well as for exchanging ideas, experiences, and knowledge. In this regard, the loss of importance of the nucleus is also expected to have a significant influence on the lack of development opportunities resulting in a major need for continuous training and training spaces in the present day.

As much as Mexico, being the second-largest economy in Latin Americamight offer, Calpan is one of the cities lacking significant opportunities([INTERTRAFFIC, 2016](#)). This lack results in a vicious cycle when the community

is economically forced to leave the area. Merely 1000 km away, another country promises the American Dream and to close the circle of uncertainty. However, this is preventing Calpan from being developed since local production and subsequently, its revenues are decreasing. With the regression of local production and the absence of the necessary workforce, the centuries-old tradition of crafts is dwindling. At the same time, political power and legislation in the country of opportunities are forcing people to leave again. Also, homesickness makes immigrants return to their former homes. So, the people of Calpan are coming back to a place still lacking the opportunities that made them leave in the first instance ([INAFED, 2010](#)).

#### b. RESEARCH QUESTION

Therefore, my research question is: How can the integration of an adaptive reuse program reactivate the monastery of San Andrés Calpan as the nucleus of the community guided through a modern reinterpretation of Franciscan order principles?

#### c. HYPOTHESES

The main objective of my thesis is to support my studio design of the rehabilitation of the Franciscan monastery in the town center of San Andrés Calpan by strategically reflecting on the Franciscan order principle of teaching disciplines and overcoming social disparities. Just by its existence, it challenges a complex context, which is facing demand for development and decreasing poverty in its community. As reference, a similar program is the Latin American and Caribbean restoration workshop schools' network, which has already proven its efficiency ("[Red de Escuelas Taller de América Latina,](#)" 2019). This program, founded in the early XX century with the support of the Spanish government, and seeks to promote work skills related to restoration of historical heritage. When the original nature and purpose of the Franciscan religious heritage are reintegrated, the former monastery will provide the people of Calpan support in everyday life and in their confrontation with uncertainty.

The target of reusing the convent is to reactivate its initial nucleus by providing a workshop for students, who are in a vulnerable state of lacking opportunities, focusing on comprehensive and accessible education, with a learning -by-doing method, that can generate quality labor. Beyond that, the workshop is geared to bring the importance of conserving Cultural and Historical Heritage back into focus.

Therefore, my first hypothesis is the following:

H1: By adaptively reusing the convent, the initial nucleus of the town can be reactivated by adding the value of a workshop school that in the first instance offers theoretical and practical training in traditional skills while sensitizing the student's awareness of the importance of the conservation of Cultural and Historical Heritage (tangible and intangible).



Looking further at possible consequences of the project planning, it can be supposed that due to the specific theoretical and practical training provided, the students can enter the labor market and can contribute money to the family income:

H2: Receiving theoretical and practical training generates quality labor opportunities to eventually contribute to the family income.

Orienting towards a long-term target, after accessing the labor market, the students have an accessible opportunity to generate income that will be reflected in the Gross National Product (GNP) of the country, which leads to the following hypothesis:

H3: Being part of the labor market and generating income, contributes to the gross national product.

To further develop the chain of thought, one needs to consider the consequence and advantage when contributing to the GNP:

H4: By contributing to the gross national product, the government can invest back in the workshop school program of Calpan, and the project is self-sustainable.

Upon detecting the problem of lack of job opportunities in this area, it has been decided to propose a solution through a comprehensive architectural project.

### III. METHODOLOGY

Various types of research and applied methods have been considered to address the problem of the abandonment of Calpan's historical monastery, the lack of development opportunities, and the loss of traditional techniques and local identity.

#### a. BASED ON CONTEXTUAL ANALYSIS

San Andrés Calpan is a versatile place of local traditions, a considerable history of conquest and has a prevailing need to gain financially and socially. By evaluating Calpan and its surrounding environment, the location where the monastery is situated, and its current site conditions, problems and opportunities prior to design, a more integral program could be developed. This provides the architect with the practicability of proposing a design responsive to the building's physical characteristics and environmental aspects. The approach of a contextual analysis has helped to determine explicit guidelines for the design and program to react efficiently according to the monastery's physical and social context.

#### b. BASED ON LITERATURE ANALYSIS

Looking at the design program with a background of architectural approaches, the concepts of adaptive reuse and reversibility support the functionality of the design program: adaptively reusing the abandoned monastery and its site by integrating some reversible elements to keep the building's original history in a best possible way. Due to the interrelatedness of those two concepts, significant advantages in the context of the monastery have been identified to tailor the value and utility of those to my design.

Next to methodological literature on adaptive reuse and reversibility, a literature of vernacular architecture has been reviewed. It forms my theoretical background to integrate applicable vernacular materials and techniques in my design. The incorporation of materials used in the immediate surroundings of Calpan reduces the embodied energy involved in the construction processes while providing an opportunity to generate additional jobs by producing those materials in the local community.

The historical building, being a monastery with its very own religious characteristics, has led me to consolidate the design proposal with the philosophical and practical fundamentals of architecture by Luis Barragan. Those fundamentals, being closely related to spiritual and religious concepts, inspired my design attributes that are intended to establish a harmonic dialogue between the existing historical building and the newly incorporated elements. This established complex provides a space inviting the user to reflect and contemplate, which establishes crucial elements for the best way of learning.

#### c. BASED ON CASE STUDIES

To support my design with practical references and to deepen my insights into adaptive reuse of monasteries I analyze several case studies. These case studies offer implementation ideas of feasible adaptive reuse

programs. All of the following case studies have gone through several previous modifications of their original programs.

The “Het Predikheren klooster” located in Mechelen, Belgium, is a monastery which was adaptively reused as a public library whereas the Kuisheran Hotel, located in Maastricht, Netherlands, was bought by a hotel company and nowadays boasts 60 modern rooms. Another case study is the Dominikanski Samostan Ptuj performance center located in Ptuj, Slovenia, which was transformed as a culture and performance center. As a fourth case study, I analyze the National Design center located in Bras Basah–Bugis, Singapore, which was renovated as a lecture hall and an area for public exhibitions, in other words, as a think-hub for Singapore’s design culture.

Each case study represents an individual program that developed in a unique adaptive reuse approach. Reflecting on other designs and similar projects helps to develop a realistic design concept for the monastery with its very own character.

#### d. BASED ON RESEARCH BY DESIGN

Besides location analysis prior to design and the acquirement of theoretical knowledge by literature review, I developed research by design in which the architectural process of my design proposal forms a substantial part of developing a coherent program. The architectural process itself offered contextual insights, individual practices and explicit knowledge aligned with the monastery. Those contextual insights have guided me through a critical analysis of pondering feasible proposals and alternatives. After identifying the existing conditions, problems, and opportunities through my process of designing I developed a comprehensive architectural project that best reacts to its physical and social conditions.

## IV. LITERATURE REVIEW

### a. CALPAN

Located in the center of Mexico and with a short distance of only 30 kilometers (km) from city capital, Puebla, the main capital city of the state, Calpan is placed in a privileged position, not only due to its proximity to the capital but also due to its immediate access to natural resources such as mountains, forests, rivers and fertile cultivation areas ([INAFED, 2015](#)).

Based in the central west area of Puebla state and located in the geographical coordinates 19° 06' 36" and 19° 41' 12" north latitude and the meridians 98° 23' 54" and 98° 32' 24" west longitude, San Andrés Calpan is the main town of the municipality of Calpan, which integrates one of the 217 municipalities of Puebla state ([INAFED, 2015](#)). Calpan is bordered by the municipalities of Domingo Arenas and Huejotzingo to the north, by the municipality Juan C. Bonilla to the northeast, by the municipality of San Pedro Cholula to the east, by the municipality of San Jerónimo Tecuanipan to the south and to the west by San Nicolás de los Ranchos. Calpan has a surface of 66.88 square kilometers which places the municipality on the 162nd place concerning the other municipalities of the State of Puebla ([ibid.](#)).

Calpan, which has a height ranging between 2840 and 2240 meters above sea level (masl), has an orography determined by its location to the Sierra Nevada, a mountain range system that is considered to be from 2500 masl. This mountain range system divides the municipality into two geographical areas: to the east side the valley of Puebla and to the west side the foothills of the Sierra. The Sierra Nevada is considered as part of the transverse volcanic system of more than 100km of continuous relief alignment ([INAFED, 2015](#)). This relief alignment is located on the west side of the state of Puebla. The municipality of Calpan presents an almost smooth and regular topography to the east with some small hills to the southeast, but as it advances to the west, its topography turns more accidental and with higher hills and some depressions ([ibid.](#)).

The proximity to the volcanoes, provides Calpan with intermittent and permanent streams that run from the Iztaccíhuatl and Popocatepetl volcanoes foothills. The snowdrifts of the volcanoes can store enough water and provide the towns and countryside located on their slopes with water during dry seasons. Additionally, the rocks and soils in the area of the volcanoes allow water to infiltrate right down to great depths so that at the foot of volcanoes water can be obtained from wells throughout the year. Another water source that provides water to the municipality of Calpan is the Atoyac River ([INAFED, 2015](#)). The river is originated on the border between the state of Mexico and the state of Puebla, and is one of the most important rivers in the state due to its remarkable dimensions. Due to these geographical characteristics, Calpan has a mild sub-humid climate with rains in summer lasting up to 3 months. This climate evokes the existence of some small pine and oak forests, especially in the regions next to the Sierra Nevada ([idem.](#)).

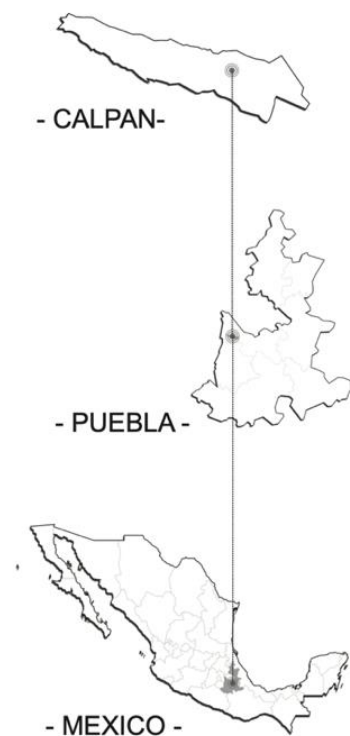


FIGURE 1 LOCATION OF CALPAN



IMAGE 2 AGRICULTURE IN CALPAN

Adapting to the environmental circumstances, the agriculture in Calpan mainly focuses on the seasonal cultivation of corn and the seasonal fruticulture of Tejocote (Mexican Hawthorn), Maguey (Agave Americana), plum, apricot, peach, fig, lime, lemon, apple, orange, walnut, and pear. Overall, nowadays, the municipality has a zoning determination of 65% for agriculture and 15% of Urban Zone of its totality ([INAFED, 2015](#)). That is why agriculture, next to cattle raising, block and common brick industry, floriculture and silviculture, consisting of the exploitation of their forests, are some of the main economic activities in Calpan .

Unfortunately, these economic activities are affected due to the lack of trained people and the loss of traditional techniques. As a consequence, Calpan faces high rates of poverty, which causes some of its inhabitants to seek to migrate in search of opportunities ([SEDESOL, 2010](#)).

In 2010, according to the federal department INEGI (National Institute of Statistics and Geography) in charge of making population censuses every 10 years, the municipality of Calpan had a total population of 13730 inhabitants. The chart of migration indicates that around 118 people living in Calpan were born in the United States of America ([INAFED, 2010](#)). These numbers draw additional conclusions that Calpans' citizens are searching for enhanced life conditions for them and their children in the United States but are deported back home or are seeking for their very own traditions back in Calpan. To have a closer look at the reason that people from Calpan aspire after job opportunities, a social gap indicator established by SEDESOL (Secretariat of Social Development), a federal department in charge of the social development, indicates the following information about the municipality of Calpan ([SEDESOL, 2010](#)):

- 6021 people from 15 years old or older did not finish their basic education
- 8414 people do not have the right to health services.
- From 3197 houses censused, 708 houses have earth floors.
- The economically active population is 29.65% of the total population.

A community that does not have adequate access to education can be reflected in a lack of job opportunities, this lack of opportunities generates poverty, and poverty is often reflected in high levels of insecurity, as evidenced in the “World Report 2019” by the US non-governmental organization Humans Rights Watch ([Mexico, 2019](#)).

Based on this given information the demand for development becomes crucial especially when it comes to educational needs. These needs can be answered with a program that does not offer general education but a skillful training that unifies the beginning of development and opportunities as well as the aspiration to strengthen traditional crafts and techniques.

However, local traditions do not only include techniques but do also refer to various festivities that are celebrated in Calpan throughout the year. Most of the local celebrations take place around the Franciscan monastery of Calpan ([INAFED, 2015](#)). The area hosts festivities such as the commemoration of San Andrés Calpan on November 30, the festival of the traditional dish Chile en nogada in the first week of August, and the memorial to the faithful deaths at the beginning of November where colorful offerings for dead ancestors

are erected (*idem.*). Together with these festivities, also the XVI-century Franciscan monastery in Calpan itself attracts many tourists turning it into the main attraction of the municipality. Among other features, the monastery's Plateresque facade with unique tequitqui ornaments and four Posa chapels with decorative and symbolic reliefs fascinate the tourists ([Meraz Quintana & Guerrero Baca, 2011](#)).

Additionally, the location of the monastery, next to the zócalo (main town plinth) and the town hall, integrates the main square of Calpan. Houses and facilities around the main square are arranged in an interesting layout with an undeniable historical character, organizing its streets and blocks. This layout, which was determined by the Franciscan presence, allows identifying the development of the town through time since the colonization period. In the northern part, from where the Franciscan monastery is located, it can still notice how this layout overlaps the old indigenous neighborhoods (*idem.*).

Through the analysis of the layout, it is evident that Calpan is defined by a northwest-southeast transversal axis and a southwest-northeast longitudinal axis. This composition forms a set of big regular blocks, mainly accommodating a housing-productive nucleus and a large orchard, which together create a "grid" ([Meraz Quintana & Guerrero Baca, 2011](#)).

IMAGE 3 STREETS AND MAIN FACILITIES OF CALPAN



**Main Streets**

- (→) San Francisco St. (←) Domingo Arenas St. (→) Constitucion St. (←) Francisco I. Madero St. (→) Pino Suarez St.
- (←) 16 de Septiembre St. (→) Niño Artillero St. (←) Narciso Mendoza St. (→) 5 de Mayo St.

**Main Facilities**

- (1) San Andres Calpan Monastery (2) Town Hall (3) San Andrés Parish (4) Cemetery (5) San Antonio Chapel (6) San Andrés Apostol Monastery
- (7) Health Clinic (8) Regional Market (9) Middle School A. Obregón (10) Guadalupe de Calpan School (11) General Primary School Eufrosina



Calpan's "grid" is slightly modified in its orthogonal composition with some diagonal streets. These streets connect the entrances and exits of the town through its main streets. This way, smaller distances are needed to arrive at the main square of the Calpan ([Meraz Quintana & Guerrero Baca, 2011](#)). Its main streets are Principal Street, which leads directly to the zócalo, Niño Artillero Street, which connects directly to the two main auxiliary joints of Calpan (Ozolco and Atzala), 5 de Mayo Street, which crosses the entire town from end to end, Francisco. I. Madero Street and La Soledad Street. Today, in these streets' facilities of auxiliary boards, some public schools, a regional market, several churches, a town hall, a municipal pantheon, and a small health center are situated.

Together with those facilities, all urban areas and agricultural areas that are adjacent to these facilities have the services of potable water, sewerage and/or drainage, electric power, public lighting, telephone, garbage collection, and public transport, but only the main streets are paved.

## b. HISTORICAL BACKGROUND

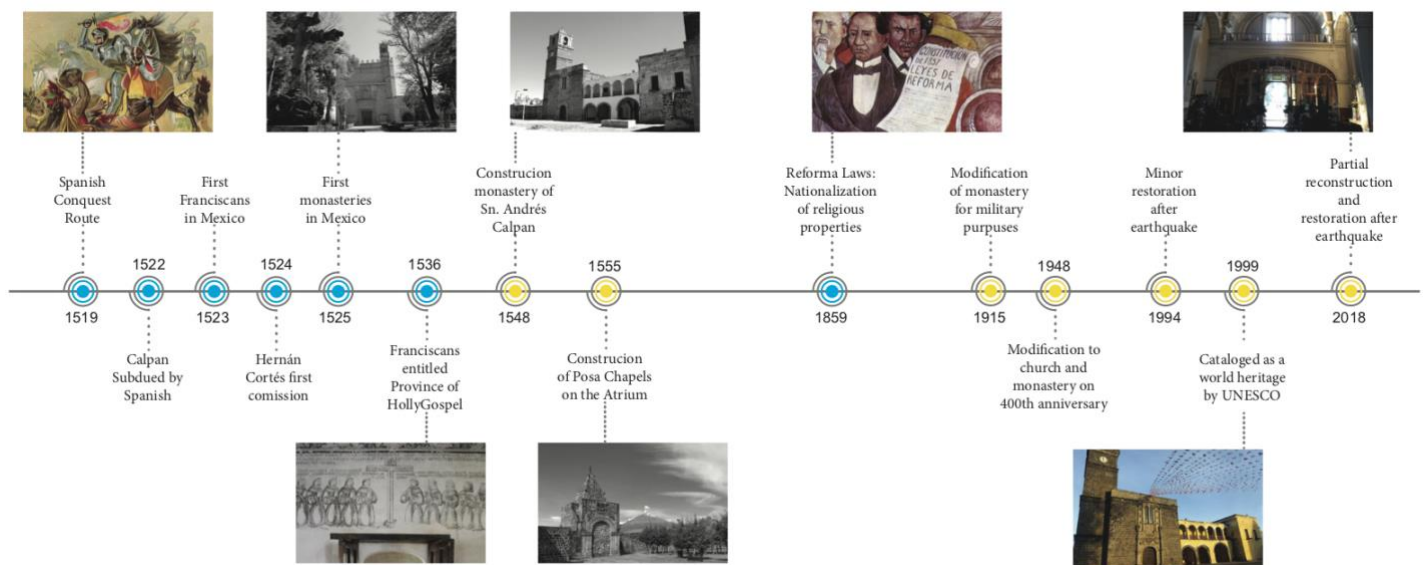


IMAGE 4 HISTORICAL TIMELINE OF CALPAN

Inhabited by the Nahuas, an indigenous group of Mexico among other countries ("[Nahuas](#)," 2018), the municipality of San Andrés Calpan, which means "place where many houses are" in Nahuatl, was founded by indigenous Toltec-Chichimec groups ([Meraz Quintana & Guerrero Baca, 2011](#)). Besides, it had important ties with other populations in the Puebla valley such as Tlaxcala and Cholula, but especially with Huejotzingo. It is known from various codices that Calpan was an outstanding warrior town. After the blithe time of the indigenous populations, between 1519 and 1522, it was on the route of the Spanish conquest, led by Hernán Cortés, the popularly known conqueror of Mexico ([idem.](#)).

Only one year after the period of conquest by Hernan Cortes, in 1523, the first Franciscans arrived to the new lands. To integrate Spanish values into the existing ones, the Spaniards attempt to transform the country's original traditions and beliefs. As part of this transformation, the Franciscan order investigated the newly discovered native ways and dialects and expend effort to understand the habits of the indigenous folk to initiate their process of evangelization ([Meraz Quintana & Guerrero Baca, 2011](#)). To promote their process of evangelization, it was needed to adapt to the context and thereby to adopt new methods and solutions. Since the Franciscan order sought to civilize the indigenous population, they saw an urgent need for evangelization as part of their doctrine. To effectively drive the process forward, the Franciscan order needed to integrate pre-Hispanic characteristics in their Christian ceremonies, for instance using open spaces in a similar way the natives already did by placing atriums in their religious complexes ([Sergio, 2016](#)). However, organizing the colonization by civilizing and evangelizing the population was not a single goal. Franciscan monasteries were also established to educate the native population and to teach practical techniques of crafts and agriculture. Due to these and many other functions performed, monasteries were considered the nucleus of the society.

The location of the municipality of Calpan itself was key for the Spanish army. Not only could the army make use of Calpan's central position but also the indigenous knowledge and manpower which helped the Spaniards to conquer the Aztecs in Tenochtitlan located in the Mexican valley. In 1524, Calpan became part of Hernán



Cortés first 'encomienda' ([Meraz Quintana & Guerrero Baca, 2011](#)). An encomienda consisted in large extensions of land, including the natives who lived there, which were granted to the soldiers and officers who participated in the conquest. It was a system of oppression and exploitation of indigenous groups. After the initial conquest, and once the process of education, teaching and evangelization had begun, in 1535, the Franciscan order requested the emperor Carlos V to build a monastery in Calpan. In 1548, the construction of the monastery was finalized and has been dedicated to Saint Andrew, who is one of the first two apostles of Jesus Christ, considered to be the first evangelizers. In 1555, additional four Posa chapels were erected (*idem.*).

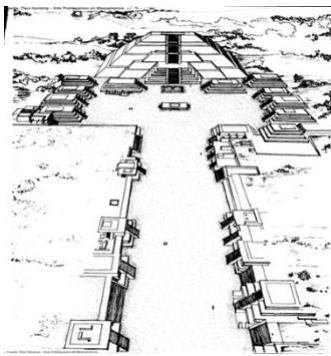


IMAGE 5 CEREMONIAL OPEN SPACE IN TEOTIHUACAN

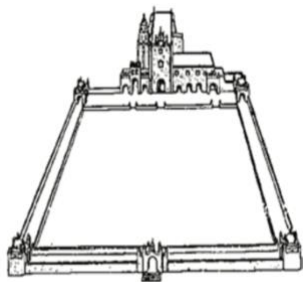


IMAGE 6 CONVENT ATRIUM

The monastery of Calpan was one of the first monasteries in Mexico. Therefore, it is a living witness of the hybridization of traditional European conventual architecture and the pre-Hispanic construction; a miscegenation that consisted of the adaptation and transformation of a clear western typology into new social context ([Sergio, 2016](#)). The union of both traditions created a new architectural identity. This architectural identity was easy to achieve thanks to the Franciscan order's freedom in their architectural distribution of spaces. They planned the distribution according to each individual place, valuing the spaciousness as being more important than the monumentality ([Braunfels, 1975](#)). This freedom facilitated the miscegenation of construction styles in Mexico. While traditionally in Europe the organization of the monastic architecture was focused around the cloister while other paces were integrated around it, in Calpan, the Franciscans had to integrate this occidental organization to the new social context. Looking more closely at the constructions, the occidental organization was made up of two main areas: a traditional area, which was conformed mainly by the church and the cloister, and an exterior area, which consisted of an atrium, and atrium cross Posa chapels and open chapels (*idem.*). These exterior areas are the most evident characteristic feature of the new hybrid architectural identity. Additionally, the native hand labor involved in this process played an important role. Their previous hand labor skills allowed them to assimilate the European construction technics while at the same time combining it with their own style and methods ([Sergio, 2016](#)).

After the initial program of the monastery, and due to the monastery's fortress-like architecture, it was used as military barracks by the liberals during the war of Reformation in 1859. Later, in 1915, the monastery suffered major modifications once again for military purposes ([Victoria, Jiménez, Quintero, & de Espinosa, 1995](#)), when the general Domingo Arenas used the monastery as his main headquarters during the Revolution period in Mexico ([López, 1995](#)). In commemoration of its 400th anniversary in 1948, the monastery was again restored and modified, mainly in the church as well as in the building around the cloister ([Ciancas, 1974](#)). Fourteen years later an earthquake hit the area and left its damages on the building. Therefore, another restoration process was initiated. Only five years later, the Franciscan monastery was cataloged as a world heritage monument by UNESCO (The United Nations Educational, Scientific and Cultural Organization) ("[Earliest 16th-Century Monasteries on the Slopes of Popocatepetl,](#)" *n.d.*). In 2018 the monastery, the church and some areas of the perimeter walls were partially reconstructed after suffering big damages from an earthquake ([De la Torre, 2019](#)).

## C. MONASTERY OF SAN ANDRÉS CALPAN

IMAGE 7 MONASTERY AND SITE FEATURES



### SAN ANDRES CALPAN MONASTERY

(A) Atrium (B) Atrium Cross (C) Posa Chapels  
(D) Church (E) Monastery (F) Orchard

#### SITE FEATURES

Grey Areas: Agriculture/Fruticulture Areas

(1) Town Hall (2) Inn (3) Restaurant (4) Open Public Space (5) Store (6) Religious Complex (7) Cemetery

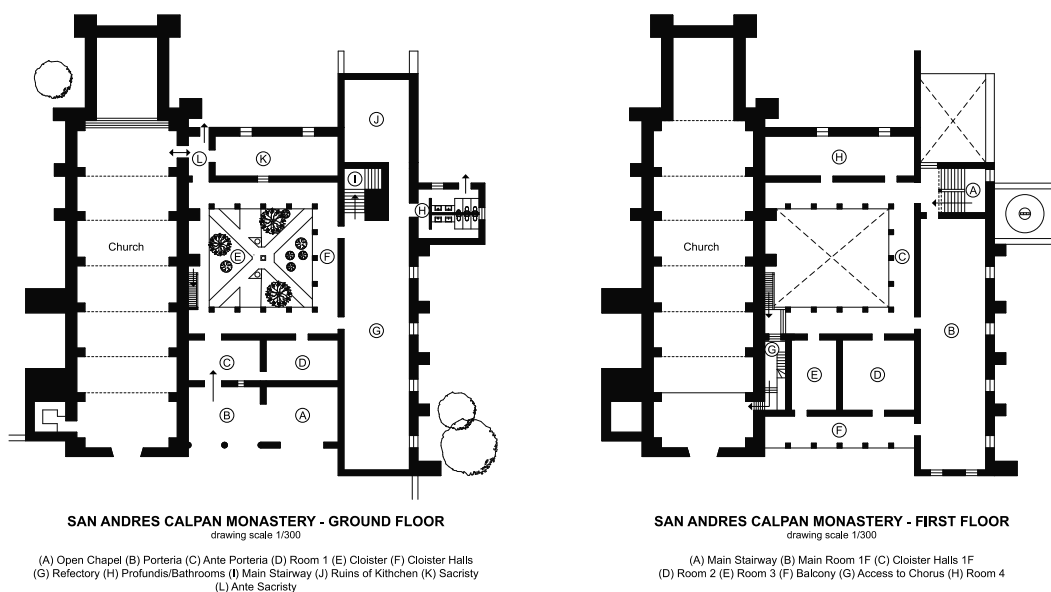
The XVI century Franciscan monastery is located in the main block of Calpan, between the streets San Francisco Street, Domingo Arenas Street, Constitución Street and 16 de Septiembre Street ([INAFED, 2015](#)). This rectangular plot of land has all the services of the municipality and the lack of vegetation in the orchard facilitates the exploitation of the place without damaging its immediate environment. The immediate context around the monastery consist of areas of temporary agriculture and fruticulture, a town hall, the town plinth, restaurants, some small hotels, stores, other religious complexes and the municipal cemetery.

The historical monastery is integrated by the following elements :

- An atrium
- An atrium cross
- 4 posa chapels
- A church
- A monastery
- An orchard

The importance of this monastery resides on its façade and its four posa chapels which incorporate carefully worked in stone decorative and symbolic reliefs and have a tequitqui style. The tequitqui style is defined by the quality with which the inhabitants of Calpan crafted the carvings on the temple and the chapels. This quality can be perceived by the integration of pre-Hispanic elements in the European-type temple and chapels, such as integrating pyramid-shaped domes instead of conventional ones and almost human-sized reliefs.

Among the most significant and surprising tequitqui details is the sculpture of Christ descending from clouds in the bible scene of the last judgement ([INAFED, 2015](#)). The sculpture is so carefully detailed that even the sores of the hands, the swords, the feathers of the angels, and the hair of the people who were captured for the scenes are clearly noticeable. Other theological history scenes including The Annunciation and the Virgin of Sorrows also stand out, being decorated with cords, shields, monograms and a wide variety of plant motifs. The sculptures are considered to be one of the most admirable jewels of plateresque in the state. All elements have been preserved for more than 465 years of history ([Gutiérrez, 1990](#)).



PLAN 1 ORIGINAL GROUND FLOOR AND FIRST FLOOR OF SAN ANDRES CALPAN MONASTERY

The main historical building of the monastery integrates on its ground floor an Open chapel (A) which is facing the atrium, formerly used to allow a large number of native people to congregate in front of the altar. Today, this place is not in use anymore. The portería (B) is a room, located next to the open chapel, where the main door to the monastery is placed. Behind the portería, the anteportería (C) and another unspecified room (D) were both used for different purposes over the years but were mainly used as transition rooms between the exterior world and the interior of the cloister. Nowadays, these rooms are empty and without any use. The cloister (E) is an interior open courtyard which was formerly utilized to grow medical plants and at the same time used as a place of meeting. During one of the modifications the monastery suffered many years ago, a narrow stairway was adapted to provide an easy access the chorus of the church. Today it is a forgotten and neglected garden. The cloister corridors (F) are placed around the Cloister and connect it with different areas in the interior of the building. Currently, only remains of a poorly planned museum lay in the halls. The Refectory (G) room was a common room mainly used as a dining room. A few years ago, it was still used for childrens' catholic lessons. The Profundis room (H), adjacent to the refectory, was formerly use as a room to for prayers of the friars, usually before taking their meals. Nowadays, this place is poorly adapted as toilet

services, open to the public with a modest fee during the town festivities. The main stairways (I) are leading to the first floor of the building. Behind the stairways, one can find the former kitchen (J) , an area which suffered major damages after the modifications the monastery had during its military use. Nowadays it is a semi open area covered by a metal sheet roof supported by a structure. It stores some tools used for agriculture. The contiguous room is the Sacristy room (K). It is located near the altar of the church and is designated for sacred vessels, vestments and articles used mainly for liturgical purpose. This room is the only room still being in use, because the Church is still actively used. Next to the Sacristy room, the ante sacristy room (L) is a small room used as connection between the church and the Sacristy room.

The first floor of the historical building can be accessed through the main stairs (A) which are adjacent to the main room (B). This room's former use could not be confirmed but most probably housed some bedrooms of the Franciscan friars. It can also be assumed that the room was modified during its use as military barracks today it is a storage room for some of the benches used for the childrens' catholic lessons. The cloister halls of the first floor (C) provide the access to different rooms on the respective floor and offer a nice view down to the cloister. The rooms (D) and (E) were used only by the head friars of the monastery since these rooms have direct access to a balcony (F) which is facing the atrium. Today these rooms are also used to store furniture which was initially intended to be used for the museum but have never been exhibited. The access to the chorus (G) is through a narrow room. This access was still in use until 2017 when the earthquake damaged the structure of the chorus, today it still waits to be restored. The room facing the east (H) was formerly divided in two smaller rooms with different functions but as the rest of the monastery, it suffered various modifications.

#### d. THEORETICAL FRAMEWORK

##### 1. ADAPTIVE REUSE:

The reactivation of the Franciscan monastery is done considering a functional analysis of its current areas. The functional adaptive reuse program allocates the new proposed areas in a thoughtful and strategic place in order to provide the best performance for the workshop school of Calpan. The term adaptive reuse was born as a response to prevent historical buildings or sites from a destructive fate and through a strategical process to provide them with a second life; a new, economically viable, use that usually differs from the original purpose they were built for and that preferably will not compromise the historical heritage of the building ([Kerr, 2004](#)). The term reuse, which literally means 'to use something again', has been addressed in countless international scripts such as the Venice Charter where adaptive reuse is presented as a conservation technique:

"Article 5. The conservation of monuments is always facilitated by making use of them for some socially useful purpose. Such use is therefore desirable but it must not change the lay-out or decoration of the building. It is within these limits only that modifications demanded by a change of function should be envisaged and may be permitted." ([The Australia ICOMOS Venice Charter, 1964](#))

Similarly, the Burra Charter, another international script, addresses adaptive reuse:

"Article 14. Conservation processes - *Conservation* may, according to circumstance, include the processes of: retention or reintroduction of a *use*; retention of *associations* and *meanings*; *maintenance*, *preservation*, *restoration*, *reconstruction*, *adaptation* and *interpretation*; and will commonly include a combination of more

than one of these. “ ([The Australia ICOMOS Burra Charter, 2013](#)) These charters define norms and methods that must be considered in the conservation of cultural heritage ([ibid.](#)).

Adaptive reuse aims to preserve original elements and materials while avoiding the waste produced by demolition, therefore it can be considered as a sustainable alternative to reach an urban regeneration ([Williamson, Radford, & Bennetts, 2003](#)). Through the new life of the churches, various different benefits, such as economic, social and cultural, can be obtained.

Kungalos, Brebbia and Beriatos ([2007](#)) have defined five design principles to be incorporated on any successful adaptive reuse project to find an adequate balance between change, adaptation, and restoration:

- Well implementation of functions for which they are redesigned.
- Be long-lasting and versatile to new uses.
- Respond well to their surroundings and enhance their context.
- Have a visual coherence and create ‘delight’ for users and passers-by.
- Be sustainable – have a minimal environmental impact

By the use of these principles one can achieve a project that responds accordingly to the current context in which the building is embedded.

## 2. REVERSIBILITY:

The new adaptive reuse program will harmonically incorporate some reversible and removable new key elements. These elements will provide the historical building with a new added value while allowing its future reconfiguration according to the possible changes of its users’ needs without altering the historical building structure. This special characteristic will ease the maintenance and preservation process of the Franciscan monastery.

“Reversible, from latin reversus-reverti, is referred to what may be altered or changed to return to its previous state or condition retracing its steps.” ([Caparrós, 2015, p.17](#)) In the field of historical heritage conservation, the term reversibility is frequently used but difficult to achieve due to all the limitations it might face. Generally speaking, a reversible construction or adaptation is any design and construction strategy that has as a final goal the intervention of buildings employing removable elements and materials. This strategy facilitates a future alteration of the buildings deriving from changes in the user needs, by maximizing the productivity of the materials used ([Durmisevic, 2006](#)).

A reversible strategy must consider disassembled structures based on a three-dimensional transformation concept. This concept integrates spatial, structural and material dimensions. The spatial dimension refers to a dimension necessary for the efficient recovering of the building materials, whereas the structural dimension focuses on the reconfiguration and reuse of the systems as well as the components of the building, and the material dimension consists in recycling and upcycling of the building elements. ([Durmisevic, 2006](#))



As adaptive reuse of buildings becomes a more used approach, the term reversibility has been deepened and complemented by the principle of 'compatibility and retreatability', which, while being a more conservation-focused principle, emphasizes the importance of maintenance rules ([Van Balen, Ercan, & Patricio, 1999](#)). This principle defines compatibility and retreatability as follows ([ibid.](#)):

- Compatibility: precondition that the materials of new adaptation will not affect in a negative way to the existing elements.
- Retreatability: precondition that the new adaptation will not interfere or prevent any future modifications.

It is of vital importance to consider that all changes that reduce the cultural significance must be planned reversibly and must be able to be returned to their original state when the situation requires it.

A non-reversible intervention should be considered as last alternative as long as it does not restrain any future conservation process ([Burra Charter, 2013](#)).

### 3. ADVANTAGES OF ADAPTIVE REUSE AND REVERSIBILITY:

The adaptive reuse process will help to preserve its historical and cultural heritage in a tangible and intangible way. The reactivation of this building, which once was the nucleus of the municipality, can generate an important economic flow for its community, through the new integrated functions ([European Commission, 2012](#)). These functions will consist in a school complex conformed by the classrooms, administrative areas, cafeteria, auditorium, workshops and interior gardens; and social integration areas conformed by the botanical garden, the bungalows and the new multipurpose atrium.

Additionally, an adaptive reuse approach for the workshop school of Calpan can be considered as an eco-friendly project since it reduces the energy consumption generated at the time of construction of the building. This energy is known as embodied energy, composed of each of the processes involved directly and indirectly during the construction process ([Shukla & Sharma, 2018](#)).

Together with an adaptive reuse program, a reversibility strategy will reinforce the idea of a sustainable intervention since it not only makes it possible to recover, reuse and recycle some of the current materials but also makes it easier for the building to evolve according to future needs and technologies ([Durmisevic, 2006](#)). As a result, the workshop school of Calpan can decrease the costs of future adequations by allowing a flexible adaptation.

There is not an overall approach or a know-how process appropriate for every single intervention. Each project has to be analyzed and valued by its own individual characteristics and properties. Every approach and principles should be constantly evaluated and evolve as a response to society and contextual development ([Durmisevic, 2006](#)).

#### 4. VERNACULAR ARCHITECTURE

The project of the workshop school of Calpan will reinforce its commitment to the development of its context by combining the use of vernacular materials and techniques. The term *vernacular* was commonly used as a concept in the early XIV century when European countries were exploring the new lands; usually, as a derogatory term suggesting something was poorly built and without being designed by a professional ([Thomas, 2018](#)).

In 1964, after an exhibition called “Architecture without architects” by Bernard Rudofsky in New York City, the term vernacular became popularized. The vernacular architecture is characterized by the use of construction materials and traditional techniques of a particular area, usually incorporating the knowledge of local builders ([Preston Blier, 2006](#)). Even though the term is mainly used to describe the primitive and traditional architecture, it can also be related to a particular kind of architecture in developed countries ([King, 2003](#)).

Vernacular architecture progress depends on the function the building is required to perform. Once the use is determined, the design of the building improves through time as it is used according to its context, including the geographic and weather conditions, the natural resources and technology available, the traditional skilled workers as well as the economic and historical conditions of the community ([Preston Blier, 2006](#)).

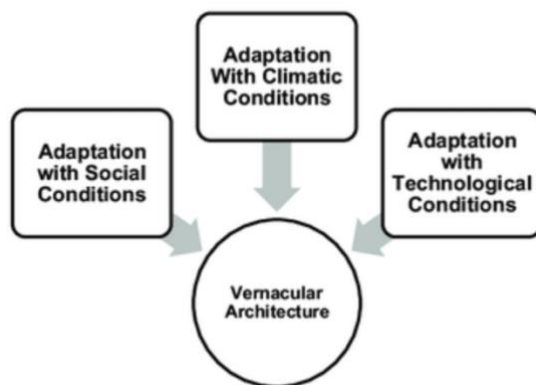


FIGURE 2 VERNACULAR ARCHITECTURE MAIN COMPONENTS

The most common benefits of vernacular architecture include the capitalization of local traditions and knowledge, the reduced embodied energy involved in the construction process, and the efficient use of energy and sustainable materials ([Correia, Dipasquale, & Mecca, 2014](#)).

#### *Bricks:*

The brick production in the region of Calpan and its surrounding regions has its origins in pre-Hispanic roots, where their historical ancestors produced artisanal ceramics and adobes. Due to this past and after the introduction of industrial processes brought by the Spaniards, the modern brick industry quickly expanded ([Shadow & Rodriguez-Shadow, 1992](#)).

There are hundreds of brickyards in the surroundings of Calpan. The vast majority produces the common brick, also known as dry-press brick, in an artisanal way ([Shadow & Rodriguez-Shadow, 1992](#)). The bricks are formed by pressing the mixture into moulds and then heating them in ovens fired with wood or organic waste from the harvest. This technique, which has been inherited through generations and which at the time was very profitable for the local population, is at risk of extinction due to much cheaper and less polluting new alternative techniques and materials (*idem*).

Nowadays bricks are still being in use for common construction processes, such as walls, paving, columns and arches ([Anonymous, 1900](#)). Their small size and characteristics allow to build complex forms while being visually attractive. The bricks can be laid in different positions which are: Stretcher, Header, Soldier, Shiner, Rowlock and Sailor ([Kreh, 2003](#)).

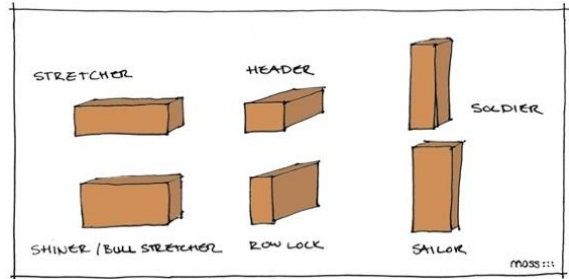


FIGURE 3 BRICK ORIENTATIONS

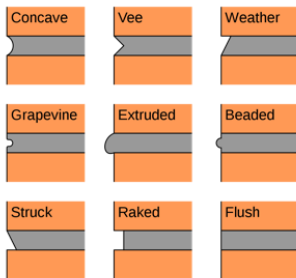


FIGURE 4 MORTAR JOINTS

Bricks are laid with mortar joints bonding them together. Some of the most common mortar joints are: Concave, Vee, Weather, Grapevine, Extruded, Beaded, Struck, Raked and Flush ([Allen & Iano, 2013](#)).

The bonding pattern usually describes the alignment of the bricks. Some of the most common bonding patterns are: Running Bond, English Bond, Stack Bond, Common Bond and Flemish Bond ([Allen & Iano, 2013](#)).

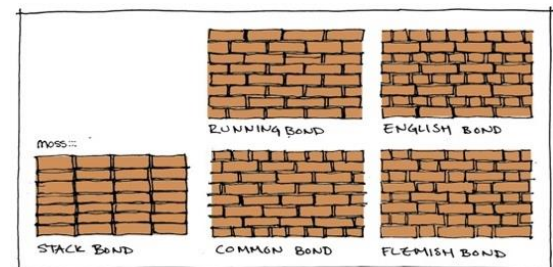


FIGURE 5 COMMON BRICK BONDING PATTERN

*Tapia:*

Earthen construction is a vernacular solution that shows a wide variety of techniques and applications developed and played a significant role over thousands of years. In Calpan, the traditional earthen technique used was the Tapia. This technique known as *tapial* or *tapia* consists in a wall which is formed by damp clay soil, rammed and compacted in place, thanks to a formwork ([Cuchí i Burgos, 1996](#)).

As the architects Meraz Quintana and Guerrero Bacca in their text "Calpan (México), historia urbanismo y tapial" ([2011](#)) mention, the tapia houses in Calpan consisted in introverted housing systems. These houses presented an almost monolithic tapia wall on its exterior facades, providing an opening only for the main door. The slopes of their roofs, as well as their windows, were oriented towards the interior patio. This patio around which the different rooms were distributed is essential, because diverse activities were performed ([Meraz Quintana & Guerrero Baca, 2011](#)).

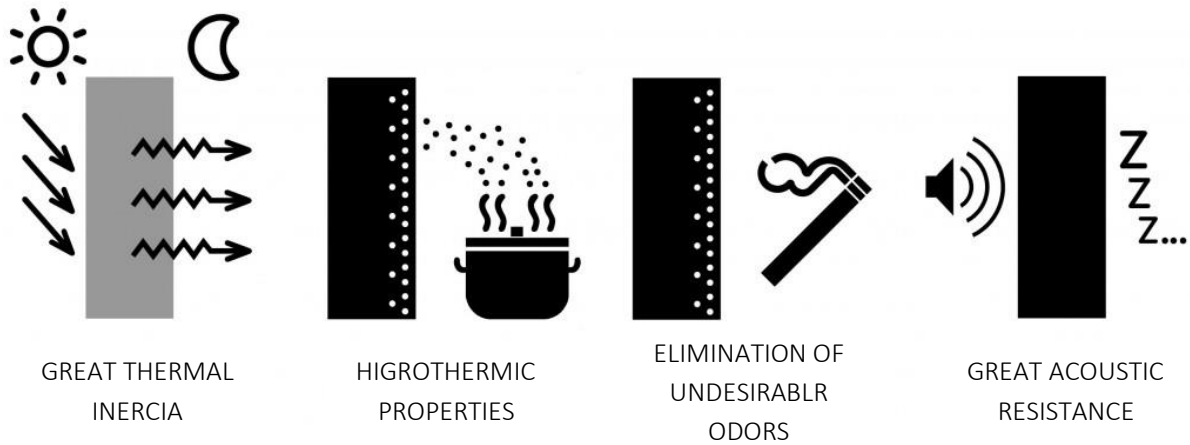
Some of the Advantages of the tapia system are ("[Construcción con Tierra,](#)" n.d.):

- Thermal capacity: as it is known the earth has positive insulating characteristics, which makes the buildings and houses built with this element have an efficient thermal resistance in comparison to other massive systems such as concrete. It is also able to storage heat which is very useful characteristic when the climate in oscillates between day and night during winter.
- High hygrothermal property: this consists in the quality of absorption of water vapor which allows to balance the humidity of its interior achieving an ideal interior comfort.
- Elimination of bad odors: thanks to its chemical composition it has the capacity to absorb toxic particles and unpleasant odors.



- High Acoustic behavior: the earth walls are an effective solution against unwanted noise due to its poor vibration transmit quality.

FIGURE 6 TAPIA PROPERTIES



- Resistance to fire: the physical-chemical characteristics of raw earth has a high resistance to fire in comparison to industrial materials such as brick and steel.
- Sufficient bearing capacity: with a proper maintenance the earth has a good bearing capacity despite having lower resistance in comparison to materials such as brick.
- Reduced environmental impact: since it uses 1% of the energy involved in the manufacturing and transportation process of concrete and common bricks, it is also hundred percent reusable after its useful life.
- Low cost and accessible: the earth useful earth is located after removing the first 40cm of organic substrate. The tools are simple and inexpensive and the construction can be performed by unskilled people, as long as an experienced person controls the construction process.

FIGURE 7 TAPIA PROPERTIES



The disadvantages of this process are ("[Construcción con Tierra](#)," n.d.):

- Vulnerability to water: if not built with the right principles water can produce an erosive effect on the tapia.
- Specialized construction training: even though this technique was related to the “architecture without architects” this was due to an adequate transmission of knowledge from generation to generation method, which nowadays is almost lost.

Over time tapia houses in Calpan have faced intense deterioration due to a loss of traditional skill knowledge deriving in a miss use of proper materials for its maintenance and conservation.

##### 5. LUIS BARRAGÁN PERSPECTIVE ON ARCHITECTURE:

Simultaneously to a vernacular approach, a functional and emotional design of the monastery will provide the users with a successful and unique complex. A good design is that one that makes use of all the qualities the site and the building hold, to incorporate an energy-efficient and functional program, that at the same time allows the users to develop their activities in a comfortable and emotional space.

One of the greatest exponents of architecture who pursued this emotional architecture was the Mexican, Luis Ramiro Barragán Morfin. He was formally trained as an engineer in Guadalajara and then self-trained as an architect by direct experience and through the different works of different artists and architectural writers ([Carranza & Lara, 2015](#)). Luis Barragán had a strong influence on the Mexican popular architecture of villages, ranches and monasteries, and a strong philosophical influence from the German sculptor Mathias Goeritz ([Ambasz, 1976](#)).

Barragan's first trip to Europe let him discover the writings of a renowned French landscape architect, Ferdinand Bac. His influence on Barragan was mainly on the attitude towards the gardens and open spaces: “the garden as a magic place for the enjoyment of meditation and companionship” ([Ambasz, 1976](#)). It was until 1924, after he visited the magnificent gardens of the Alhambra in Spain, when he realized the sensual and intimate feeling evoked by the incorporation of fountains and water channels in enclosed interior gardens. This became a feature for most of his designs. He conceived his gardens as “interior-open” areas loaded with seductive and mystical properties which allowed its users to develop and open their senses ([ibid.](#)).

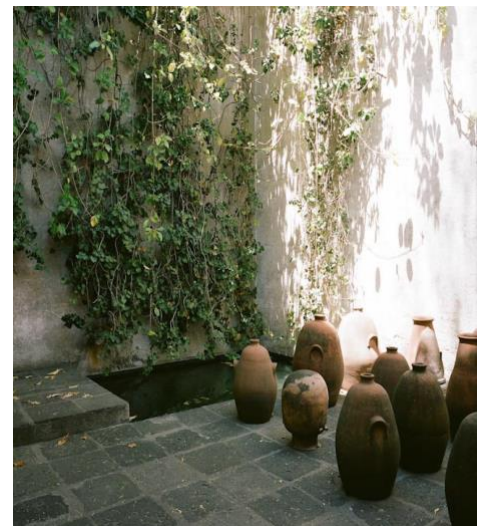


IMAGE 8 INTERIOR PATIO BY LUIS BARRAGAN

“Barragan has always endeavored to create an architectural language which would express man's eternal longings in the context of modern Mexico's natural and cultural conditions” ([Ambasz, 1976](#)). The architecture of Luis Barragán incorporates Mexican forms and elements in a way to honor the sublime architectural tradition of his roots, and always directly linked to the climate and natural resources as fundamental factors of its architectonic designs ([Carranza & Lara, 2015](#)). He used every factor related to his designs, including social factors such as poverty and unskilled labor, which resulted in architectural elements of simple structure and few materials, but functional and highly emotional. His designs suggest a constant give-and-take between *masses and voids* ([ibid.](#)). In Barragán's eyes, the void is the medium for light and shadow to play with the

element, and also, an important composition element that can join together different volumes. He also believed that a wall had a core and skin, the core being the structural element and the skin its layer of paint ([Ambasz, 1976](#)).

According to Barragan, each project had an entity itself and each case present an opportunity to deal with the tensions which sometimes was introduced by the presence of the user and some other times by his absence ([Ambasz, 1976](#)). Barragan's architectural design was mainly inspired by the architecture of the atriums of Mexico's monasteries, where the façade of the church could be perceived as a divine screen that contained the mystical powers behind. Guided by this inspiration he designed his plazas as places where a man can have a moment of reflection ([ibid.](#)).



IMAGE 9 STAIRS BY LUIS BARRAGAN

## V. CASE STUDIES

### a. HET PREDIKHEREN KLOOSTER



IMAGE 10 EXTERIOR HET PREDIKHEREN KLOOSTER

Program: Library  
Project: Korteknie Stuhlmacher Architecten (2015)  
Country: Belgium  
City: Mechelen  
Adress: Predikherenklooster, Goswin de Stassartstraat



The Dominican friars moved to Mechelen after being expelled from 's-Hertogenbosch by the protestants in 1651. In 1652 the Franciscans were allowed to build an east-facing modest chapel and a contiguous square monastery. Simultaneously to these religious buildings, a brewery was built to provide with an income to Franciscan priests. After 1689 the chapel was too small for its use and after seven years, in 1736, the new baroque church was built. As a common characteristic of Dominican monasteries, this one also had a library ([Krol, 2019](#)).



IMAGE 11 HISTORICAL DRAWING HET PREDIKHEREN KLOOSTER



IMAGE 12 HET PREDIKHEREN KLOOSTER NURSERY

In the end of the XVIII century, during the French era, the religious life of the monastery ended. After this religious culmination, the monastery suffered some modifications to merge the monastic cells into rooms to use it as a retirement place for men ([Krol, 2019](#)). Later, on the early XIX century and until past mid XX century, the monastery was used for military purposes such as a training camp, a hospital and as barracks under the name of 'Barracks General Delobbe'. German army forces used the monastery during World War II. In 1979, after several modifications due to its diverse uses and despite its almost ruin conditions, the monastery was protected as a monument ([ibid.](#)).

The monastery's adaptive reuse program designed by Rotterdam firm Korteknie Stuhlmacher, considers the cloister, an outer ring which accommodates several multifunctional rooms, the attic, the courtyard and the church.



IMAGE 13 IMPERFECTIONS HET PREDIKHEREN KLOOSTER

Despite of the diverse uses the monastery hosted, the structure has been preserved. This structure is identifiable from almost every place on the building ("[Library within baroque walls,](#)" 2018). The structure together with the existing spirit of its areas were the main inspiration for the adaptive reuse design of this monastery. This Project finds its beauty on its own imperfections which resulted from the different uses and adequations the monastery experienced through its existence. Therefore, one is able to appreciate all over the building the scars and modifications the building experienced during its intense history ([ibid.](#))



IMAGE 14 HET PREDIKHEREN KLOOSTER COLOR DRAWING

The new project is divided in three different areas. The first area which is destined for multipurpose use, is integrated by a cafeteria, an entrance hall and a computing room. Thanks to all the openings the monastery has on its ground floor it invites the people to come in and make use of its courtyard or any of its diverse public functions.



IMAGE 15 HET PREDIKHEREN KLOOSTER NEW OPEN COURTYARD



IMAGE 16 HET PREDIKHEREN KLOOSTER OLD OPEN KLOOSTER

The second area is considered to be a peaceful and calm area for people who want to enjoy a good book or study without disturbance. This area is placed mainly on the first floor where its nice architectural elements, characteristic of a late XVII century monastery, welcomes the readers with a unique library experience. The rooms around this library are mainly used as classrooms and meeting rooms (["Library within baroque walls," 2018](#)).



IMAGE 17 HET PREDIKHEREN CALM LIBRARY

The last area, which is designated as a general flexible library, is placed in the attic. In this area which was adapted with large windows and skylights to experience different views from the city; young and adults are able to see and feel its magnificent wooden structure (["Red de Escuelas Taller de América Latina," 2019](#)). To make use of the attic's double height a two-level book with a mezzanine was placed. The ceiling was reinforced with a steel structure which is hidden under a black slate finish ([ibid.](#)).



IMAGE 19 HET PREDIKHEREN ROOF LIBRARY



IMAGE 18 HET PREDIKHEREN RESTORED FACADE

The church placed adjacent to the monastery is still in restoration process and will function as a multipurpose building to host socio-cultural activities ([Krol, 2019](#)).



IMAGE 20 HET PREDIKHEREN CHURCH - EXTERIOR



b. KRUISHEREN HOTEL



Program: Luxury Hotel  
Project: SATIJN plus Architecten (2005)  
Country: Nederlands  
City: Maastricht  
Address: Kruissherengang 19, 6211



The Kruisherenklooster, or monastery of the crutched friars, is a former monastery which belonged to the Holy Cross order in the city of Maastricht. During its first years Gilled van Elderen donated some houses for the friars to live. During this period a small chapel was built.



IMAGE 21 KRUISHEREN OLD CLOISTER

Later Eddius van Elderen gave a land to the Holly Cross order, a place where the XV century Gothic monastery was built ("[Discover the history of Kruisherhotel Maastricht](#)," n.d.). It is documented that even though the church was finished in 1459, it was consecrated in 1470. The monastery buildings were developed over the next decades up to 1520. During the period where the monastery complex was built it suffered several modifications and internal reconfigurations ([ibid.](#)).

After the invasion of Maastricht by the French in 1794 the monastery building was used for military purposes such as arsenal and barracks. After the French left Maastricht, the monastery was administrated by the Dutch Ministry of War. In the late XIX century the monastery was restored and adapted as the National Agricultural Testing Station, during this restoration process a section of the east building collapsed ([KruisherHotel, 2011](#)).

During the World Warr II the monastery was invaded by the German army, then it was occupied by the American liberation troops and then the city of Maastricht took charge of the building. After a couple of years, the building was cataloged as a protected monument (*rijksmonuments*). The historical building was bought by a hotel company in the year 2000 with the purpose of being reused as a design hotel ("[Discover the history of Kruisherhotel Maastricht](#)," n.d.).



IMAGE 22 KRUISHEREN OLD EXTERIOR FACADE

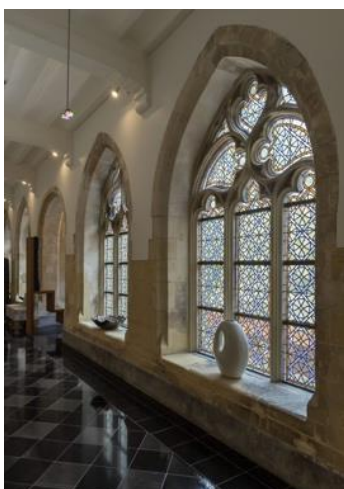


IMAGE 23 KRUISHEREN INTERIOR CLOISTER HALLS

The adaptive reuse of this building consisted in a series of renovations on the monastery, its church and a pair of adjacent buildings. Due to its protected monument nature the new elements had to be as much reversible as possible, Interior designed by Henk Vos, this project is focused in contrasting the historical building with its new incorporated elements. His design incorporates elements inspired by famous architects, sculptors and designers ([KruisherHotel, 2011](#)).

The monastery is integrated by three areas which incorporate 60 hotel rooms. The first area is the church, were the main entrance is placed on one side of the nave with a shiny copper tunnel designed by the German Ingo Maurer ([KruisherHotel, 2011](#)). This area is destined for a semipublic purpose since it houses the hotels reception, a restaurant which is placed on a steel mezzanine installed in the middle of the main nave and which offers magnificent views from the church walls and callings, conference rooms, a small library, a coffee bar

placed under the mezzanine with nice stained glass, a wine bar placed also under the mezzanine right where the altar used to be, a restroom area carefully adapted from which people can see some tombstones, a boutique shop placed on one side of the nave and a glass elevator which connects the church with the monastery building. This interior design shows how it is possible to find a dialogue between the contemporary styles and historical architecture (ibid.).



IMAGE 24 KRUISHEREN MAIN ENTRANCE TUNEL



IMAGE 25 KRUISHEREN MAIN HALL

The second area is the cloister and its monastery placed adjacent to the church. The monastery houses most of the 60 rooms mentioned, each one designed in a different and exclusive contemporary style. The rooms contrast this contemporary style with its historical elements such as colorful stained-glass windows and decorative walls and vaults in order to achieve a comfortable and original experience. The cloister, which is surrounded by the building's corridors, formerly used as an herb garden; was adapted as a meeting area or multipurpose courtyard incorporating designed benches to provide the user a moment to admire the place and its carefully placed sculptures (["Discover the history of Kruisherenhotel Maastricht," n.d.](#)).



IMAGE 27 KRUISHEREN HOTEL ROOM



IMAGE 26 KRUISHEREN NEW CLOISTER

The third area is integrated by the Concierge building with a renaissance style and a new annex “Casa nova” built to house the remaining hotel rooms. The Concierge building incorporates a brick layered façade with black slate finish on the roof. The Casa Nova is a new contemporary volumetric building incorporating Corten steel on its façade. The Green Areas of this monastery were redesigned incorporating art elements, by Ingo Maurer, to provide the user a nice experience after a busy day (["Discover the history of Kruisherenhotel Maastricht," n.d.](#)).



IMAGE 29 KRUISHEREN CASA NOVA



IMAGE 28 KRUISHEREN CONCIERGE BUILDING

c. PTUJ PERFORMANCE CENTER



IMAGE 30- FRONT VIEW OF TRIBUNE IN MAIN EVENT HALL.

**Program:** Performance Centre  
**Project:** ENOTA architects (2013)  
**Country:** Slovenia  
**City:** Ptuj  
**Address:** Muzejski trg 1, Ptuj 2250



The church of the Dominican monastery of Ptuj was built in different stages during the medieval period. During the 12<sup>th</sup> and 13<sup>th</sup> centuries, it went temporarily through phases of Romanesque and Gothic until it acquired its Baroque style (["Dominikanski Samostan Ptuj / History," 2017](#)). In the course of its last period, the church was given a different orientation, changing some of its elements and revealing its main access to the city. These different architectural phases can still be recognized on the outer wall, in the northern part, of the church. The Dominican monastery of Ptuj was abolished in 1785. Since then it served as a military infirmary until 1923. Then, in 1928, the municipality used it as a museum and housing until 2011. Following this year, the restoration and renovation processes began ([ibid.](#)).



IMAGE 32 PTUJ MONASTERY HALLS



IMAGE 31 SECONDARY EVENT HALL



IMAGE 33 PTUJ VIEW FROM TRIBUNE TO MAIN STAGE

This adaptive reuse project manages to preserve the tangible and intangible historical heritage of the building through a cultural (performance) space. Often monasteries fulfilled the role of cultural and scientific centers. In this way, the new reuse of space fits in perfectly with these principles (["Ptuj Performance Center / ENOTA," 2013](#)).

The project limits its intervention to areas that do not present new archaeological findings and integrates key premises of the adaptive reuse process, achieving a respectful and successful intervention. These premises consider reusing the building in a non-invasive way, allowing its possible adaptation for future interventions. Likewise, it facilitates the maintenance of existing elements, when required.



IMAGE 34 PTUJ TRIBUNE STAIR PLACED IN RUINS AREA

Entering the church from the north access, you arrive at an event room with completely modern accents, where a stage is set up in the western part and a removable grandstand of seats is erected along its horizontal volume (["Ptuj Performance Center / ENOTA," 2013](#)). This element accentuates the spatial partition between the restored baroque church and the remains of what was once the old Gothic building.



IMAGE 35 PTUJ TRIBUNE DIVIDING RESTORED AND RUINS AREA

The church is connected to the auxiliary spaces that line up around the cloister by means of a removable platform, raised from the floor, with a black concrete surface. The black color of the new surface, although contrasting with the white of the main hall, is based on the relationship with the black and white clothing of the Dominican order



IMAGE 36 MONASTERY HALLS AROUND CLOISTER



IMAGE 37 CONCRETE FLOOR ON MONASTERY HALLS



PLAN 2 - GROUND FLOOR PTUJ

d. ST ANTHONYS CONVENT



IMAGE 38 NATIONAL DESIGN CENTRE FACADE

Program: Singapore National Design Centre

Project: SCDA Architects (2013)

Country: Singapore

District: Bras Basah–Bugis

Address: Middle Road 111, 188969

St Anthony's Convent finds its origins back in 1879 when a Portuguese Mission set, in a two floors shophouse, the St Anna's school for children who their parents weren't able to afford school fees ([A century in Singapore: The Canossians, St. Anthony's Convent, 1994, p. 4](#)). After a new complex was built in 1886, with the help of the Portuguese Mission, public and government donations, the school was renamed St. Anthony boys' and girls' school ([idem](#)).

In the late XIX century the girls' and boys' school split in two different schools. The Canossians Sisters, known for providing help to underprivileged people, arrived to Singapore to run the girls' school ([A century in Singapore: The Canossians, St. Anthony's Convent, 1994, p. 4](#)). Under the Canossians Sisters administration, in 1895 was set an orphanage and boarding facilities in the school building. One area was destined for the girls' school and the other provided with sewing and embroidering techniques to the woman ([A century in Singapore: The Canossians, St. Anthony's Convent, 1994, p. 5](#)). St. Anthony's girls' school moved to a new complex in 1896 with the support of the local government. In 1940 the convent was integrated a complete Junior and Senior education program ([A century in Singapore: The Canossians, St. Anthony's Convent, 1994, p. 7](#)).



IMAGE 39 ST. ANTHONY'S HISTORICAL FACADE

The girls' school was closed in 1994 and the convent was later used by the Nanyang Academy of Arts and the Chinese Opera Institute from 1995 to 2009; date since when the convent was partially abandoned. In 2011 SCDA Architects won the competition for the adaptive reuse of the convent into a national design centre .

The adaptive reuse of the St. Anthony's Convent contemplated the restoration and adaptation of a four-building complex. It incorporates an auditorium, a library, public exhibition areas and a developer area.

Even though the modifications on the exterior facades were subtle. The architects replaced the roof tiles, opened new windows on the floor ground and installed energy efficient glass on the windows. By opening these windows, the building connects its inside with the exterior. This new project opens a new entrance to the building right in the corner of Victoria st. and Middle rd, with a contemporary design. The entrance is framed by a discreet light that eventually penetrates the building leading the users to the main reception or directly to the atrium. Through this interior corridor the replacement of the brick walls with glass is perceivable ([Pearson, 2015](#)).





IMAGE 40 NATIONAL DESIGN CENTRE MAIN ENTRANCE

The ground floor of the convent was adapted to host diverse public activities such as temporary exhibitions, design stores, a cafeteria and a makerspace. The new design covers the central atrium with a carefully designed folded skylight (Pearson, 2015). This allowed to add, in the sheltered atrium, four rectangular boxes with a translucent metallic material. The main intention of this four-floor high structure, was to create areas such as workshops and meeting rooms while providing the users a connection between the gallery and the upper level. The new structural element integrated by the four volumes is completely separated from the external façade, which gives provides the users with a pleasant visual effect. In this same atrium pivoting doors were placed in order to play with the distribution and zonification of the rooms allowing its reconfiguration according to the needed use.



IMAGE 41 ST. ANTHONY'S SCHOOL PICTURE

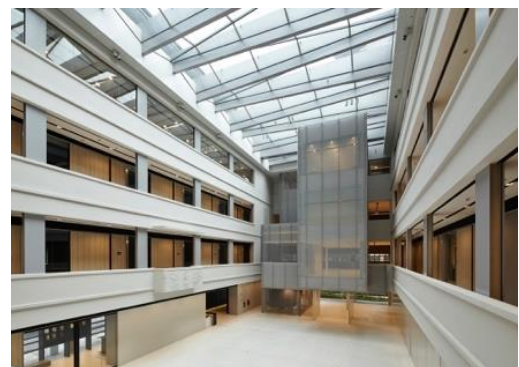


IMAGE 42 NATIONAL DESIGN CENTRE NEW INTERIOR COURTYARD

The passage which divides the three connected buildings with the fourth one was transformed as an open interior courtyard incorporating a water mirror and reconfigurable benches. A fire stair with a contemporary translucent metallic cover was placed in this same courtyard.

The new project incorporates elements as metal pale wood and white paint to achieve a pleasant atmosphere on the interior of the building. The building is divided in three main areas. The first two floors are used mainly as shared spaces, the labs and studios for design tenants are placed on the third floor and the fourth floor is used by the Singapore Design Council



IMAGE 43 INTERIOR HALLS

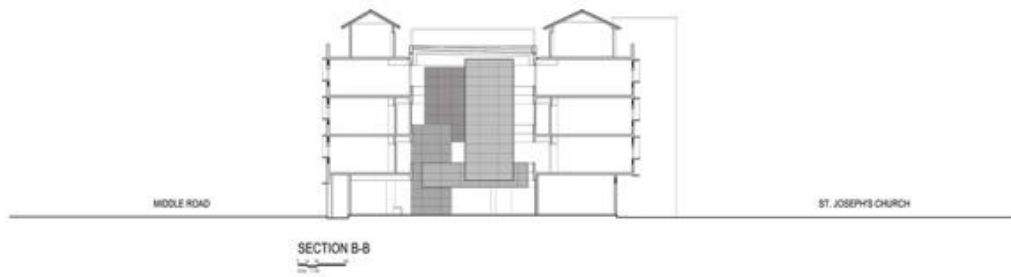


IMAGE 44 SECTION

## VI. DESIGN CONCEPT

The design concept is planned inclusively since it considers not only the historical building itself but also the urban context in which it is located, as well as the social impact it represents for the community of Calpan. First, the history of the monastery's foundation was deeply analyzed in order to comprehend the historical background of the building. It is important to consider the religious order that founded the monastery; their principles and the role the monastery has played historically within the community of Calpan, to understand its tangible and intangible heritage weight.

The hybridization of construction styles during the colonization period also plays a strong role in the development of the design concept. The design concept seizes the idea of this historical hybridization to incorporate a contemporary hybridization based on the adaptation and transformation of a clear religious typology into a new educational and social context.

The incorporation of a substantive and spatial adaptive reuse program integrates to the current context and needs of the community was determined. This spatial program is inspired mainly by the Franciscan order principles applied in Mexico of providing education. The program consists of a workshop school that will serve as a reactivator of the monastery as the social nucleus of Calpan. At the same time, it will play the role as catalyst of social development, acquiring a renewed social meaning in the community.

Once the program was chosen, the possibilities and spatial limitations of the monastery for the incorporation of this program were analyzed. A typological analysis of the monastery helped to identify the elements and areas that conform the religious complex, in order to determine an appropriate proposal for the reorganization and reuse of the areas, that together with the integration of some reversible elements will contribute with the future use and preservation of the historical building.

The organization of this areas and the design are based on the philosophical interpretation of architecture by the renown Mexican architect Luis Barragan ([Ambasz, 1976](#)), whose designs are directly related to Mexican popular architecture and monasteries. His fundamentals will be reinterpreted through a functional-emotional design and by accommodating seductive gardens which incorporate water elements that create an intimate atmosphere and invites to contemplate. These elements provide the perfect education place for thinking and generating ideas.

After the spatial program was defined, a brief analysis of the Franciscan order, who arrived in Calpan, was made and a color pallet was identified. This color pallet derives from the *habits* the Franciscan frays wore. Those habits were made out by interlacing natural white and black wool strings, resulting in a grey ashy color. Until the mid XVIII century this grey was set to be the official color of the Franciscan order ([Gálvez, 2002](#)). This analysis derived in the use of black, white and grey as the main color pallet for the project.

As a resume, it can be concluded that the design concepts used for this adaptive reuse project are based on:

- A modern translation of Franciscan order principles by providing traditional high skill training for disadvantaged people to overcome social disparities.
- The hybridization of the religious building into a new educational and social context by integration of the workshop school in the monastery.
- The architectural and philosophical fundamentals of Luis Barragán through a functional and emotional architecture.
- The color analysis on the Franciscan order habit by using grey as a result of mixing white and black tones.

## VII. DESIGN PROPOSALS

The monastery's adaptive reuse project considers the historical building and the orchard, which will accommodate several classrooms, administrative areas, an auditorium, a terrace, four workshops, tapia bungalows, a botanical garden and a multipurpose atrium. The historical building will be preserved with some subtle but key interventions to provide the users with all the necessary elements and to facilitate the circulation. The following design project will be guided by explaining first the ground floor, then the first floor, followed by the terrace and the orchard.

### a. THE GROUND FLOOR:

The open chapel area, located in front of the atrium, will be used for small temporary exhibitions of work done by the students of the school. This way the visitors can delight in with the successful works produced by the students. The main entrance to the monastery is located on the left side of the open chapel. In this area, a wooden element will be placed in order to frame the entrance of the school. This element will incorporate detailed planiform engravings alluding to the workshops of the school. These planiform engravings are inspired by the atrial cross. The atrial cross is considered an element with an educational purpose since it was engraved with pre-Hispanic reliefs by the natives themselves, representing religious symbols in order to learn the Christian precepts. The access to the interior of the monastery will be controlled by adding an administrative area conformed with a reception and a waiting room, located in the area of the portal. That way, unauthorized persons cannot enter the building. Adjacent to this area there will be a meeting room with its own access to restrooms. This location of the meeting room will allow the users to have easy access which can be controlled by the receptionist.



IMAGE 45 ATRIUM CROSS ENGRAVINGS

Following the direction into the building, one enters the interior courtyard. The design of the interior courtyard, also known as the cloister, will be reconfigured inspired by Islamic gardens. A water element will be placed in the center of the courtyard and together with the greenery, it will provide the users with a



IMAGE 46 ISLAMIC GARDENS WITH WATER ELEMENT

peaceful space that eases the spiritual connection of the human senses as the physical connection to the different areas of the building. Similarly, a glass elevator will be adapted in this area to facilitate vertical circulation to the first level and as to the rooftop level. In the cloister corridors designed wooden benches will be placed. These wooden benches can be pushed together allowing its reconfiguration in the cloister according to the users' needs.



The main hall located on the ground floor, formerly the Refectory, will be adapted to host four classrooms employing removable modular panels. Thanks to the flexibility of the panels, the area can be reconfigured according to the future needs of the users, as well as the reversibility to its original state if necessary. The Profundis room, where the restrooms are currently located, will be restored and equipped to house a study room. By rehabilitating this area, not only the original intention of the room is recovered, but also the circulation to the outside of the convent is facilitated.

Due to the still-active character of the Church, the sacristy room which is located on the east side of the monastery, is preserved without intervention. This room preserves its Christian energy since is still in use to keep the vestments, sacred vessels and other church furnish. Adjacent to the sacristy room, an area, which nowadays is in ruins, was formerly used as a busy kitchen and provided the friars with meals. The new project uses this peculiar area to incorporate a contemporary extension to the existing monastery.

The new building extension was conceived after analyzing the forms and functions of the historical building and its dominant views.

The spatial program houses restrooms and storage facilities, as well as a cafeteria. From this cafeteria, the users can experience a different variety of light and shadow contrast together with its open views. On the east, a window is open from which a stainless-steel sculpture standing above a water mirror reflects the sunbeams. Through this window, the users can spot the workshop area. In the south, a series of openings, which are delimited on the ground by the water mirror, are following a constant rhythm that offers the users the opportunity to experience the magnificent views of the new open atrium and the botanical garden. This continuous rhythm finds a common language after observing the vertical buttress that the historical building shows on the same façade. The new façade integrates a key vernacular element, the red common brick, which is traditionally produced in the region. The brick is proposed in an irregular layout to provide the building with a raw finished skin; a red canvas of masses and voids where the light and shadows can play throughout the day. This raw finish seeks to find a dialogue between the masonry stone walls of the historical building and the new annex. It contributes to a dialogue that will be more evident throughout the time when both elements acquire a natural patina produced by the aging of the materials. A perforated brick wall will be placed on the interior west side of this cafeteria. This will serve as a screen wall allowing the users to have a glimpse of a small joint corridor that connects to the study room.

The 2-meter-wide interior corridor which connects the historical building to the workshops incorporates a double-height area from which a zenithal light descends over a golden painted Tau cross. This provides the corridor with a mystical atmosphere as the user access or leaves the historical building.

#### b. THE FIRST FLOOR:

This first floor is accessible either from the glass elevator or from the main stairs. The main hall area, located aside the main stairs, will be adapted the same way as the Refectory on the ground floor, housing four classrooms with removable modular panels. An additional administrative area will be organized in the rooms located on the west side of the building. These rooms with access to the main balcony will house the office of the general director and the office for the teachers and workshop directors. The dividing walls in this area will also be removable, using the same system as in the classrooms on the ground floor. The balcony can then be used by the heads of the school as a place to meet, exchange ideas and prepare their classes. The access area to the church's choir will be maintained with its existing function, restricting its access to authorized personnel.

The east side room of the monastery will house a modest auditorium. This auditorium will incorporate a retractable seating system to allow flexibility in the use of space. This retractable system can be completely removed in case the future user needs change. The new extension area, on the first floor, will be provided with various services such as restrooms, storage room, a school library, and a new balcony. The access to this extension area is placed next to the main stairs, on the counter side of the new classroom area. The users will be received by an interior patio with wooden beams on the ceiling. On the center of this space, above the wooden beams, a rectangle skylight is placed allowing natural light to interact with the interior space. Through this space, the user can access the restrooms or proceed to the library. On the way to the library, the user is provided with the opportunity to experience the double-height as well as the zenithal light being reflected on the golden Tau cross in a more direct view.

The library will also incorporate wooden beams in the ceiling from which metallic design lamps will hang. In this space, the users will be provided with four square glass opportunities to frame the exterior views around the monastery. These square windows also present an opportunity for natural light to join the readers in their journey of knowledge. This library also provides the users with the opportunity to access an open balcony carefully integrated to the exterior vault, crowned with a cross, of the former Profundis room. From this balcony, the users are provided with an open clear view of the botanical garden and the magnificent landscape. An ideal place to have a break from their reading.

### C. THE TERRACE:

Placed on the roof of the old monastery, this area is only accessible through the glass elevator and the emergency exit stairs leading to the garden of the workshop area. This emergency, exit stairs rather than just being a functional element, will integrate to the building as a design element by using the same brick material of the new annex and resembling a pre-Hispanic inverted stair.

The roof of the old monastery is adapted with a lightweight – removable structure to level the floor and provide an extra layer, protecting the historical building. The users will be provided with sitting and shadow areas through temporary wooden pavilions, designed and assembled by the carpentry workshop student, as well as through designed planters which incorporate a wooden sit. In this area, it will also be integrated into an elevated platform used as a sight view. The roof terrace will provide the users with an unforgettable



IMAGE 47 LUIS BARRAGAN TERRACE

memory of the extraordinary panoramic views of the monastery and Calpan landscape always escorted by its volcanoes.

Subtle but important changes will be done in the historical building. The monastery's poor condition floor will be replaced with a new black volcanic tile. This material, also known as "black recinto", which was used since pre-Hispanic times, is abundant in the region thanks to the proximity to the volcanoes. The crumbling interior and exterior plaster will be repaired and painted in with an "ash-gray color" (COMEX micrófono 312-03) accentuating the details with a white tone color (COMEX albino 004-01). The predominant "ash-gray color" used on the walls is inspired by the habit used by the Franciscan friars in Calpan. The wooden elements such as the sitting elements placed on the corridors and the beams will be laminated with 6mm of natural pale "sabino" wood. The sabino wood comes from the well-known Mexican national cypress tree "ahuehuete". New low-E windows will be installed to provide the building with higher standards of energy efficiency.

#### d. THE ORCHARD:

After going through the Historical building and the new annex the user will access the former orchard area. This area, guided by a "black recinto" corridor, takes the user through a nice garden, which incorporates water elements, into a new exterior cloister created between the monastery and the new building which houses the workshops each of the schools' workshops. This area is proposed as a single element integrated by the workshop units of Agriculture, Floriculture, Carpentry and Construction. It will be placed in a strategic and central area allowing easy access for students as well as for suppliers. This building will be located on the east side of the monastery.

The building is designed after analyzing the traditional composition of the houses in Calpan, almost monolithic on their facades facing the exterior but opened to the interior patios. This way the workshops provide a door to their storage rooms facing the providers' corridor while revealing its interior to the interior corridors and patio. The plinth of the workshop building will rise this element 40 centimeters creating a visual effect of being lifted over a water pond. This building will be visually divided by two vertical elements while creating an opening for the users to continue their journey through the workshop's main corridor. These vertical elements will also serve as a fountain for the water mirror. In addition, a supplier's door will be opened between San Francisco street and Domingo Arenas street. This access will be controlled with a gatekeeper cabin made out of traditional tapia. The north side of the orchard will be used by the Agriculture workshop. In this new orchard area, the students will learn the skills needed to plant trees and crops from the region such as corn, tejacote, apple, and peach. Once, after they learn the basic skills in the school's orchard, they will continue their course helping the various local producers.

Through the supplier's corridor, an access to the bungalow area will be placed. The bungalow area is destined for the construction and carpentry workshop students to learn the basic skills of building with tapias. The noble and sustainable tapia technique allows today's builders to construct contemporary designs. The student will be able to build their own bungalow designs. Once the Bungalows are built, they can be rented for tourists who seek an unparalleled experience, different from a traditional hotel room. At the end of the workshop year, the bungalows can be dismantled and the same materials can be reused by the next generation of students.

A public entrance on Constitucion Street is opened to provide public access to the botanical garden and the bungalows. This access incorporates a ramp and stairs leading to a small patio delimited by a water element;

this allows control the access to the site without obstructing the view to the wonderful monastery and the new elements which integrate it. A small one-floor complex is placed on the left side of the access to provide the users with the following services: ticket office, restrooms, and an office. This complex will be built following the same premises of the new annex. Laying the common brick in a way to create a skin-like composition allowing an interplay of positive and negative volumes.



IMAGE 48 BOTANICAL GARDEN OAXACA MONASTERY

The botanical garden is organized in a grid inspired by an abstract hybridization of pre-Hispanic and Christian symbols. This grid allows placing the greenery creating different moments for the users to appreciate the mystical composition of the botanical garden. The design and garden maintenance work will be in charge of the floriculture workshop students as well as for the rest of the gardens of the monastery. The botanical garden incorporates a new multipurpose open atrium able to host different socio-cultural activities.

In addition, the necessary safety requirements for the proposal are contemplated, such as signage inside the building, location of fire extinguishers, and the incorporation of an emergency stairway. Each of the adaptations and extensions proposed for the Calpan workshop school project seeks to fit in respectfully with the existing structure, seeking a dialogue between the old and the new. This respectful dialogue is achieved not only through the reversibility of the proposed elements, but also, through the spatial quality of the new interventions that contribute to their meaning and use, without detracting the value of the monastery.





## VIII. FINAL OVERVIEW

This research aimed to identify the best program to reactivate the monastery of San Andrés Calpan by means of a functional and highly emotional adaptive reuse project; a workshop school tailored to provide young people with training on traditional skills. Thanks to this practical training they can incorporate to the labor market.

The methodology considered for this research helped to successfully achieve and develop an integral project that responds effectively to its physical and social context. Based on a complete contextual analysis of the site, it could be concluded that the monastery is located in a strategic area and embodies a strong historical background. These characteristics helped to shape the concept and design of my project. Just by the fact that the monastery is placed in the main block of the municipality it plays an important role. It provides an easy access for the users while providing services and facilities in its immediate surrounding. This offers an ideal context for developing the architectural project.

The important historical role that Calpan played during the Spanish conquest under the lead of Hernan Cortés offered an interesting and multifaceted context. This historical role has been enriched by the religious importance that the XVI century monastery has had for the Franciscan order through which it became the nucleus of knowledge of Calpan. As a reference to the historical heritage the development of the concept was aimed to bring back its importance by reinterpreting the value of the building being a physical place representing the Franciscan order principles of teaching disciplines in order to overcome social disparities.

Since Calpan is a municipality which faces underdevelopment and lack of jobs which is the main reason for its citizens to migrate mainly to the United States of America the social context led to the problem statement for this thesis. Inspired by the Franciscan order principles the problem of social disparities has been approached by an effective design program of reusing the Franciscan monastery which contemplates the Workshop school to offer the most adequate solution.

The idea of incorporating a traditional agriculture workshop integrated by fruticulture and floriculture was based on the local main economic activity of temporal agriculture. Calpan's environmental and geographical conditions offer a fertile ground and promotes the growth of fruits and flowers. The new program destines an area for the students of the fruticulture workshop to grow and harvest the local fruit trees. A botanical garden is integrated to offer the students of the floriculture workshop an ideal condition to practice. To open the botanical garden to the public a new access is strategically placed on the south façade of the orchard.

Identifying the deteriorated traditional houses in Calpan which are made out of tapia has led to the incorporation of the construction workshop. The workshops have found their place in the orchard where students are taught in a learning-by-doing method. By integrating the construction workshop of tapias together with the carpentry workshop in the school program, students can practice their new acquired skill by building bungalows made out of tapia with traditional and contemporary styles. Once built, these bungalows will be available to host tourists providing with a revenue to support the workshop school. This

way the traditional technique of building houses with tapias can be recovered and the deteriorated houses can be preserved. As an added value, restoring the tapia houses to its former conditions helps to improve the urban image. By adapting the roof of the monastery as a sight view area the carpentry students are provided with an area to build and assembly temporary wooden pavilions to offer the users of the terrace sitting and shadow areas.

Comprehending the main characteristics of the tapia houses and observing the local traditional brick industry proposed a further literature analysis on vernacular architecture. The use of this raw brick material as main character for the new annex and the workshops helped not only to create a dialogue with the raw stone material used on the historical building, but also to contribute to the local brick industry. Additionally, the incorporation of other local materials such as *black recinto* and *sabino wood* reduces the embodied energy involved in the construction process.

A detailed literature analysis derived in a custom-made project thanks to the proper assimilation of the concept of adaptive reuse. To complement this concept, and due to the listed monument status of the building by UNESCO, a reversible strategy was approached. Instead of thinking about this condition as a limitation it was approached as an opportunity to develop a project which incorporates some elements that allow a flexible reconfiguration of its internal spaces according to the current and future user needs.

To sum up, the modern translation of Franciscan principles has been approached by the recovery of the cultural and historical heritage through a series of strategic architectural interventions, and by the introduction of an integral program, which aims to provide qualitative training on traditional skills as well as social integration. As a result, this project contributes to create a promising future for disadvantaged people. Therefore, adaptive reuse is the ideal approach to reactivate the Franciscan monastery of San Andrés Calpan as nucleus of the community. Through the course of time the monastery of Calpan experienced several modifications and reconfigurations, this project is tailored to add a new chapter to it.



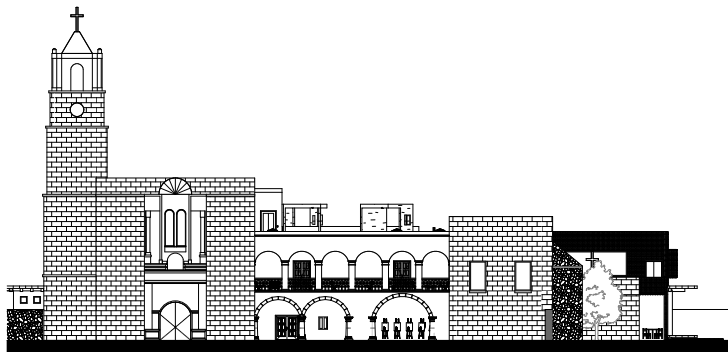
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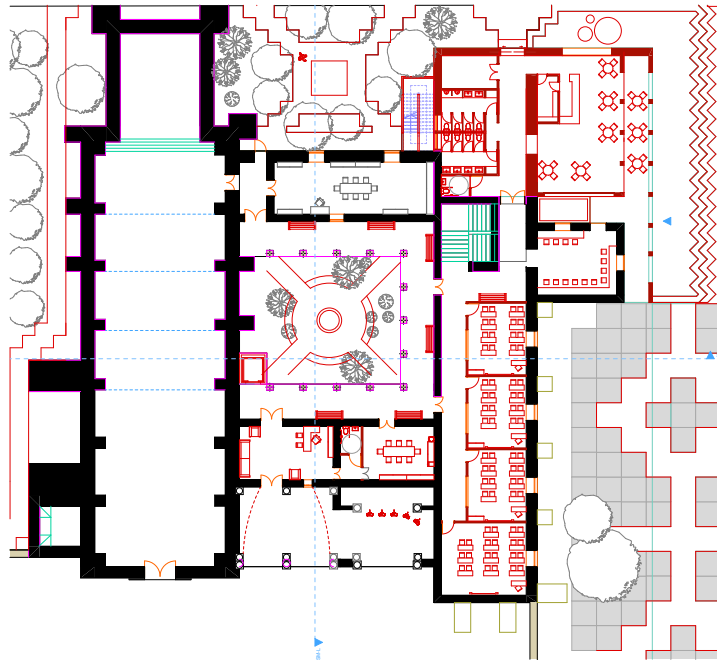
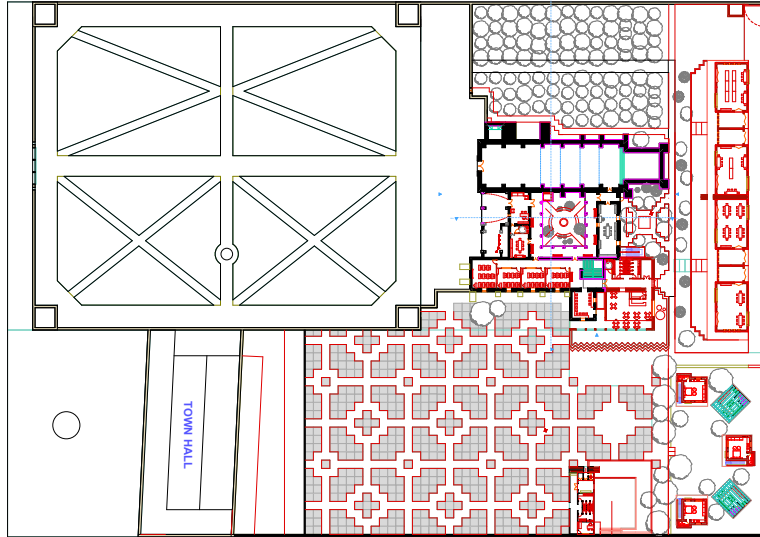
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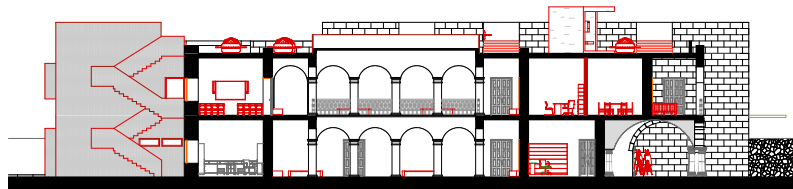
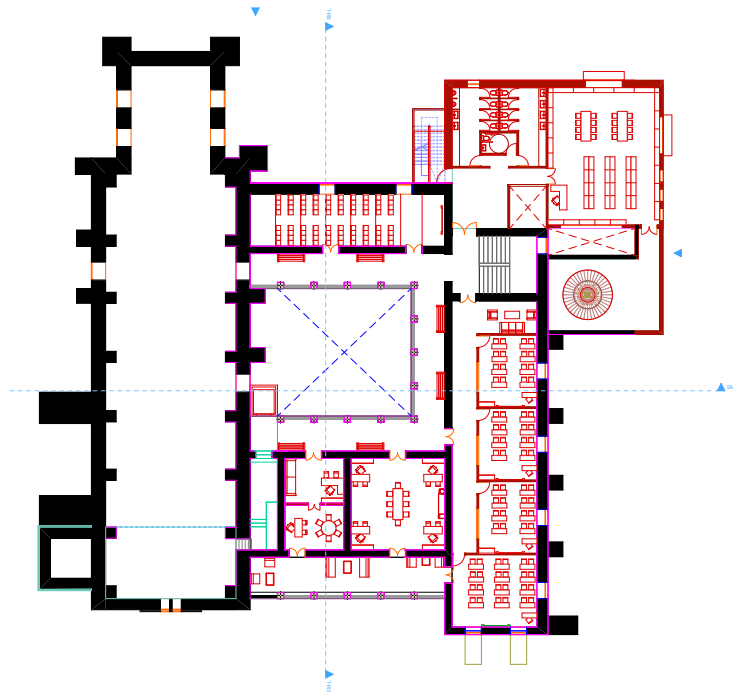
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M West Elevation (1)

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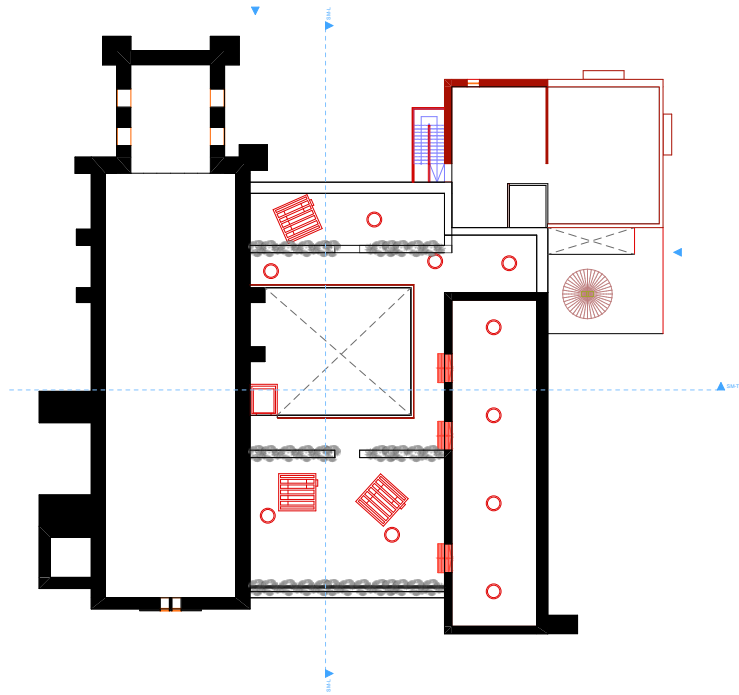


SM-L

Longitudinal Section (1)

1:200





2.

Story (2)

1:250

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## X. IMAGES, FIGURES AND PLANS REFERENCES

IMAGE 1:

Retrieved from: <https://i.pinimg.com/originals/62/be/4d/62be4d2a5577f49dc762f5f828c66d96.jpg>

FIGURE 1:

Produced by: Frederick Fink Pacheco

IMAGE 2:

Retrieved from: <https://www.google.com/imgres?imgurl=https://sxx1.b-cdn.net/csz/news/800/2013/backdroppedb.jpg&imgrefurl=https://phys.org/news/2013-05-mexican-volcano-rumbles-residents.html&tbnid=FmKJLq9BvIONjM&vet=1&docid=x68HojQo3vIr1M&w=500&h=336&itg=1&q=agricultura+calpan+popocatepl&source=sh/x/im>

IMAGE 3:

Produced by: Frederick Fink Pacheco

IMAGE 4:

*Spanish conquest route*-Retrieved from:

[https://www.google.com/imgres?imgurl=https://www.thoughtco.com/thmb/WGtj6KYNV8Jrb9v\\_wd4\\_gCqUabc%3D/768x0/filters:no\\_upscale\(\):max\\_bytes\(150000\):strip\\_icc\(\)/GettyImages-101683494-5b928684c9e77c008285ae5e.jpg&imgrefurl=https://www.thoughtco.com/consequences-of-the-conquest-of-aztecs-2136519&tbnid=aVJb3sTrzgw5aM&vet=1&docid=pduT810DZjsMEM&w=768&h=512&q=Spanish+conquest&source=sh/x/im](https://www.google.com/imgres?imgurl=https://www.thoughtco.com/thmb/WGtj6KYNV8Jrb9v_wd4_gCqUabc%3D/768x0/filters:no_upscale():max_bytes(150000):strip_icc()/GettyImages-101683494-5b928684c9e77c008285ae5e.jpg&imgrefurl=https://www.thoughtco.com/consequences-of-the-conquest-of-aztecs-2136519&tbnid=aVJb3sTrzgw5aM&vet=1&docid=pduT810DZjsMEM&w=768&h=512&q=Spanish+conquest&source=sh/x/im)

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*Construction of Posa chapel*-Taken by: Frederick Fink Pacheco

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*Cataloged as world heritage by UNESCO*-Taken by: Frederick Fink Pacheco

*Partial reconstruction and restoration after earthquake*-Taken by: Frederick Fink Pacheco

IMAGE 5:

Retrieved from: <https://www.ricsh.org.mx/index.php/RICSH/article/view/22/82>

IMAGE6:

Retrieved from: Sergio, R. S. (2016). *El mestizaje en la arquitectura mendicante del siglo XVI en México. Lo europeo y lo precolombino en los conventos de Cuilapan, Huejotzingo y Actopán*. Universidad Politécnica de Madrid, Spain, Madrid.

IMAGE 7:



Produced by: Frederick Fink Pacheco

PLAN 1:

Produced by: Frederick Fink Pacheco

FIGURE 2:

Retrieved from: [https://www.researchgate.net/figure/Conceptual-diagrams-of-vernacular-architecture-from-some-scholars-points-of-view\\_fig1\\_321137958](https://www.researchgate.net/figure/Conceptual-diagrams-of-vernacular-architecture-from-some-scholars-points-of-view_fig1_321137958)

Figure 3:

Retrieved from: <http://moss-design.com/brick/>

Figure 4:

Retrieved from: [https://en.wikipedia.org/wiki/Mortar\\_joint](https://en.wikipedia.org/wiki/Mortar_joint)

Figure 5:

Retrieved from: <http://moss-design.com/brick/>

FIGURE 6:

Retrieved from: <https://www.meta2020arquitectos.com/construccion-con-tierra/>

FIGURE7:

Retrieved from: <https://www.meta2020arquitectos.com/construccion-con-tierra/>

IMAGE 8:

Retrieved from: <http://robhutcharch.com/luis-barragan-buildings/qwdkt0ln9barxxv8av024tozgc88mr>

IMAGE 9:

Retrieved from: <http://robhutcharch.com/luis-barragan-buildings/mjqgsxx516wirlzn18vo1mephtsi68>

IMAGE 10

Retrieved from: [https://www.dearchitect.nl/projecten/arc19-het-predikheren-restauratie-en-herbestemming-predikherenklooster-tot-stadsbibliotheek-korteknie-stuhlmacher-architecten-3?\\_ga=2.137790520.968263009.1589116364-327466115.1589116364](https://www.dearchitect.nl/projecten/arc19-het-predikheren-restauratie-en-herbestemming-predikherenklooster-tot-stadsbibliotheek-korteknie-stuhlmacher-architecten-3?_ga=2.137790520.968263009.1589116364-327466115.1589116364)

IMAGE 11:

Retrieved from: <https://www.arquitecturayempresa.es/noticia/rehabilitar-la-historia-una-biblioteca-en-malinas-de-korteknie-stuhlmacher-architecten>

IMAGE 12:

Retrieved from: <https://www.arquitecturayempresa.es/noticia/rehabilitar-la-historia-una-biblioteca-en-malinas-de-korteknie-stuhlmacher-architecten>

IMAGE 13:

Retrieved from: <https://www.arquitecturayempresa.es/noticia/rehabilitar-la-historia-una-biblioteca-en-malinas-de-korteknie-stuhlmacher-architecten>

IMAGE 14:

Retrieved from: <https://www.arquitecturayempresa.es/noticia/rehabilitar-la-historia-una-biblioteca-en-malinas-de-korteknie-stuhlmacher-architecten>

IMAGE 15:

Retrieved from: <https://www.arquitecturayempresa.es/noticia/rehabilitar-la-historia-una-biblioteca-en-malinas-de-korteknie-stuhlmacher-architecten>

IMAGE 16:

Retrieved from: <https://www.arquitecturayempresa.es/noticia/rehabilitar-la-historia-una-biblioteca-en-malinas-de-korteknie-stuhlmacher-architecten>

IMAGE 17:

Retrieved from:

[https://bciprod.azureedge.net/media/29152/mechelen\\_het\\_predikheren\\_public\\_library\\_be\\_003.jpg?mode=pad&width=1500&height=1000&bgcolor=ffffff&format=jpg&quality=85](https://bciprod.azureedge.net/media/29152/mechelen_het_predikheren_public_library_be_003.jpg?mode=pad&width=1500&height=1000&bgcolor=ffffff&format=jpg&quality=85)

IMAGE 18:

Retrieved from: <https://www.arquitecturayempresa.es/noticia/rehabilitar-la-historia-una-biblioteca-en-malinas-de-korteknie-stuhlmacher-architecten>

IMAGE 19:

Retrieved from: <https://www.arquitecturayempresa.es/noticia/rehabilitar-la-historia-una-biblioteca-en-malinas-de-korteknie-stuhlmacher-architecten>

IMAGE 20:

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IMAGE 21:

Retrieved from: <https://www.oostwegelcollection.nl/en/kruisherhotel-maastricht/>

IMAGE 22:

Retrieved from: <https://www.oostwegelcollection.nl/en/kruisherhotel-maastricht/>

IMAGE 23:

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IMAGE 24:

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IMAGE 25:

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IMAGE 26:

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IMAGE 27:

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IMAGE 28:

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IMAGE 29:

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IMAGE 30 -37:

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PLAN 2:

Retrieved from: <https://www.archdaily.com/431421/ptuj-performance-center-enota>

IMAGE 38:

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IMAGE 39:

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IMAGE 43

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IMAGE 44

Retrieved from: <https://www.archdaily.com/490539/national-design-centre-scda-architects>

IMAGE 45

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IMAGE 46:

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