

The Application of The Indigenization Technique in Modern Chinese Church Architecture

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Abstract. "Indigenization" is a process that presents a blend and adaptable feature by combining foreign elements with the local natural environment and cultural factors. Church buildings are the most tangible manifestation of the "indigenization" of Christianity. This paper discusses the application of indigenization techniques in modern Chinese Catholic church architecture from four aspects: layout, structure, materials, and decoration. In terms of layout, indigenization is reflected in space, plan, and orientation. The space mainly imitates traditional Western-style churches and simplifies with the simplification of function. In terms of plan form, the basic rectangular space is retained and combined with local architectural features to evolve into some new variants. Orientation, some churches have absorbed local building orientation patterns. In terms of structural indigenization, the main materials are stone, brick, and soil, and the building structure is mainly supported by load-bearing walls and wooden beams. In terms of material selection, indigenization techniques are mainly based on regional resource conditions and are combined with the characteristics of local residences and climate conditions. The choice of building materials is made by considering the availability, processing difficulty, and physical properties of materials. The application of decorative indigenization often borrows common decoration techniques from local residential buildings and combines them with traditional Chinese culture to create a unique Chinese and Western fusion style building, making the church better integrated into the local architectural community and accelerating local residents' acceptance of Catholicism.

Keywords: Architecture; Modern Chinese Catholic church; Catholicism; Indigenization.

1. Introduction

"Indigenization" is an important strategy of Western colonialism to penetrate the world, and it is also an inevitable trend for the survival and development of all religions. After 1840, the signing of a series of unequal treaties by Western countries greatly facilitated the penetration of Western thought and culture into China, resulting in several modern architecture with both Chinese and Western styles. In this context, a number of modern buildings with both Chinese and Western styles were produced.

As one of the important categories of modern architecture, church architecture is an important carrier of religious culture and the most concrete embodiment of the "indigenization" of the Christian religion. As the main force of the invasion of Western thought, the Christian religion was fiercely resisted by different classes in China at different times, forcing it to adopt the strategy of "indigenization" to promote its better acceptance in different places. As one of the major Christian religious denominations, the Catholic Church has used indigenization strategies in China in many ways, such as translating religious doctrines into local languages, training local clergy, and building churches based on local architecture and culture [1] As a result, a number of Catholic churches with a combination of Chinese and Western styles were left behind, such as the Dali Catholic Church in Yunnan, the North Catholic Church in Guiyang, Guizhou, and the Changting Catholic Church in Fujian, with both Western architectural styles and local architectural characteristics.

This paper discusses the use of indigenized techniques in four aspects of modern Chinese Catholic church architecture: layout, structure, materials, and decoration.

2. The development and "indigenization" background of Chinese churches

2.1. History of Chinese churches

When missionaries first entered China, they established churches themselves without thinking about what kind of church to build. From 1583 to 1720, Jesuits such as Michele Ruggieri and Matteo Ricci preached in China in a unique way to adapt to Chinese culture. They used Chinese culture to illustrate Catholicism and Catholic etiquette, actively absorbed some Confucian cultural ideas, and paid attention to making friends with the upper class of society. Only then did Catholicism really begin to develop in China.

From 1721 to 1845, following the controversy over whether traditional Chinese etiquette violated the Catholic doctrine, Emperor Kangxi of the Qing Dynasty issued the instruction to ban religion in 1721. During this period, Catholicism showed three characteristics: the basic nature of missionary work, the independence of teaching and the openness of ritual. Later, due to various reasons, the "century-old ban on religion" occurred. The Society of Jesus unified its internal thinking and established the idea that "missionary work in China should be adapted to Chinese culture".

Between 1846 and 1918, Emperor Daoguang lifted the ban on missionary work in 1846. With the outbreak of the Opium War, the number of religious believers increased rapidly. Because the image of "western religion" was deeply branded in people's minds, the process of Catholic indigenization was slow in this period.

From 1919 to 1948, the Catholic Church actively promoted the process of indigenization in China in order to match and adapt to the Chinese new culture movement. Measures such as the establishment of dioceses, the convening of bishops' conferences, the construction of Chinese-style churches, and the training of Chinese priests and nuns all accelerated the process of indigenization.

From 1949 to 1958, at the beginning of the founding of New China, foreign missionaries were withdrawn from the mainland, and China realized political, economic, and church affairs independence. Since then, all dioceses on the mainland have been managed by national clergy [2].

2.2. "Indigenization" background

Chinese modern churches have begun to transform from the early western church style to a Chinese-Western style church that integrates traditional Chinese architectural culture in terms of layout, materials, decoration, and functions. It has the characteristics of Chinese and indigenization. For example, the Dali Catholic Church, as the main church of the Dali Autonomous Region established by the Holy See, adopts the traditional Chinese courtyard layout. In addition, the Zhengding Catholic Church, located in Shijiazhuang, Hebei Province, adopts the folding eaves and tiles commonly used in traditional Chinese houses. Furthermore, Guiyang North Catholic Church uses the traditional local archway as the main facade of the church and is carved with flowers, birds, landscapes, and other patterns rich in Chinese national art.

3. Indigenization of churches in modern China

3.1. Indigenization of Layout

Compared to the laws of western church location and layout, there are certain changes in church location and layout due to the influence of different geographical and social environments. The use of indigenization techniques is mainly reflected in the site selection, orientation, plan and spatial layout.

The Catholic churches are generally located in small towns and villages in the far East. Some refer to the principles of local architecture to better adapt to the local architectural environment and to

follow the architectural guidelines. This helps the churches follow architectural guidelines and avoid appearing "alien." For example, the Dali Catholic Church is located in a flat area with a street and alley and has a courtyard layout, with the chapel inside, reducing its prominence. Changting Catholic is located at Changting County, Longyan City, Fujian Province. It adopts a decentralized courtyard layout, with the priest's building located in the southeast corner of the church, to the left of the entrance gate of the Catholic Church, and the nun's building set in the northwest of the church, weakening the overall sense of volume of the chapel in the building complex.

In terms of the plan, the Basilica three-temple plan form is the most dominant in Chinese Catholic churches, on top of which rectangular and Latin cross forms are dominant. Compared to the simpler rectangular plan, the Latin cross-plan layout has more cross-hall space. Both Dali Catholic Church and Guiyang North Catholic Church adopted the rectangular plan form and were built in the same southwest region and under the auspices of the same church, with Guiyang North being built approximately 50 years before Dali. Both show certain similarities, such as a tower-style bell tower above the building. The plan of Changting Catholic Church, located in the southeast coastal area, is relatively more complex, featuring an overall Latin cross and a hierarchical entrance with in-and-out design elements (Fig. 1).

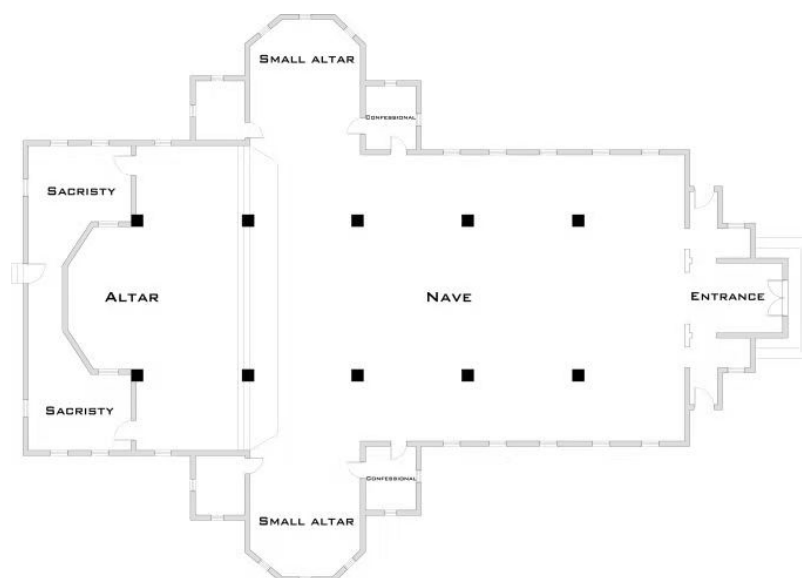


Fig. 1 Plan of Changting Catholic Church

The spatial layout follows the principle of the service function. Due to the constraints of various conditions, most church spaces are simplified with the function, while some variants are produced by combining with local characteristics. The interior space of many Catholic churches in modern China is relatively simple and is mainly divided horizontally into three parts by difference in the height: the nave and the side corridors on both sides. The difference in height is mainly reflected in the ceiling. The lower space for human activities is not divided except for the structural pillars, forming a more transparent rectangular space. The overall layout of the interior space is greatly simplified from the traditional Western Basilica church space (Fig. 2). The entrance of the chapel of Dali Catholic Church incorporates the local temple architecture, with a front porch that has three openings and is higher in the middle and lower on both sides. The gray space under the front porch forms a division point between indoor and outdoor space. Compared with the foyer of the Basilica church, this spatial transition is much weaker and mainly serves a formal role. The bell tower is a unique feature that highlights the indigenization of space with its traditional architectural form.



Fig. 2 Interior space of (a) Dali Catholic Church, (b) Guiyang North Catholic Church, (c) Changting Catholic Church

The orientation of Catholic churches has been a subject of debate. One argument is that Catholic churches should face the direction of the Vatican, and this has resulted in differing orientations in some churches in the East and West. The other argument is that the altar should face the East, following the rising sun, and the door at the other end should naturally be set in the West, which aligns with the common choice of the orientation of traditional European churches. Both orientations were influenced by geography and religion. However, in modern times, as colonialism continued to expand eastward, local customs and architecture have also played a role in determining the orientation of the churches. Some churches strictly follow the traditional Western Catholic church orientation pattern, with the chapel sitting east to west, such as Dali Catholic Church and Guiyang North Catholic Church, although the location of the main door may differ. Changting Tianzhu Hall sits in the northwest and faces southeast, and the orientation of the building is fully based on the local residential orientation pattern, with the influence of the geographical environment dominating.

3.2. Structure indigenization

For the indigenization of the modern church, due to the limitation of local construction technology and church construction fund, there were three main structural types: the traditional civil structure, western brick and wood structure, and modern reinforced concrete structure, presenting the integration of Chinese and western. Traditional civil structures and western brick and wood structures are modern churches most commonly used structural forms. Modern building materials and techniques, such as reinforced (bone) concrete structures, were applied to modern churches in coastal areas and some inland areas after 1900.

At present, there are three types of structures in modern Chinese Catholic churches. First is the civil structural system supported by load-bearing walls, columns and wooden beams of local characteristic materials. Second is the stone and wood structural system supported by local stone and wood. Third is brick and wood structure system similar to western Catholic church buildings.

3.2.1 Civil Structure

The Catholic Church in modern China mainly consists of civil structures. Due to the low level of production technology at that time, the materials for civil structures were easily obtained all over the country and were widely used. For example, the main church and the priest building in Changting Catholic Church use civil structures [3]. Additionally, the wall of Changting Catholic Church uses the rammed earth wall of Hakka tulou in western Fujian. The rammed earth wall is used as the main bearing and retaining component, and raw earth as the main building material is mixed with fine sand, lime, sticky rice, brown sugar, bamboo slices, wood strips, etc., which is constructed by artificial repeated compaction and ramming. The roof is covered with fire tile, which is durable and does not damage (Fig. 3), which is an indigenized structure with strong local characteristics.

In addition to the rammed earth-bearing walls, wood also plays an important structural role in Changting Catholic Church. The roof of the whole church is a traditional wooden frame structure, and the nave is a three-gallery type with high side windows for increased lighting. The nave and the corridors are made of European wooden shamrock hammer roof structure, and the upper ceiling is a circular arc wooden slat. The bell tower, located in the center of the entrance, is the commanding

point of the entire church building, with a multi-story traditional wooden frame structure and a roof covered with three eaves. The top floor is built in the mountain's indigenized form of four corners [3].



Fig. 3 Rammed earth wall of Changting Catholic Church

3.2.2 Stone and wood structure

In modern China, due to the limitation of technology and transportation, local stone and wood were often used to build churches with local stone and wood structures. For example, Dali Catholic Church completely adopts the local stone and wood structure form to build the Basilica three-temple rectangular chapel. The main part, in the form of column network, is more suitable for the construction of a chapel with large transparent space, compared with the pipe type (Fig. 4). However, compared with most of the early Catholic churches built in the southwest, Dali Catholic Church's high Windows are very difficult to achieve in accordance with the traditional structure, reflecting an important breakthrough in construction technology [4]. In traditional Gothic churches in the West, high Windows are one of the most important elements, and their main function is to make up for the lack of lighting in the towering space. However, when the church was built in a remote area of southwest China, it was difficult to achieve the high window setting only relying on local materials and technology. First of all, the whole roof truss structure needs to be divided into two layers to obtain a higher longitudinal hall space and form a window at the height difference between the two floors of roof truss. Secondly, appropriate materials, especially a large number of load-bearing wood columns, are needed to achieve this form, which is completely dependent on local materials and technologies.



Fig. 4 Old photo of Dali Cathedral construction

3.2.3 Brick and wood structure

Chinese modern Catholic church buildings were built according to local conditions and combined with local traditional building materials. In mainland China, Western Catholic church buildings were mainly built with similar brick and wood structures. For example, before 2004, the North Catholic Church of Guiyang was mainly made of brick and wood, with wood frame inside and brick exterior. However, after the reconstruction in 2004, the internal frame was changed into steel frame, and the rest of the brick parts changed little, and the original degree of indigenization was partially damaged and affected. The roof of Guiyang North Church is a combination of western roof truss and traditional

Chinese roofing practices. Composite roof truss stiffly pieced together three-span pointed arch, showing the influence of Gothic church style; Since there was no Chinese transverse tiebeam or Western-style flying tickler under the beam, the roof truss could not form a stable stress system, which reflected the ignorance of the Chinese craftsmen at that time about the external structural system, and they only made simple imitation from the surface modeling [5]. The North Catholic Church of Guiyang is mainly in the shape of a Gothic church. The three-span open hall is high in the middle and low on both sides. Each span is a Gothic spire. The clock tower is made of pure wood, hexagonal in plan, with a large door in the center, which is also pointed in the Gothic style and has round stained-glass Windows. Four-fold green tile with a pointed roof and a cross on top (Fig. 5) [6].



Fig. 5 Bell Tower of Guiyang North Catholic Church

3.3. Material Indigenization

Chinese traditional building materials mainly include soil, wood, brick, and stone, and the materials selected for building houses are usually selected according to local geographical conditions and resource types.

In the north of China, brick and wood are mainly used to build houses. Among them, brick is mostly used for building walls and load-bearing structures, and wood is mostly used for building roofs as beam frame structures. For example, Zhengding Catholic Church in Hebei Province uses mainly brick and wood as building materials. Hebei Province has a typical northern climate: cold in winter and hot in summer. The external wall of Zhengding Catholic Church is made of thick bricks and stones to resist the severe cold and windy weather (Fig. 6). In addition, the choice of brick as the main material is due to the abundant stone resources in the Taihang Mountain region, the convenient transportation of materials, and the mature manufacturing technology for brick in the area [7].



Fig. 6 Application of brick and stone in Zhengding Catholic Church

The materials used for buildings in the Yunnan-Guizhou Plateau in the southwest of China are chosen for their ability to handle the large annual rainfall, the number of rainy days, and the relative humidity. Because the sedimentary rock in the Yunnan-Guizhou area has good impermeability, people usually choose rock as the material to build the wall base and dado and effectively prevent the

erosion of rainwater to enhance the durability of the external enclosure components to achieve the moisture-proof effect [8]. For example, both Dali Catholic Church and Guiyang North Catholic Church use these materials in their local buildings. They use wood as the main structural framework, and stone as the form of building walls and roofs. However, there are certain differences in the way they handle materials. The wall of the Dali Catholic Church is a regular square made of polished stones (Fig. 7). The stones are piled up perfectly, then plastered with white lime, and the marble-carved Roman columns, column bases, and other decorative elements are used in the church, showing a distinctive Bai architectural style as a whole. However, Guiyang North Catholic Church uses locally fired blue bricks to stack the walls (Fig. 5), and the column foundation is simply made of blue stone, without too much decoration.



Fig. 7 Stone application of Dali Catholic Church

Changting Catholic Church, although located in southern China, is different from Dali Catholic Church and Guiyang North Catholic Church in material selection. It mainly uses clay and wood as materials. The reason is mainly that Fujian Province is one of the main forest areas in China, with abundant wood resources and rich local clay resources. Moreover, due to the influence of Hakka earth buildings in western Fujian, its walls are mainly made of rammed earth walls of soil structure (Fig. 3), making full use of clay resources and reflecting the local ethnic characteristics.

3.4. Decorative indigenous

In modern churches, decorative indigenous can be divided into three categories: ethnic, local, and cultural.

The indigenous ethnicity is expressed in the inclusion of distinctive decorations in modern churches that are in keeping with local ethnic characteristics. The Dali Catholic Church is influenced by the traditional decoration of the Bai people (One of China's ethnic minorities), known for their decorative wood carvings. This is mainly because the Dali Catholic Church is located in a city with a multi-ethnic population, and its architectural decoration incorporates many unique aesthetics from ethnic minorities. The Guiyang North Catholic Church, on the other hand, has a Han Chinese influence. Its Memorial Archway is the most local part of the building, with a Chinese roof in the centre, a ridge covered in flowers and birds, and fine clay sculptures of kissing animals. The main ridge has two symmetrical clay dragons containing auspicious clouds, and the cornices are decorated with turtle fishing and treasure vases. The main facade is decorated with colourful relief carvings in the Chinese folk-art style, featuring traditional Chinese landscapes and flowers and birds. The main colour is blue, which is commonly used in the decoration of local folk houses (Fig. 8).



Fig. 8 The Guiyang North Catholic Church Memorial Archway

The indigenous is reflected in the use of common local decorative forms in the church, considering local materials and aesthetics. For example, the use of the "stacked eaves" structure, commonly found among northern dwellers, can be seen in the design of the eaves of the Zhengding Catholic Church. This helps to enrich the details of the walls, add layers, and increase their aesthetic appeal [9]. In terms of appearance, the eaves of Zhengding Catholic Church were made of 'diamond-edged eaves' (Fig. 9). The structure is made up of two layers of square bricks stacked in sequence, a multi-layered form often seen in the 'diamond-edged composite eaves'. In addition, the window forms of the Zhengding Catholic Church make use of the wooden comb-back structure and stacked eaves that can be found in the surrounding houses, highlighting the local materials and aesthetics.

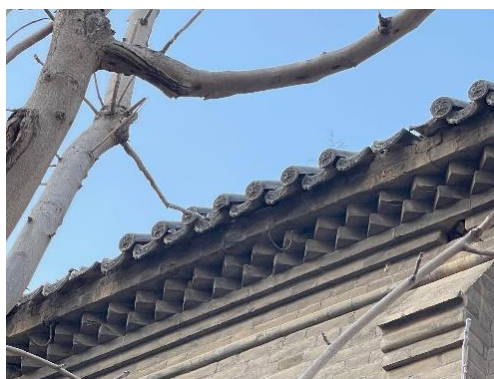


Fig. 9 The stacked eaves and tiles of the ZhengDing Catholic Church

The interior of Changting Catholic Church is particularly notable for the use of local specialists and materials. The interior ceiling of Changting Catholic Church is decorated with traditional wood carvings, including Chinese and Western decorations. The Changting Catholic Church has chosen local traditional decorative motifs representing auspiciousness, with the roof decorated with a pentagonal flat roof made of timber. The window frames, sashes, and doors are made of Minnan (southern Fujian) granite and traditional timber. For the western decoration, the local cedar wood material is used to carve the Trinity of Father, Son and Holy Spirit as the representative western Catholic decoration on the entrance door lintel.

The cultural aspects include special motifs representing traditional Chinese culture and decorative structures. In the case of the Zhengding Catholic Church, the tiles are the 'protective umbrella' of the building, consisting of barrel tiles, slate tiles and DiShui (One end has a drooping edge, slightly triangular shape, and is built with tiles placed on the cornice). As well as playing a decorative role,

the special motifs carved on the surface of the tiles have special ideas and symbolic meanings for the builder, such as vivid images of animals and divine beasts and ancient text patterns [10]. For example, the tiles of the Zhengding Catholic Church of Gods and Goddesses are beautifully carved with divine beasts (Fig. 9), and the round tiles are carved with the traditional Chinese animal image of the tiger. The tiger is considered the king of all animals in traditional Chinese culture, representing majesty and power [11].

In addition, some churches have indigenous decorations such as couplets and banners. For example, the North Catholic Church in Guiyang has three vermilion gates below the Memorial Archway, with traditional Chinese stone couplets and banners on both sides (Fig. 8).

4. Conclusion

This paper examines the integration of indigenous techniques into modern Chinese Catholic church architecture focusing on four aspects: layout, structure, materials, and decoration.

The indigenous approach is reflected in the layout in three main aspects: space, plan and orientation. The space is simplified in line with the simplification of function, imitating the traditional Western-style church, but with a weakened sense of space due to the limitations of scale and structure. Regarding plan form, the basic rectangular space is retained with some new variants that incorporate local architectural features. In terms of orientation, some churches have incorporated the local architectural orientation rules and abandoned the inherent choice of orientation in the religious sense.

In terms of structural indigenous, the materials used are mainly stone, brick and earth, and the structure of the building is based on load-bearing walls with wooden beams. The construction of stone arches requires a high level of skill, depending on the local materials and the skills and habits of the craftsmen. The material expression of the structure and materials is less likely to correspond to the theological significance of the religion, influenced instead by traditional Chinese architecture, which is more concerned with meeting functional needs than artistic pursuits.

The indigenization technique for material selection is based on the region's resources and considers the characteristics of the local dwellings and the climate. It considers the availability, ease of processing and physical properties of materials.

The use of indigenization decoration in modern Chinese churches often draws on common decorative techniques found in ordinary local dwellings and reflects traditional Chinese culture, such as the structure of the eaves, the patterns of sacred animals on the surface of the tiles, local materials and traditional couplets and banners. The result is a unique blend of Chinese and Western architecture, which allows the church to be better integrated into the local architectural community and accelerates the acceptance of Catholicism by the local population.

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