
Characteristic Analysis of Spatial Layout of Labuleng Temple in Gannan Area

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Abstract:

Based on the surveying and mapping data of Labuleng Temple. On the premise of field research, this paper systematically combs, analyzes and illustrates the spatial planning and layout of Labuleng Temple. On this basis, the paper analyzes the spatial characteristics of the main functional areas of the temple. In addition, from the two aspects of road grade and road morphological characteristics, this paper studies and analyzes the temple road structure system. Finally, the specific methods and characteristics of the spatial layout and planning of Labuleng Temple are summarized.

Keywords: Labuleng Temple, Spatial planning, Road structure, Functional zoning.

I. INTRODUCTION

Labuleng Temple is located in Xiahe County of Gannan Tibetan Autonomous Prefecture (Abbreviation: "Gannan area") in Gansu Province (Fig 1). In 1708, that is, during the reign of Emperor Kangxi of Qing Dynasty, Labuleng Temple was built by the support of Mongolian nobles. It already has a history of more than 300 years. Gannan area is located in the southwest of Gansu Province, with prominent geographical advantages. It connects the Qinghai-Tibet Plateau in the southwest, Sichuan Basin in the southeast, the Hexi Corridor in the northwest, the Loess Plateau in the northeast, and the central Shaanxi plain by acrossing Long Mountain. Since ancient times, Gannan area is not only the intersection of Han, Mongolian and Tibetan national culture, but also the object of the ancient forces [1]. Geographically and historically, Gannan area connects Sichuan province and Qinghai province (Fig 1). It was once the main

area of Henan part of the Silk Road, an important connecting channel between the Grassland Silk Road and the Southern Silk Road, and also plays an important role in the history of cultural exchanges on the Silk Road.

Due to the particularity of the integration of politics and religion, the Tibetan Buddhist Temple Group headed by Labuleng Temple before the democratic reform was the actual controller of politics, economy, culture and military in Gannan area [2]. The construction, form layout and spatial structure of the temple are not achieved overnight, but developed dynamically for hundreds of years. From the first Jiamuyang period, the architecture, space and pattern of the temple were deeply influenced by different political, economic and cultural backgrounds in different periods. Until the founding of the People's Republic of China, the system of political and religious integration completely collapsed. In 1982, Labuleng Temple was listed as the second batch of national key cultural relics protection units, which means that the transition from dynamic development to static protection has been completed in the temple architecture, spatial layout and morphological structure.

With the formulation and implementation of the national "Silk Road Economic Belt", Gansu, as an important part of the "Silk Road Economic Belt", puts forward the idea of building "Greater Lanzhou Metropolitan Economic Zone", which takes Gannan area as an important part, that is means unprecedented opportunities and challenges for Gannan area [3]. Challenges and opportunities coexist, "Silk Road Economic Belt" is not only a strategy of regional economic and trade cooperation and development, but also a strategy of regional cultural protection and rejuvenation. How to protect national heritage and culture while developing economy and trade has become an urgent issue. This is also the significance and original intention of studying the spatial planning and layout of Labuleng Temple.



Fig 1: Real scene and location map of Labrang Temple

II. PROTECTION STATUS AND RESEARCH SITUATION

Labuleng Temple is the six main temples of Gelug Sect of Tibetan Buddhism. Although relevant research is not rare, but from the perspective of architecture, the research on synchronic dimension of Labuleng Temple is not comprehensive. At present, most of the researches focus on the classification and combination of architectural space, site selection or landscape space of the temple, rarely involving the temple layout mode, functional zoning and road structure system etc. From the overall preservation status of Labuleng Temple, the spatial form and architectural style of the temple are well preserved. The overall spatial layout, road pattern, landscape spatial relationship and functional zoning of the temple have been well protected and continued, which has high research value.

In fact, the functional space layout of Labuleng Temple is not only the full use of terrain, but also the full expression of religious and cultural connotation. For example, the road structure with distinct primary and secondary and various forms reflects the obvious characteristics of the dualistic spatial cultural structure of “The Truth Life’-’The Buddha world’”. Besides, the centripetal and hierarchical feature of Labuleng Temple special layout is the direct expression of the Buddhist Mandala culture in realities. (Fig 2)



Fig2:diagram of Mandala

Note: Mandala: called “dkylil vkhor” in Tibetan language

To some extent, the research of this paper fills in the theoretical blank of the temple space planning of Labuleng Temple, which provides new ideas and support for the protection and repair of the temple. Besides, it also provides a comparative reference for the study of other Tibetan Buddhist temples. Especially, in the context of the "one belt and one road" macro strategy, we can effectively protect the heritage treasure of the temple and preserve its heritage. Cultural connotation, to stimulate the potential influence of historical buildings, plays a positive role in promoting regional competitiveness and building national and cultural self-confidence.

III. FUNCTIONAL LAYOUT FEATURES

Labuleng Temple site behind the mountain, in front of the water, shaped like a conch. Daxia River in the South and mountains in the northwest, which define the space scope of the temple

naturally. On the whole, the terrain of the temple is higher in the northwest and lower in the southeast. (Fig 3).



Fig 3: Layout of Labuleng Temple

Labuleng Temple is the research object of the author's doctoral stage. From 2015 to now, a large number of data collection and field research work have been carried out for Labuleng Temple. With the support of the scientific research fund and the local cultural protection department, we have effectively sorted out and digitized the temple surveying and mapping drawings and collected documents. Through the analysis, it is found that the spatial form of Labuleng Temple is not formed in a day, and there are many conventional rules to follow in the long development process. According to the different religious functions undertaken by the functional areas, they are distributed on different altitudes: the lower terrain represents “the

truth life” with weak religious nature, and the higher terrain represents “The Buddha world” the sacred world. For example, the temple buildings dedicated to god and Buddha and chanting scriptures(It includes six college buildings and other Buddha Hall buildings) occupy the high places of the temple and are concentrated on the northwest highlands. In addition, there is the living Buddha's dormitory of Jiamuyang, the master of the temple. The monasteries for the daily life of ordinary monks are arranged in the northeast of the lowest temple. The layout of the temple space is the full expression of its religious connotation in vertical space, taking the Buddhist Mandala as the reference image, combined with the terrain and terrain.

3.1 Function Division of Labuleng Temple

The overall layout of the temple is based on the mountain, and the boundaries between the functional areas are not strict, but the vertical layout is carried out according to the principle that the terrain is high and the religious connotation is corresponding [4], which makes the overall Temple show the morphological characteristics of clear primary and secondary (Fig 4).

Through investigation and analysis, the spatial distribution of Labuleng Temple can be divided into sutra hall building area, buddha residential building area, central square area, monk residential building area, scripture debating area and the worship area. The overall layout of the temple is based on the mountain, and the boundaries between the functional areas are not strict [5]. However, the vertical layout is basically carried out according to the principle that the terrain level corresponds to the religious connotation, which makes the overall layout of the temple present the morphological characteristics of clear primary and secondary (Fig 4)

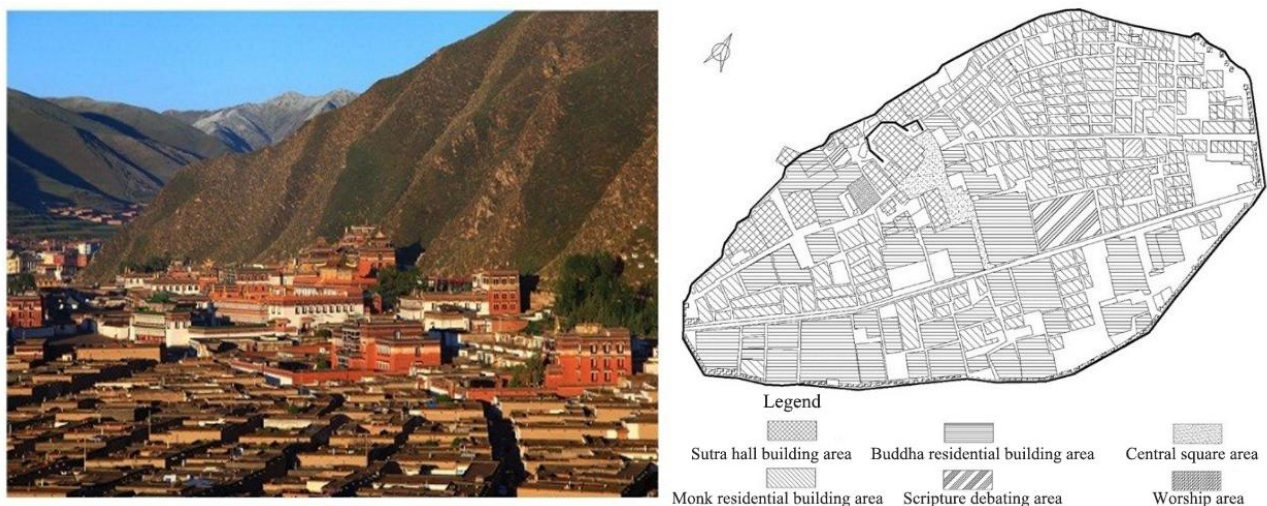


Fig 4: Schematic diagram of temple functional zoning

(1) Sutra Hall Building Area

Sutra hall building area is located in the northwest of the temple, occupying the highest terrain of the temple. Influenced by the layout mode of the core building group of Gelug Sect of Tibetan Buddhism [6]. The area mainly includes the six academy buildings and most of the Buddhist temple buildings, which undertake the teaching and administrative functions of the temple.

(2) Buddha residential building area

This area is mainly the living area of Buddhas, including the residential buildings of Jiamuyang Temple master and other Buddhas. The residential buildings of Jiamuyang living Buddha are located in the northwest of the temple. The rest of the Buddha's residential buildings are concentrated in the southwest and south of the temple. The main road leading to the county is divided into two parts: the South and the north. The edge of the southern area is connected with the corridor around the temple.

(3) Central square area

The central square of Labuleng Temple is mainly used for monks' assembly and annual Dharma meeting. It is located in the east of Wensi college building, the core building of the temple. It is one of the most important open spaces in the temple. The north side of the square is connected with the turning road outside Wensi College.

(4) Monk residential building area

This area adopts centralized layout, and is generally divided into two areas. A small number of them are located in the living Buddha residential area on the southwest side of the temple, while a large number are relatively independent and distributed in the northeast area of the temple. Through the central square and the road leading to the county, it is separated from the temple building area and living Buddha residential buildings.

(5) Scripture debate area

It is an important link for Tibetan Buddhist monks to understand Buddhist scriptures. In Labuleng Temple, there are two important places for debating scriptures: one is the debate square on the southwest side of Wensi College, the other is the one located in the construction area of monk's house in the northeast of the temple.

(6) Worship area

Under the influence of Tibetan Buddhist sutra conversion worship ceremony, the temple worship area is mainly used for believers to turn scriptures and worship. The worship area of Labuleng Temple mainly includes the circular prayer road around Wensi College and the circular worship corridor outside the temple.

3.2 Spatial Organization Principle of Functional Zoning

The functional division and layout of temples are deeply influenced by the temple hierarchy and religious culture. The Buddhist world outlook emphasizes the hierarchical order from "human" to "Buddha" [7], and holds that the center of the world is the Buddha world. Therefore, the temple space also reflects the vertical space structure from bottom to top, and has obvious "the true life" - "the Buddha world" space cultural structure characteristics. The order expression of temple spatial layout under the vertical spatial dimension is mainly based on the landform and landscape elements as the spatial boundary.

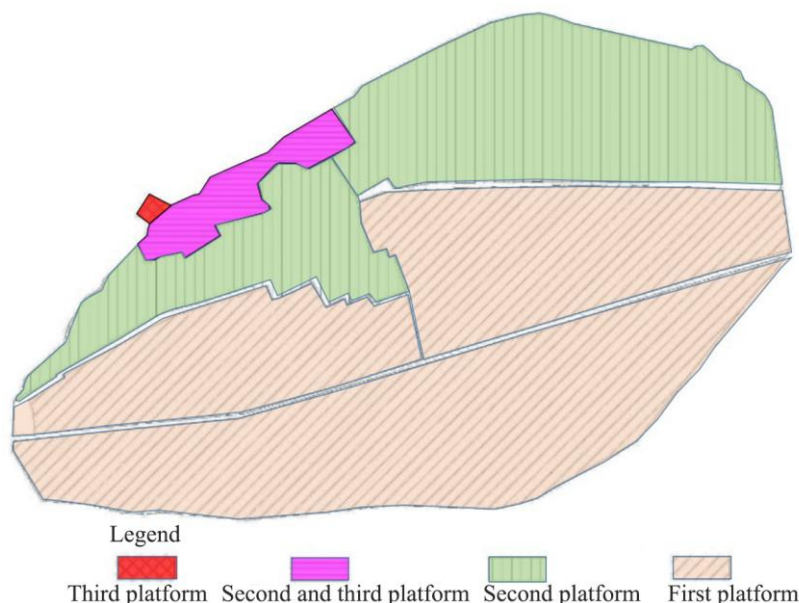


Fig 5: Topographic classification map of the temple

Labuleng Temple can be roughly divided into four levels according to the terrain elevation (Fig 5). Among them, the sacred space representing the "the Buddha world", such as the white umbrella covered Buddha Hall, the upper Buddha palace of Jiamuyang residential building, the Maitreya Buddha Hall, the Shabudan hall, the Xiaxubu College and the back hall of Wensi college, etc. These are all located in the northern part of the temple, and the terrain connecting

the second and third platform. Other important buildings of the temple, such as: the core building of the temple—Great sutra hall (Wensi College), Zongkaba Buddha hall, Shou'an temple, Shilun college, Xijin'gang college, Tibetan medical college, Baidumu Buddha hall, Green Tara Buddha hall and central square are all located on the second platform. The south of Buddha residential building area and monk residential building area are all located on the lowest platform, which is called the first platform [8].

(1) The residential buildings of Labuleng Temple are mainly distributed on the lowest platform. The volume of these buildings is low, and its homogeneous texture constitutes the bottom of the vertical sequence of temple space.

(2) The academy building is located on the second platform, which forms the middle layer of the vertical sequence of the temple space. Except for the lower part of the college, the other college buildings are located on the second platform, mainly for the following two reasons. Firstly, as the "the Buddha world" image of Buddhist culture, the sutra hall building belongs to the holy land space, and is located at the height of the temple terrain, which is the spatial embodiment of Buddhist world outlook and also Tibetan. Secondly, the higher three platforms and the joint zone of the second and third platforms in the temple are narrow and zonal distribution, which can't meet the basic requirements of the huge building volume for the construction land of Labuleng Temple.

(3) The Maitreya Temple, the Baisan'gai cover and the Jiamuyang residential building, which symbolize the residence of the Buddha, are located at the junction of the third level terrain and the second and third level terrain of the temple, which constitute the highest level of the vertical spatial sequence of the temple. Jiamuyang residential buildings, which symbolize the highest political and religious rights of the temple, are distributed in the same vertical space level as the highest level Buddhist temple buildings in the temple, indicating the absolute status of political and religious rights in the development of Labuleng Temple.

IV. ANALYSIS OF THE ROAD STRUCTURE OF LABULENG TEMPLE

4.1 The Types of Roads in Labuleng Temple

Under the influence of terrain elevation difference and religious order, the road form of Labuleng Temple has formed a specific type (Fig 6), which can be summarized into four types: radial type, regular type, irregular type and fishbone type.

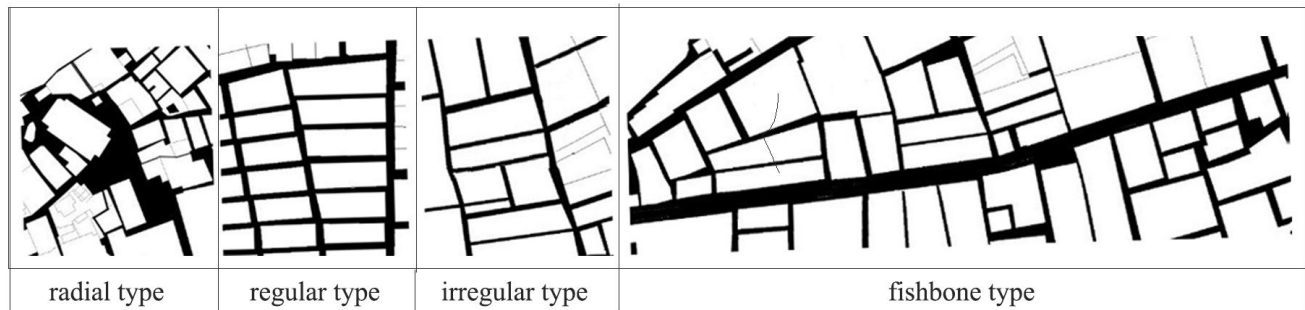


Fig 6: Road types of Labuleng Temple

(1) Radial type

The radial Road (Fig 6) is unobstructed with the core buildings of temples or important space nodes as the center. The road form radiates from the center to the outside, emphasizing the leading role of the central building or space on the surrounding areas. For example, Wensi College (include central square) and Zongkapa Buddha Hall, the surrounding road network belongs to this category.

(2) Regular type

Regular road network (Fig 6) is usually found in the monastic residential area in the northeast of the temple and the Buddha residential building area in the south of the temple. Because the construction of the residential area for monks is under the unified planning of temples, the scale, volume and form of buildings are relatively unified, and the shape of roads is relatively regular. The distance between roads is usually 8-20 meters. The Southern Buddha residential building area has a gentle terrain, and its road network shape is relatively regular. However, due to the scale of Buddha residential buildings is far larger than that of monks, the distance between roads in this area is larger, generally 15-50 meters.

(3) Irregular type

Irregular type (Fig 6) is a common road form in the living Buddha residential area in the southwest of the temple. The terrain height difference in this area is large, and the distribution of buildings is relatively free according to the terrain, and there are many types of buildings in the region, such as Buddhist temple, living Buddha residential building, monk residential building, auxiliary housing, etc. And the scale and scale of the buildings vary greatly, so the road network shape presents irregular shape.

(4) Fishbone type

Fishbone type (Fig 6) mainly refers to the road network type connecting the main street of the temple with the temple buildings. Taking the East-West main street as the main road, many lanes extend to the north and south to connect the temple buildings.

4.2 Road Grade of Labuleng Temple

The road structure system is the skeleton of the overall form of the temple, and also plays an important role in the traffic organization of the temple. According to scale and function, Labuleng Temple road can be divided into three levels: Main Street, Sutra road and alleyway (Fig.7). From 1966 to 1976, although some streets and alleys of the temple were destroyed and some changes were made in texture, the structural system of the three-level roads was still relatively clear [9].

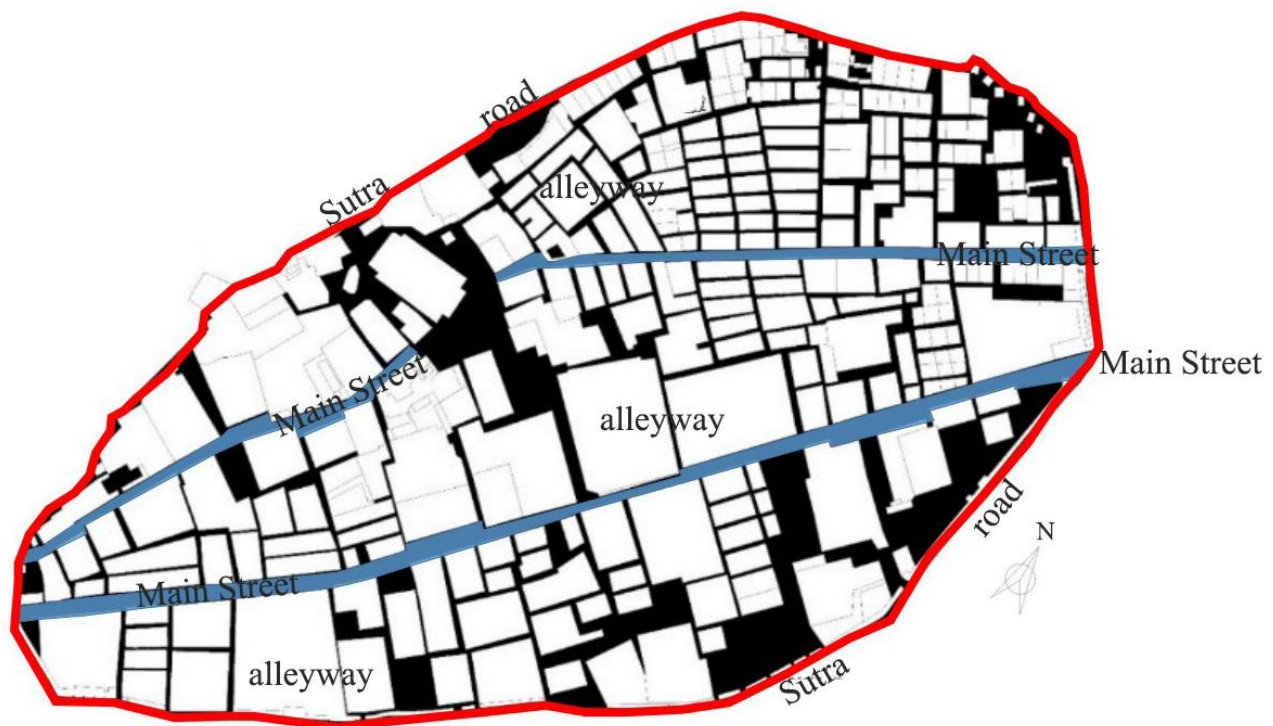


Fig 7: Road structure system of Labuleng Temple

(1) Main Street

The first level of the temple road system is composed of two East-West main streets.

1) The main street on the north side of the temple used to be the most important road for the temple to communicate with the outside world. The road is 5-6 meters wide. Many core temple buildings, such as Wensi College, Shilun College, Xijin'gang College, Amangcang Buddha residential building, are distributed on both sides of the road. The street is divided into East and West sections. The east section is located in the monk house building area in the northeast of the temple. It divides the monk's residence into two parts: the South and the north. The road shape is relatively regular, and the west section is located in the temple building area and living space. The road shape between the Buddha residential areas is irregular due to the influence of terrain height difference. The East and West sections of the road are connected by the central square, and the two ends of the road are built with white towers as the sign of the entrance of the temple.

2) The initial width of the main street on the south side of the temple was slightly smaller than that on the north side, about 4-5 meters. During the cultural revolution, it was widened to 6-7 meters and was transformed into asphalt road to allow traffic. This road gradually replaced the main road on the north side and became the main road connecting the temple and the county. The road shape is relatively regular, with Gansu Buddhist College, Tibetan Medical College and Gongtangcang Buddha residential buildings on both sides.

(2) Sutra road

Sutra road is the second level road system of Labuleng Temple, which is in the form of circular road. It is composed of Sutra mountain road on the north side and Sutra corridor on the south side. The width of the Sutra mountain road on the north side is about 2-3 meters, and the width of the sutra corridor on the south side is about 4-5 meters. In addition to the function of traffic organization in the south, the sutra road is mainly used for monks to turn scriptures, and its religious significance is far greater than its traffic organization significance. The South and North sections of the sutra road conform to the topography, and connect with the east and west entrance of the temple.

(3) Alleyway

The alleyway is the third level road system of the temple, which is responsible for the traffic organization between the temple buildings or between the buildings and the main street, with a width of 2-3 meters. The alleys of Labuleng Temple are common in the Buddha residential building area and the monk residential building area in the northeast of the temple. In order to maximize sunshine, the width of lanes in east-west direction is usually larger than that in north-

south direction.

4.3 Road Organization Characteristics of Labuleng Temple

The road skeleton of Labuleng Temple directly reflects the basic concept and intention of the overall planning and layout of the temple, and it is also one of the elements to define the dual spatial structure of "the true life"—"The Buddha world".

The temple road basically conforms to the change of terrain elevation [10]. The sutra road around the temple and the circular worship road centered by Wensi College constitute the basic order streamline of religious activities in the temple. From the distribution point of view, the six college buildings and other important buildings are basically arranged along the above ring sutra road. The road framework of the Buddhist residential area is well planned. Making use of the scale difference of the road, the building can get more sufficient sunshine as far as possible, and improve the living quality.

V. SPATIAL LAYOUT CHARACTERISTICS OF LABULENG TEMPLE

The macro site selection and overall planning of Labuleng Temple reflect the concept and basic characteristics of the overall planning and design. The spatial layout pattern of Labuleng Temple is a typical one in Gelug Sect of Tibetan Buddhism [11]. The unique geographical environment of Labuleng area makes the natural landscape become the base of the temple space layout. In the process of planning and design, the layout of temple buildings and road skeleton is combined with the topography, so as to form its specific Temple space form.

5.1 The Spatial Layout Presents the Dual Cultural Characteristics of "The True Life" and "The Word of Buddha"

Buddhism aims at crossing people, so the binary opposition between "Buddha world" and "present world" is an important connotation of its religious culture, which is fully expressed through architectural space.

From the macroscopic site selection, the "Buddhist world" symbolized by the temple space of Labuleng Temple and the "the true life" represented by the surrounding villages and towns constitute a large-scale dual spatial structure. The two are defined by the temple boundary formed by the circular corridor around the temple, the Daxia River and the Xiang Mountain. From the perspective of the overall planning of the temple, the dual culture of "the true life" and "The Buddha world" is mainly reflected in the dual opposition formed in the

space between the temple building functional area symbolizing the "holy land" and the monk residence building functional area representing the "secular". The "opposition" between the functional spaces is mostly completed through the temple road skeleton. From the micro point of view, the individual building also reflects the space distinction between "human" and "Buddha". This kind of planning and layout model is also used in the planning and layout of the four main temples of Gelug Sect of Tibetan Buddhism.

5.2 Spatial Layout is "Free" and "Orderly"

Labuleng Temple has been developed for hundreds of years. It is different from Han Buddhism in the Central Plains. It often presents a very free layout pattern. It seems that there is no clear spatial axis in the temple space, which shows a state of natural derivation to a large extent. However, through analysis, it is found that in addition to the free planning and layout, the temple still has the following characteristics.

(1) Unity: the layout of monasteries presents a virtual axis relationship of landscape unification

In the annals of Labuleng Temple, there is a description about the temple planning of Labuleng Temple: "in the book of Kadang, there is also a metaphor of the sun to indicate the reality of various dharmas. For example, the great Sutra Hall (Wensi College) in Labuleng Temple is located in the middle of the three hills on the right side of the opposite mountain, and the top of the hill is just the center line of equal hours of day and night." Indian Buddhist doctrine integrates the contents of ancient Indian primitive religion's worship of the sun. For example, the right-handed worship ritual around the pagoda was this kind of worship. Obviously, Tibetan Buddhism is also integrated into the religious content of sun worship. The Gelug School is called the new Kadang School, and its doctrinal content basically continues the doctrine of the Kadang School. The site selection of Wensi College in Labuleng Temple is based on the observation of the sun's orbit. Therefore, the building orientation of Wensi college is east-west, and the main scripture hall in Labuleng Temple records The description actually illustrates the axial alignment between Wensi college and the mountain on the other side of the Daxia River (Fig.8). In the mapping map of Labuleng Temple and its surrounding terrain, this visual imaginary axis can be clearly seen. After connecting Wensi College with the mountain in the center of the opposite bank, it is found that its reverse extension line is just opposite to a mountain peak near Xiang Mountain in the north of Wensi University. The axis alignment relationship between the temple core building and the large-scale landscape environment belongs to the visual axis, which is a very important planning and design method and feature in the temple layout

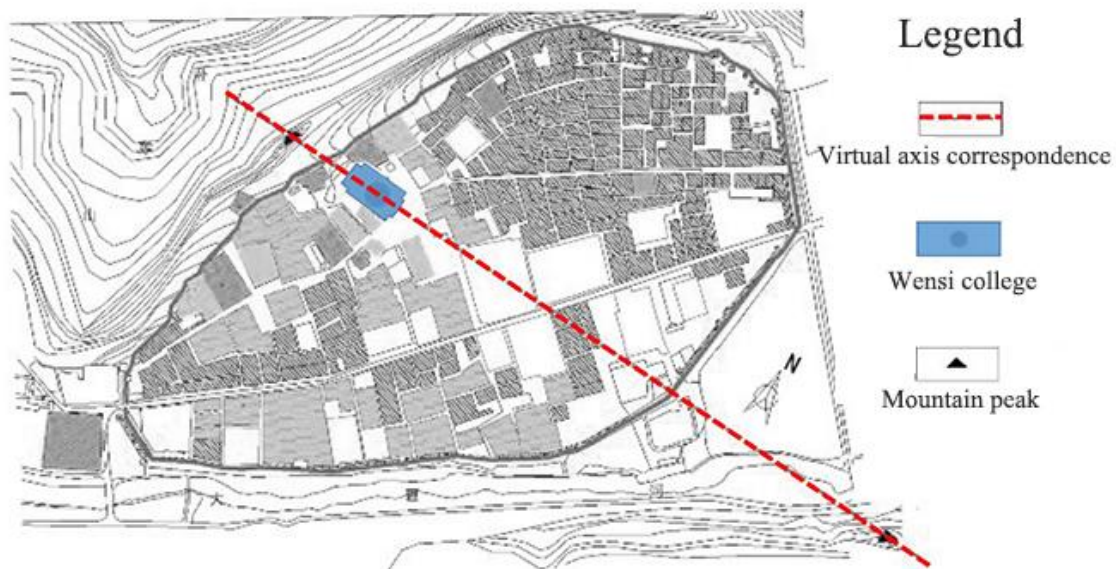


Fig 8: Axial alignment of Labuleng Temple

(2) Hierarchical: under the influence of religious culture, the functional areas present a vertical spatial distribution order

The hierarchical features of Buddhist worldview are mainly manifested in the vertical spatial structure from the human to the Buddhist realm, which also has a profound impact on the spatial layout of Buddhist temples. The spatial layout of temples reflects the order characteristics under such vertical spatial dimensions. The hierarchical expression is based on the terrain and landform, with the landscape elements as the spatial boundary, and will not be repeated.

(3) Centripetal: the layout of the temple in primary and secondary order reflects the centripetal characteristics

Through the analysis, it is found that the temple space layout and structure are strictly controlled by modulus, reflecting the concentric circle composition characteristics [12]. This centripetal layout refers to the combination and arrangement of space elements system around the dominant elements, thus showing a strong centripetal. It is not difficult to find that the centripetal spatial layout characteristics of the core buildings such as Maitreya Buddha Hall, shabudan hall, Shilun College, Tibetan Medical College and xiaxubu College, which are close

to Wensi College, are relatively obvious. However, the "free" spatial layout tradition of Tibetan Buddhist temples weakens this feature with the increasing distance, the relationship between the core building of the temple and Wensi College seems to be more "weak". In fact, the traditional Tibetan "free" architectural group layout mode is adopted in the spatial layout planning of Labuleng Temple. At the same time, the overall layout of the temple is deeply influenced by the concept of centripetal Temple composition. Labuleng Temple is combining the natural terrain with the building On the basis of flexible layout, the geometric modulus is used to control the spatial relationship of important Buddhist buildings in the temple, thus forming a circle type layout mode with Wensi College as the center (Fig 9).

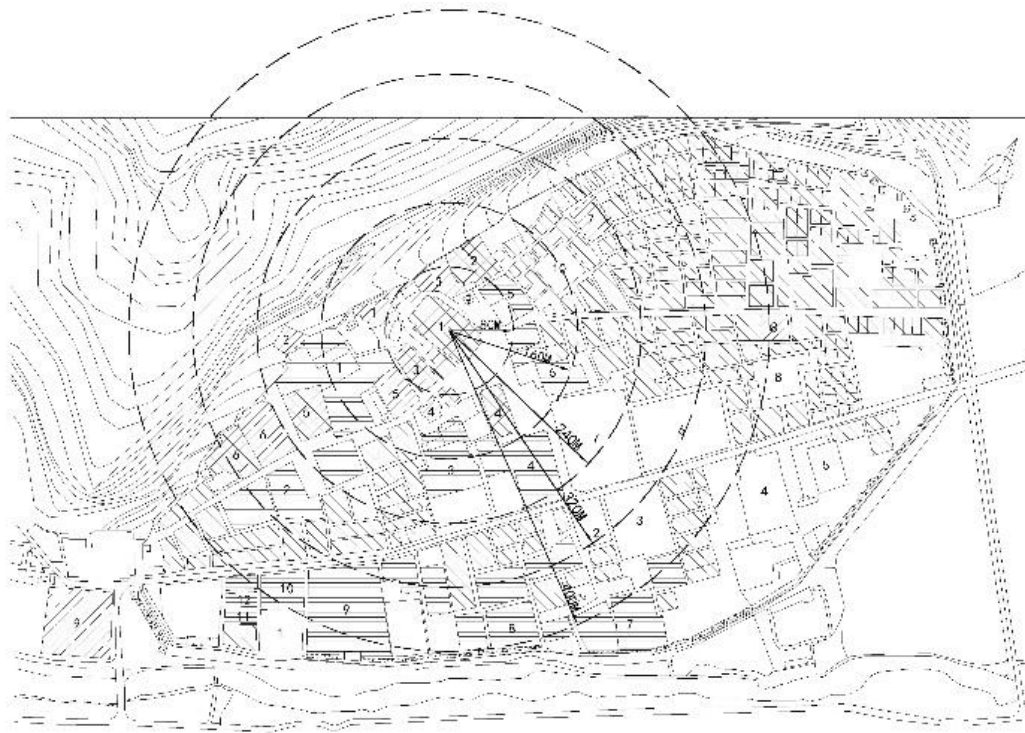


Fig 9: Centripetal layout of Labuleng Temple

At the same time, the temple has made strict regulations on the volume, scale, shape and other aspects of different functional types of buildings [13]. The hall building group with Wensi College as the core occupies the high terrain and dominates the overall situation, forming a spatial form with the palace building as the core, and the shortage building, monk house building and auxiliary building form a space form surrounded by arches.

VI. CONCLUSION

In different historical periods and different times, Labuleng Temple carries different historical missions. Labuleng Temple used to be the political and religious core of the whole Gannan area, and had an important regional influence. Today, as the religious center and national cultural security unit in Northwest China, it is still of great significance to study it. First of all, Labuleng Temple is undoubtedly a very important cultural heritage. The research on its spatial layout and planning characteristics fills in and enriches the research blank of Labuleng Temple in this respect to a certain extent. From the perspective of heritage protection, combing and analyzing the spatial layout and planning characteristics of Labuleng Temple is conducive to further mining the rules and connotation of temple spatial layout. Secondly, the research combined with religious literature, from the perspective of culturology, it has reference and guiding significance to explore the dynamic mechanism between temple space planning, temple space form and Buddhist culture, which lays a foundation for comparative study with other Tibetan Buddhist temples. Finally, from the perspective of the economic strategy of the Silk Road Economic Belt, Labuleng Temple is an important religious relic of Tibetan Buddhism in Northwest China, one of the treasures of China's religious culture, and an important part of national culture and spirit. The in-depth study of Labuleng Temple is conducive to enhancing cultural confidence and realizing the great rejuvenation of the Chinese nation.

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