



NEW EXPLORATION OF GATHERING SPACE IN PARK BASED ON FUJIAN TULOOU
ARCHITECTURAL STYLE



A Thesis Submitted in Partial Fulfillment of the Requirements
for Master of Fine Arts DESIGN ARTS (INTERNATIONAL PROGRAM)

Silpakorn University

Academic Year 2023

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Keyword : Tulou architecture, architectural symbols, regional culture, modern park gathering space

Miss Tanfei ZHAN : New exploration of gathering space in park based on Fujian Tulou architectural style Thesis advisor : Professor Eakachat Joneurairatana, Ph.D.

In recent years, urban infrastructure has become increasingly well developed, providing more places and opportunities for outdoor activities, attracting more and more people to participate in outdoor activities and fostering a healthier lifestyle. However, people's needs are subject to change as society develops, and therefore the city's infrastructure needs to be constantly innovated and upgraded to meet people's changing needs and expectations. This exploration focuses on some of the infrastructural deficiencies that exist in the high-traffic spaces of Yuping Park. In order to more fully meet the public's needs for the use of Yuping Park, excellent traditional culture is integrated into the design of the park's gathering space.

Tulou is a unique form of dwelling built by integrating the local natural environment, social culture and economic life, and has strong regional and cultural characteristics.

This exploration uses observation, documentary analysis, interdisciplinary methods and experimental methods to analyse the psychological and behavioural habits of people choosing seating in park gathering spaces, to explore the use, innovation and inheritance of the architectural symbols, colours and exterior shapes of the Fujian circular tulou in modern park gathering spaces, and to explore the artistic communication effects of the designed modern park gathering spaces.

The design of the modern park gathering space based on the Fujian Tulou architectural style highlights the attitude of paying attention to the excellent history and culture, and a new way of thinking about its inheritance, using the Tulou architectural symbols to add to the attractiveness of the park and to promote and inherit the excellent history and culture of the region. It allows more people to enjoy visiting the park and feel the new vitality in the park.

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I felt the academic charm and cultural ambience of a key institution of higher learning at the University of the Arts in Thailand, where I not only enriched my knowledge base at the master's level, but also enhanced my professional knowledge and practical expansion in art and design. The completion of my master's thesis not only involves my personal efforts and labour, but also the help and care given to me by the people around me, for which I would like to express my heartfelt gratitude.

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1.1 Background of the Research

In recent years, the economic development of countries around the world has been accelerating, showing a trend of globalisation. During this period, China's economy has grown rapidly and has become the second largest economy in the world. However, China's development has not been synchronised in all areas, with some areas developing rapidly and others progressing slowly. In this context, it is clear that China's traditional cultural heritage has yet to be strengthened. China is increasingly looking for support in the form of cultural soft power in order to expand its international influence and enhance its comprehensive national power. Therefore, the inclusion of traditional culture in the design is the trend, the way to go, the cultural identity and an important part of it. The modern park gathering space is an important part of the park landscape in every city. In the new era, it will also usher in new innovations and reforms.

As one of the most important resting places in people's daily lives, modern park gathering spaces are characterised by frequent interactions and a wide range of services for people. The integration of good traditional culture in the design of modern park spaces allows everyday facilities to become a 'living culture' in people's lives, showing 'soft culture' as 'hard power'. The 'soft culture' will be shown as 'hard power' in our surroundings.

The Tulou is a product of the confrontation and integration between the Hakka people who moved into Fujian and the Fulao aborigines who lived there to fight for living space, and was used as a defensive dwelling against the Qing Dynasty and the Japanese. The function of the building is divided from the centre outwards, with the ancestral hall in the middle for ancestral worship, and the family style is strict, with a clear division of priorities, so that for people the building also represents family and unity. This design connotation is particularly in keeping with the characteristics of collectivism and the cultural atmosphere of the gathering space in Park.

Fujian Province is located in the southeast of China and is a coastal province with a subtropical monsoon climate. Especially in summer, there are many showers

with heavy rainfall, but the rains are relatively short and the air is very fresh after the rain, making it very suitable for the public to participate in outdoor activities. This is why people like to take their families to the park after work, on weekends and during holidays for walks, camping, kite flying and so on. The closest, most spacious and best built park to my home is Yuping Park, so I have made Yuping Park the subject of my research.

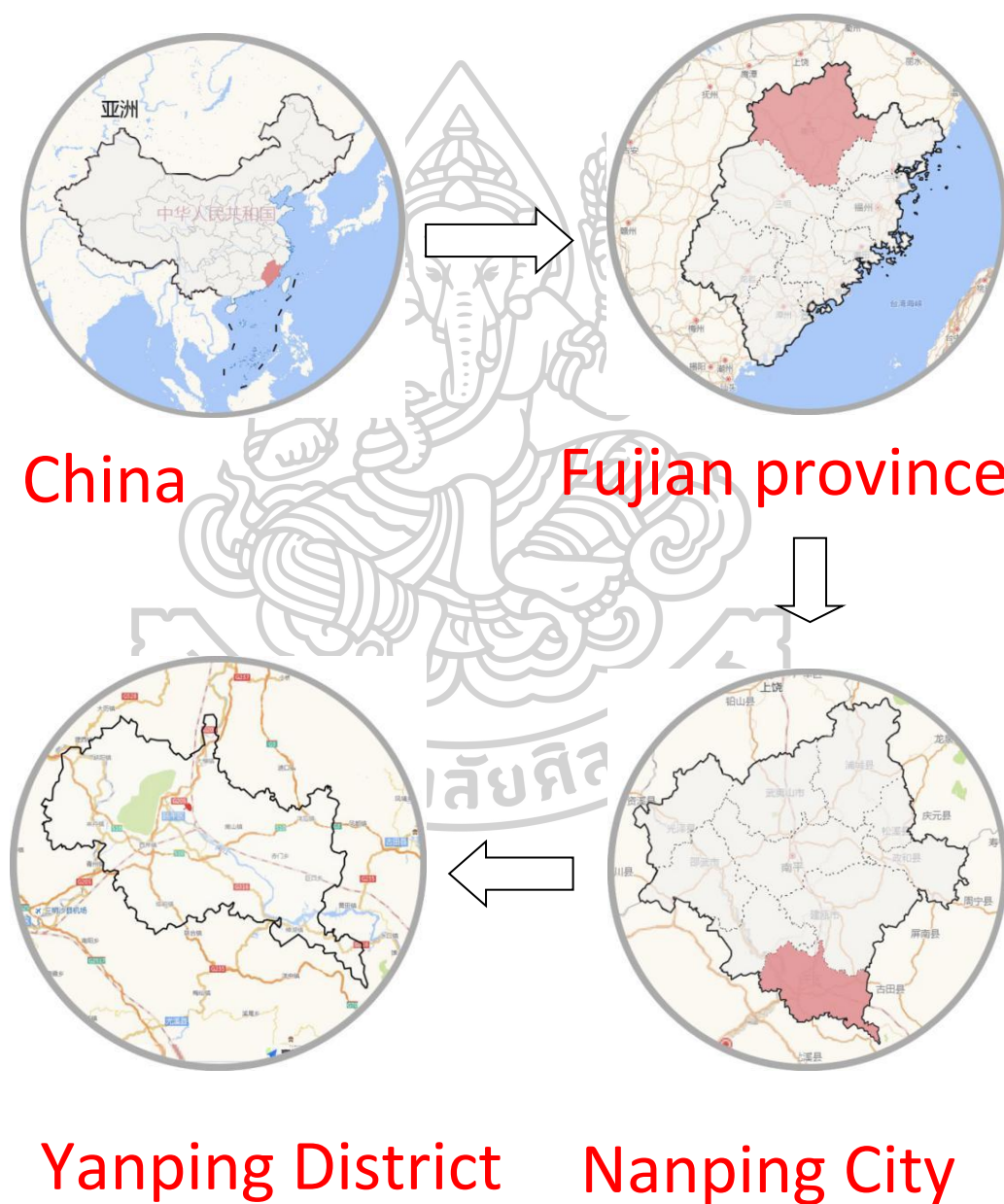


Figure 1: Park location

Yuping Park is an open park of public interest located in Yanping District, Nanping City, Fujian Province, and is known as the back garden of Nanping City. When designing the landscape, I followed the principle of "intention first, layout second", giving priority to the analysis of the cultural background and focusing on the excavation of the geo-culture. As the area of Yuping Park is relatively large, I focused the design on the areas where people gather.

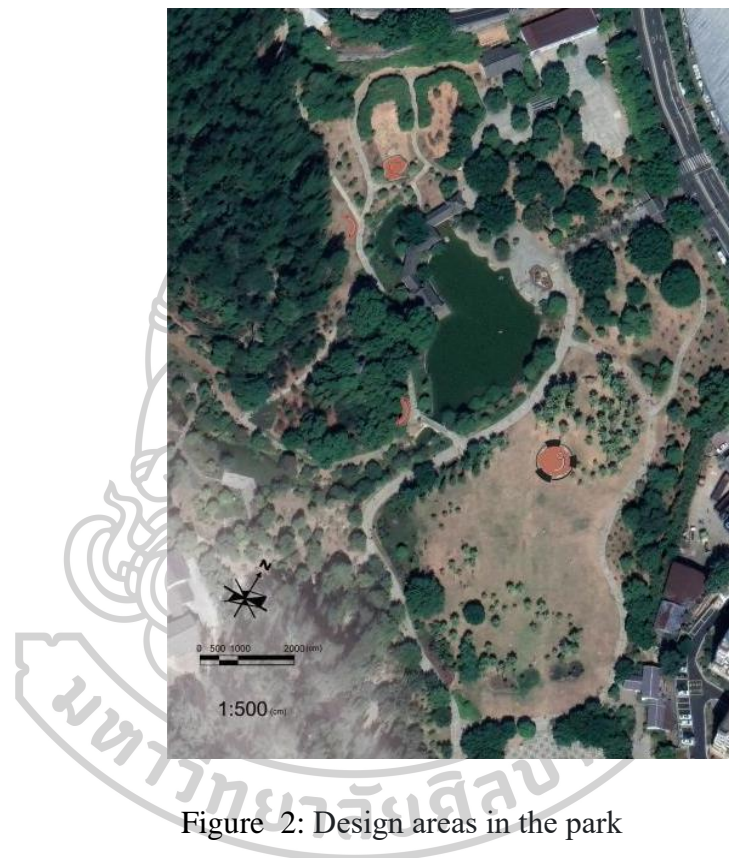


Figure 2: Design areas in the park

In China, the majority of modern park spaces are designed in a modernist manner, and the design of modern park spaces lacks local style features (Yang Hongjun.2016) and traditional connotations, making it difficult to convey the characteristics and culture of the region. The "international style" is simple and clear, but it also makes people rethink the value of regional geography and architecture.

1.2 Significance of problem

My hometown, in Yanping District, Nanping City, Fujian Province, China. I often go for a walk in the park with my parents and friends in my spare time to Close to

nature. Yuping Park is the park we often visit. It occupies an area of 29.84 square kilometres and consists of three natural peaks connected from west to south. There are many landscape vignettes in the park for people to enjoy and play. The Lake of Hundred Flowers and the Great Lawn have the largest flow of people. Citizens and visitors like to stroll around the Baihua Lake, people like to go camping with their families on the Great Lawn, and children like to enjoy their leisure time after school by flying kites and playing football on the Great Lawn. Some of the users of the gathering space like to sit on the lawn to rest and get fully close to nature, while others like to sit on the seats and relax. However, there are no benches for people to rest in this gathering space, and the design of the park does not adequately meet the needs of people to use it. This is the original purpose of my current study, through which I hope to improve the conditions of use of the public gathering space in the park. To have only benches and no other functions is a lack of attention to the integrated environment, so I decided to expand the scope of my exploration to the whole gathering space.

The famous industrial designer Chad Saber once said, "The designer does not need to explain anything about his design, but should express all the connotations of the design through his design". Most of the gathering spaces in China's urban parks are mostly modern in style, and their type and style regional characteristics are not obvious. Park gathering space in the whole park area as a space for citizens' leisure and entertainment, is to provide a place for people to rest and exchange, is an important part of the park construction. Park gathering space plays an important role in the communication and learning, living and daily work activities of urban residents, and is an indispensable part of park landscape design. It can also serve as a carrier of cultural communication and can render the artistic and cultural atmosphere of the city very well. For urban residents, the integration of good traditional culture in park gathering spaces can also enhance the sense of national identity and belonging of local residents, strengthen people's sense of ownership, and make the connection between people closer, thus promoting the inheritance and development of good traditional culture (ZHAO Xinghui, SONG Shoujian. 2015) .

1.3 Objectives of the research

1.3.1 Observe

The main research object explored in this paper is the architectural style of Tulou. Tulou architecture is characterized by defensive enclosed spaces, sloping roofs, and wide and thick protective walls. The integration of ethnic cultural characteristics into the architecture has formed a unique architectural culture.

1.3.2 Analysis

The double-ringed Tulou is the most famous form of Tulou architecture in its development and evolution, and the most impressive element is its double-ringed structure. This is followed by the rammed earth technique used to build the earthen buildings, which forms thick, solid rammed earth walls.

1.3.3 Design development

Tulou buildings will not be built again, but recreating them by extracting their architectural elements and incorporating them into the design is also a way of inheriting and developing the culture of Tulou architecture.

1.4 Scope of the research

By analysing the park through the composition of visual factors and functional attributes, the scope of the study in this paper is defined as follows:

1.4.1 User behaviour, activities

The gathering space of the park mainly provides a function for people to relax and communicate. For example: swinging, playing chess, flying kites, playing soccer, etc. It is within the scope of this paper to include the actual needs of the users in the design and to enhance the attractiveness of the gathering space.

1.4.2 Gathering Spaces Space

- Park zoning: Yuping Park covers an area of 29.84 square kilometres, with attractions such as Baihua Lake, Wang Shanping, the Art Trail and Baihua Rock.
- Plants: The park not only has banyan trees, lilies and other representative plants native to Nanping, but also osmanthus, camellias and peach blossoms waterfront with water lilies and ginger flowers.
- Exploration Area : The area for this gathering space design is located on the large lawn near the Hundred Flowers Lake, which is open and gentle and

rich in vegetation.

1.4.3 Furniture

The furniture and facilities in the park gathering space are also important in the park to assist people in their daily activities. For example, stone tables, benches and swings are within the scope of the definition of the object of study in this paper.

1.5 Research Methodology

The following four research methodologies were adopted for the design of the park gathering space based on the Fujian Tulou architectural style: observation, documentary analysis, interdisciplinary approach and experimental approach, in preparation for the development of the design that follows.

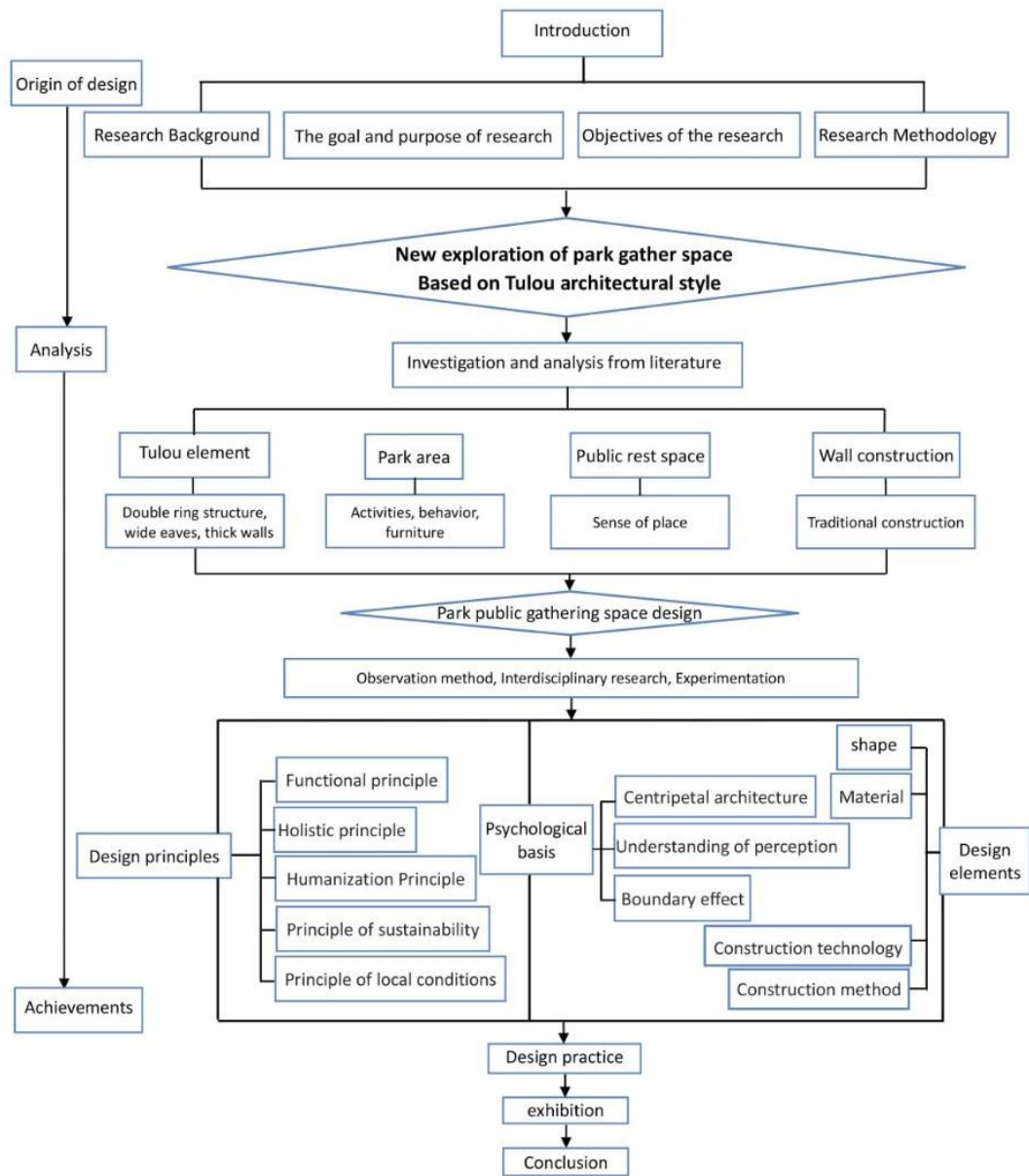
1.6 Research Result

The main motivation for the research was to address the problem of parks without seating in high-traffic areas and to design suitable spaces for people to gather. The result was to achieve a unity between function and form, with function being the basis and form conveying the connotations of good traditional culture and encouraging greater attention to good traditional culture and good traditional construction techniques and the innovation and development of construction techniques.

The research reflects the hidden needs of people's psyche, and their spiritual needs, and the result is to meet people's expectations of the gathering space as much as possible.

This design can also provide design ideas for future researchers who need to do this type of design, and provide reference solutions for the design of park gathering spaces.

1.7 Research framework



Chapter 2

Literature Review

2.1 Introduction

Go to the knowledge database to check the relevant literature on Fujian Tulou, modern park gathering spaces and Fujian's relevant excellent traditional architecture and culture, and learn about the design methods and steps of park gathering spaces with local characteristics, etc. Gain a basic understanding of the history, stories, construction methods, building techniques and construction materials of Fujian Tulou.

2.2 Tulou architectural culture

Tulou is a characteristic ancient residential building (Figure 3) and a valuable ethnic culture. The Tulou architectural complex is located in the Hakka settlements of southern Fujian Province and northeastern Guangdong Province. From their creation and development to the present day, they have a history of several hundred or even several thousand years. It was not until the mid-1950s that some scholars began to pay attention to it. The Chinese Architecture Research Office commissioned Zhang Buqian and Zhu Mingquan to make a special trip into the villages of Yongding to make a more complete examination of the Tulou, and the results of this examination have attracted the interest of the architectural community at home and abroad.



Figure 3: Tulou photos

Source https://m.sohu.com/a/366294729_737500?_trans_=010004_pcwzy

The Fujian Hakka Tulou buildings are unique in their architectural form; they are usually constructed from natural materials such as adobe, stone, wood and bamboo. These earthen buildings are usually round or square in shape and are three to five storeys high, with outer walls up to one metre thick, providing strong defensive properties. The interior of the tulou is divided into several rooms, each with its own purpose, such as a kitchen, bedroom, living room, etc. The interior of the Tulou also has an atrium for light and ventilation. The Fujian Hakka Tulou not only has a unique architectural style, but also contains a deep cultural connotation. These Tulou are unique cultural symbols formed by the Hakka people during their long historical evolution, representing the wisdom and hard work of the Hakka people. The layout and decoration of the interior of the Tulou also reflect the lifestyle and values of the Hakka people, such as family respect, harmony and unity, and the importance of kinship.

The Tulou inherits the long-developed ancient Chinese techniques of building raw earth architecture, but also creates a new form of raw earth residential architecture by integrating the regional traditions of local ethnic groups according to the integrated environment. The book *Tulou in Fujian, A Treasure of Traditional Chinese Dwellings* by Mr. Huang Hanmin contains a great deal of exposition on the site selection, construction techniques and cultural values of Tulou. The form, defence system, construction techniques and many other aspects of the Tulou are discussed in detail. Nowadays, although some of the earthen buildings are still available for human habitation, they are no longer able to meet the requirements of modern life, as more and more people are leaving them due to the relatively long period of time when they were built, and the level of production and conditions under which they were constructed at that time, which resulted in inadequate lighting, ageing facilities and unreasonable functional layout. This is why it is said that no more Tulou will be built. It is therefore all the more important to preserve the Tulou and to pass on the excellent architectural culture.

2.3 Park area

2.3.1 activities in park

In *Human Places: Design Guidelines for Urban Open Spaces*, Clair Cooper and Carolyn Francis classify urban park activities into eight categories: static recreation,

walking access, culture and entertainment, play, communication, sports and exercise, viewing and sightseeing, and occupational activities.

In "A Comparative Study of Urban Park Activity Behaviour in China and the United States - A Case Study of Shenzhen, China and Charleston, USA", Luo Danqiang explores the types of urban parks, covering four main types of research, of which "park behavioural activity research" belongs to one of the four broad categories. Among them, "park behavioural activity research" is a branch of the "urban park subject research" category (Luo, D.2016). In recent years, many researchers have focused on the patterns and characteristics of behavioural activity in parks, with research theories covering tourism, psychology, geography, sociology and other disciplines, and the behavioural activity of user groups in parks based on different cultural contexts has become one of the most popular topics of research.

Source: Based on Wu Chengzhao (1998, 1999)

Classification criteria	Classification of activities	Connotation	Examples
Number of participants	Individual activities	Emphasis on a single person doing	Reading, walking, running
	Team-based activities	Emphasis on numbers	Dance, singing, volleyball, Frisbee
Social status	Social activities	Interpersonal, emotional interactions	Chatting and gathering with friends
	Solitary activities	Individual activities, with emphasis on solitude	Meditation, meditation, walking
Activity state	Static activity	Relatively calm, harmonious activities	Watching, reading, playing instruments
	Dynamic activities	Relatively vigorous, dynamic activities	Running, cycling, hiking
Nature of activity	Entertainment	Relaxing, enjoyable, leisurely activities	Playing cards and chess, walking the dog, walking
	Fitness	Exercise for the purpose of exercise fitness	Running, boxing, yoga, ball and games
	Education and knowledge	Education, science, close to nature	Learning about plants and animals, science exhibitions
	Social and leisure Festivals	Interpersonal communication, bonding Festivals, themed events	Chats, parties, picnics New Year's parties, music festivals

2.3.2 behaviors in park

Park behaviour is not isolated and many activities are intrinsically linked and relevant, such as walking, chatting and reading books. Park users see themselves as a

kind of integration into their surroundings, seeking harmony and unity between people and their environment. The boundaries of personal privacy are weaker and a sense of belonging to the environment is sought while observing the people and environment around them. One can even change oneself through the environment, being conditioned by the moods and states of others in the environment. In 'An Introduction to Human Behaviour and Urban Park Landscape Design', Zhang Lingbo, Chen Shanshan and Song Li suggest that Chinese park users have a distinct tendency to be quiet in parks and focus on being close to nature (Zhang Lingbo, Chen Shanshan, Song Li. 2009) . Park behaviour is divided into three categories: traditional behaviour, non-traditional behaviour and undesirable behaviour. Traditional behavioural activities are abundant, such as: morning exercise, viewing, education, gathering, playing, resting, art and buying and selling; non-traditional behavioural activities are not common in parks, such as: dog walking, bicycle riding, roller skating and other special behaviours arising from individual needs; undesirable behavioural activities are particularly prominent in the destruction of public property, as well as demolition and theft.

2.3.3 furniture

Public facilities are equipment or objects that serve the public in public places, and are an important part of modern cities, playing a role in coordinating the relationship between people and the urban environment, and are an important reflection of the image of the city as well as the quality of management and quality of life, and an important symbol of the improvement of the spiritual life of modern people. As mentioned in "Landscape Design of Neighbourhood Parks in Chengdu", public facilities in parks mainly include games and fitness garden accessories (such as fitness facilities and children's trampolines), resting garden accessories (including benches, tables, sunshade covers, etc.) and service garden accessories (including rubbish bins and lighting equipment, etc.). With the improvement of people's living standard, the variety of public facilities is becoming more and more abundant and is developing in the direction of diversification. Only by keeping up with the needs of modern life and providing service facilities can we make modern life better. (Ju Xian. 2009)

2.4 Case study

2.4.1 Xihu park in Zhangpu

The landscape and recreational buildings in the Xihu Park in Zhangpu, Fujian, have been designed according to the scale, overall shape and decorative elements of traditional dwellings.



Figure 4: Xihu Park in Zhangpu

Source <https://www.xiaohongshu.com/discovery/item/63593a8b000000001601b418>

2.4.2 Beijing Xiangshan Hotel

The I.M. Pei-designed Beijing Xiangshan Hotel, located in Xiangshan Park in the scenic area of Beijing's Xishan Mountain, organises the building group according to its surroundings and blends in with the beautiful landscape. The rules for organising space in traditional courtyard houses are reproduced in accordance with the local context. The courtyard space with a Jiangnan garden style is refined and open, making it impressive.



Figure 5: Xiangshan Hotel

Source <https://mr.baidu.com/r/Z8U0WzYCo8?f=cp&u=af60661b16c0bb08>

2.4.3 The Tulou Commune

The Tulou Commune in Nanhai, Guangdong, is a collection of residences designed to provide accommodation for low-income earners, using the circular Tulou as a reference object. Through the rational transformation of the Tulou building, it has a traditional Tulou form with a modern touch. It can accommodate up to 1,800 people, each resident has their own individual space and can also enjoy the communal areas of the building.



Figure 6: The Tulou Commune

Source https://m.sohu.com/a/453907650_12070956

2.5 Public rest space

The park rest space is the most densely populated area in the park environment and is an important part of the park public space, where people gather for habits, purposes and activities. It not only meets the needs of people, but also serves to revitalise the environment and improve urban functions. In Gordon Cullen's 'Urban Landscape Compendium', he refers to a 'sense of place' and argues that there is a special emotional connection and sense of belonging between places and people. The design of public gathering spaces should therefore also take into account the specific 'sense of place' (Miao Wei.2011). The most famous architect and urban planner of the 20th century, Le Corbusier, once proposed that "any space exists within an environment, so improving the physical quality and artistry of the man-made environment is bound to become an important component of improving the quality of modern life". Therefore, the exploration of the park gathering space must not be generalised from one aspect only, but should take into account the systemic, holistic and artistic nature of the space. Cultural connotation as a design reference is the only long-term solution. Combining the research and analysis of other scholars, this paper analyses the three aspects of user, culture and environment, in order to deepen the design of park gathering spaces.

2.6 Traditional wall construction

The master's thesis on 'A Study of Walls in Traditional Suzhou Architecture' by Yang Shu of Soochow University analyses and studies walls in traditional Suzhou architecture from three perspectives: how to use walls to create scenery, how to express cultural connotations through walls and how to use walls to create space. The master's thesis on 'A Study of the Primary Materials and Composition Forms of Traditional Folk House Walls' by Fan Jing of Kunming University of Technology analyses and discusses the composition forms and wall materials of traditional folk house architecture in Yunnan. Although these theses do not elaborate on the walls of Fujian tulou dwelling buildings, but rather on the walls of traditional dwellings in other regions, they provide some insight into the construction of walls of traditional buildings in different regions, which is still of some significance and value to the study of tulou walls.

With the advancement of technology, more and more new materials are being developed. This has opened up more possibilities for designers and provided more opportunities for innovation, resulting in an increasing variety of design forms and thought-provoking highlights from the different combinations of heterogeneous materials. From a design perspective, each material has its own different qualities of colour, technique, texture and touch, bringing different feelings and thoughts to the user. The traditional wall construction method of Tulou is ancient and natural. It can bring people emotional resonance through time and a rich emotional experience through the materials and construction methods. The design of the park gathering space should boldly use traditional building materials and innovative construction methods. Explore different combinations of materials to create a park gathering space that suits the local environment and conditions.

The traditional walls of the Tulou were built using the rammed earth technique. The rammed earth technique involves the use of materials such as sand and earth, bamboo, wood chips, glutinous rice and brown sugar. Fujian is full of bamboo forests and trees, a natural oxygen bar, so the materials used for the walls of the Tulou are all materials adapted to the local context. They are all materials with emotional memory properties and have an incomparable affinity and sense of period. Such a design space emerges from the local environment and is integrated into the natural environment. (Wang Yafei.2020)

2.6.1 Construction method

1. Avoid dirty, inauspicious places as much as possible. At the same time, we should also consider the relationship with the surrounding environment, only harmony and harmony can achieve the goal of peace and prosperity.

Therefore, my design consideration is placed on the open and stable flat ground, the vision is open, there are mountains and water, and man and nature are harmonious and unified.



Figure 7: park environment

Source http://fj.sina.com.cn/city/nanping/tu/2012-01-05/1114225_2.html?from=wap

2. Consider the size of the base, then use the gray line to draw a standard circle on the ground according to the size.

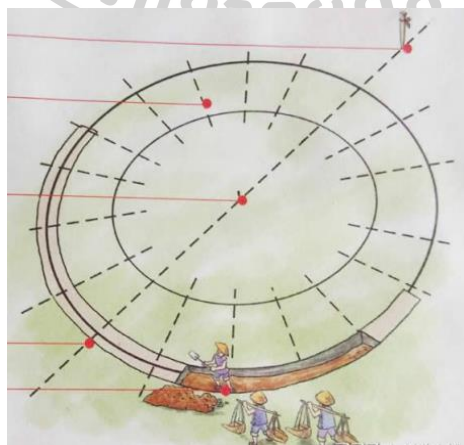


Figure 8: Consider the size of the base

Source <https://www.163.com/dy/article/EFTANDFJ05448QR9.html>

3. make a low stone wall. the wall corner is called the stone corner, and the corner is built with stones. Reserve the location of the door frame during construction.

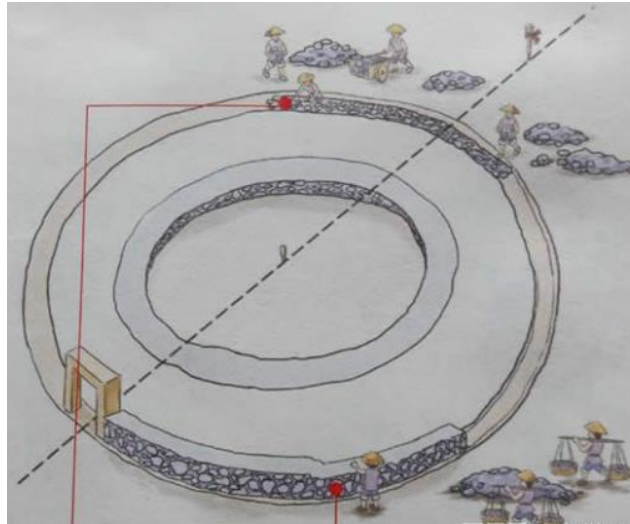


Figure 9: low stone wall

Source <https://www.163.com/dy/article/EFTANDFJ05448QR9.html>

4. After the stone corner is built, make rammed earth walls. use the molds to build the wall.

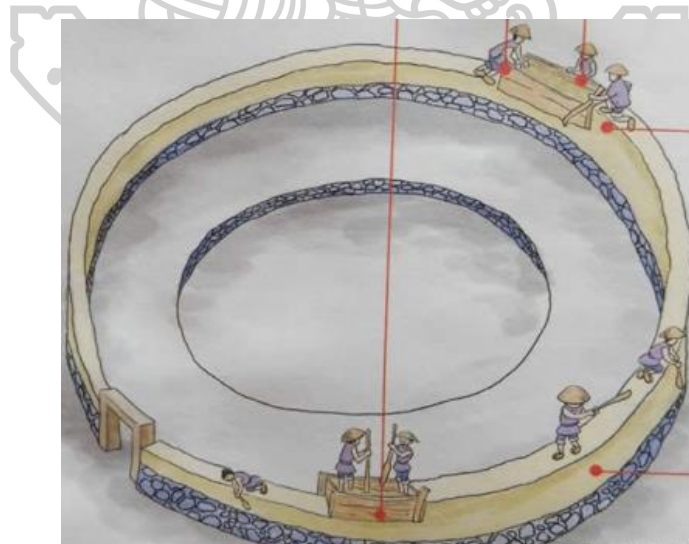


Figure 10: make rammed earth walls

Source <https://www.163.com/dy/article/EFTANDFJ05448QR9.html>

It needs to be made in sections using molds. the fermented soil is struck repeatedly with a hammer.



Figure 11: Putting in bamboo sheets to press the earthen wall

Source https://mp.weixin.qq.com/s?__biz=MzA4MDQ2NDYxNg==&mid=2651509246&idx=3&sn=99fedabf24e5a5609706c5df22f715dc&chksm=845dae79b32a276f4cc45adcac690e142b098c16560a40516fa4c70826a96b8edd86f33a7383&scene=27

The addition of bamboo strips enhances the tension of the wall and makes more solid and sturdy.

5. Make arched stone doors.

This picture is the gate of the famous Tulou Jinjiang .



Figure 12: arched stone door

Source https://m.163.com/dy/article/FSTR12TL0534HGBM.html?spss=adap_pc

Firstly, it is necessary to build the walls on both sides of the door frame, and prepare to construct the arch by placing a frame at the beginning of the arch.



Using steel bars to create two arched models



Place the arched frame made of steel bars on the shelf made in the first step.
Place stone bricks on both sides of the corners to fix the frame and arch.





Divide three equal distances from the shelf and stack the bricks as support points for the arch. Place stone bricks according to the arch frame, lay bricks, and then place another arch frame at the top of the bricks to reinforce the shape, and fix the frame with cement.



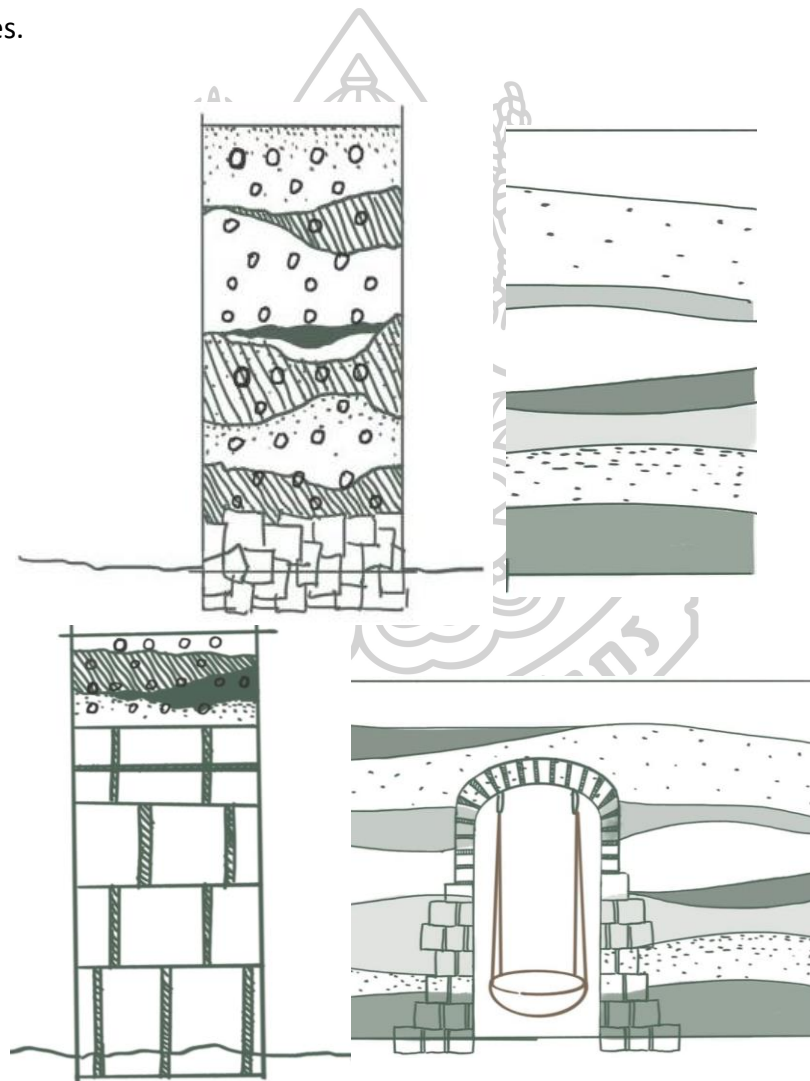
Figure 13: the making of an arch door frames

Source https://m.bilibili.com/video/BV17b4y1n7py?ts=1684385387&spm=333.401.click.video_callApp&h5_buvid=841B9CF5-864E-4B4D-65A7-B5956BAEC46020107infor&unique_k=&bsource=search_360&openid=&wxid=&page=0&start_progress=47168

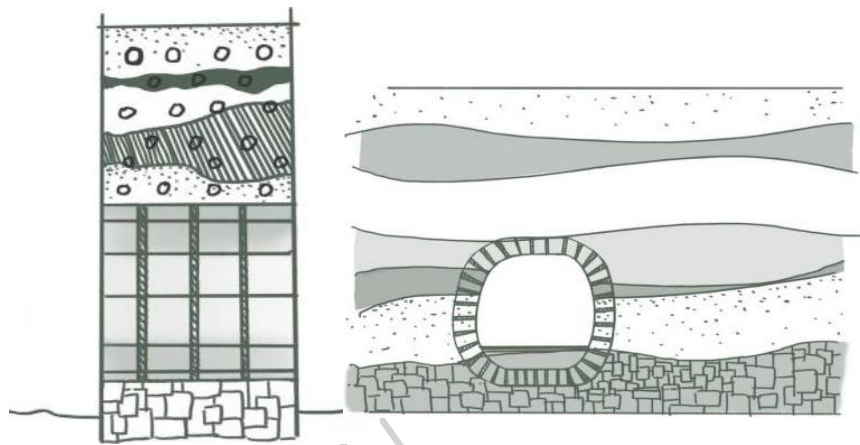
After completing the above steps, the arched door frame is complete. Finally, we need to do the closing work. Starting from the arched frame, lay bricks in areas without bricks, using cement as the connecting material, which is sturdy and inexpensive.

Detail view of the wall (profile map、 front view、 model)

In this section, there are three images as a group, which are profile map, front view, and model. Describe the details of the wall in detail from three different perspectives.



This picture represents: A wall with a door. The internal structure, external representation, and model presentation of walls with doors after construction.



This photo represents a wall with seats. The relationship between bricks and sand layers inside the wall.

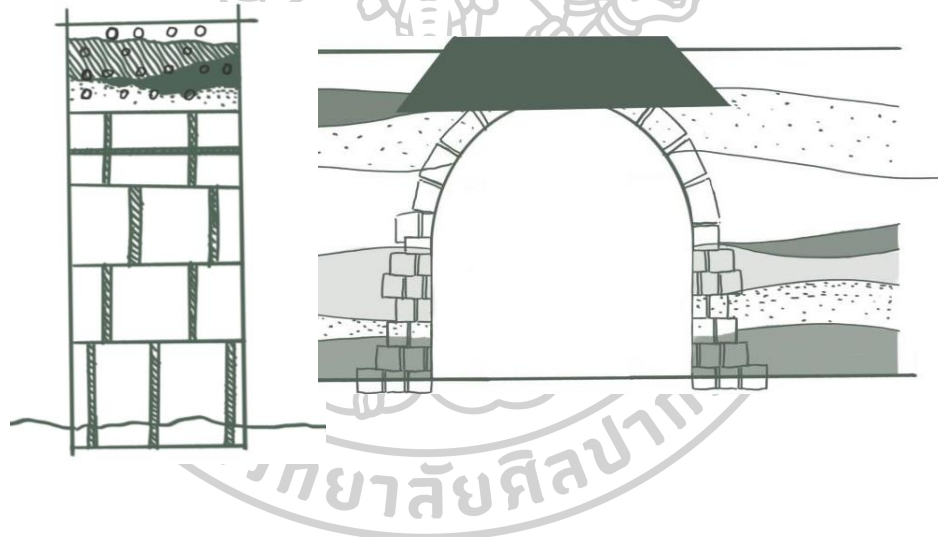


Figure 14: Detail view of the wall

The circle in the picture represents bamboo. The sand layer is composed of sand of different sizes.

6.put on the roof



Figure 15: Detail view of the wall

The roof is one of the most representative elements of Tulou architecture, which not only serves to shelter people from the wind and rain, but also represents the family.

2.7 summary

This chapter provides a more detailed discussion of the architectural style of Tulou and the park gathering space, logically sorting out the object of the thesis and the theoretical basis on which it is based. The first part introduces the characteristics and functions of Tulou architecture and its position in the history of ancient residential architecture; the second part introduces the activities of the park gathering space and the behavioural combing and furniture composition of the citizens in this space, and analyses the current situation of the park gathering space. A theoretical framework is set up to pave the way for the corresponding theory for the research to be done next, to realise the transition from theory to practice, and to explore the design of park gathering spaces from multiple perspectives.

Chapter 3

Research Methodology

3.1 Introduction

Chapter 3 contains a summary of the different research approaches, including the research methodology, the research process, from the beginning to the end of the design. It explores the functional analysis of the park gathering space, the involvement of users and the integration of the Fujian Tulou architectural style. This chapter consists of four main parts:

Part 01: Non-intrusive, immersive integration into the user community through the observation method.

Part 02: Researching the use of the park gathering space, collecting data and analysing it.

Part 03: Using a formal exploration approach, brainstorming, capturing elements and modelling.

Part 04: Deepening the design with an interdisciplinary approach, exploring the design of gathering spaces from different perspectives.

3.2. Observation Method

3.2.1 How people find the rest space

As can be seen from the actual situation in the park, the process of sitting down is a process of choosing a resting space, a process that addresses multiple and comprehensive purposes. Not only do people take into account climatic conditions, environmental conditions, seating facilities, etc., but also the number of users, the purpose of use, the behaviour of the users, etc. (Figure 16).



Figure 16: Users who are choosing their seats

The choice of seating for a group is very different from that of an individual. The number of people in a group is more of a consideration when choosing seating - are there enough seats to share, do they sit side by side or in a circle? There are clear boundaries between groups and this is the sense of boundaries and social distance between people.

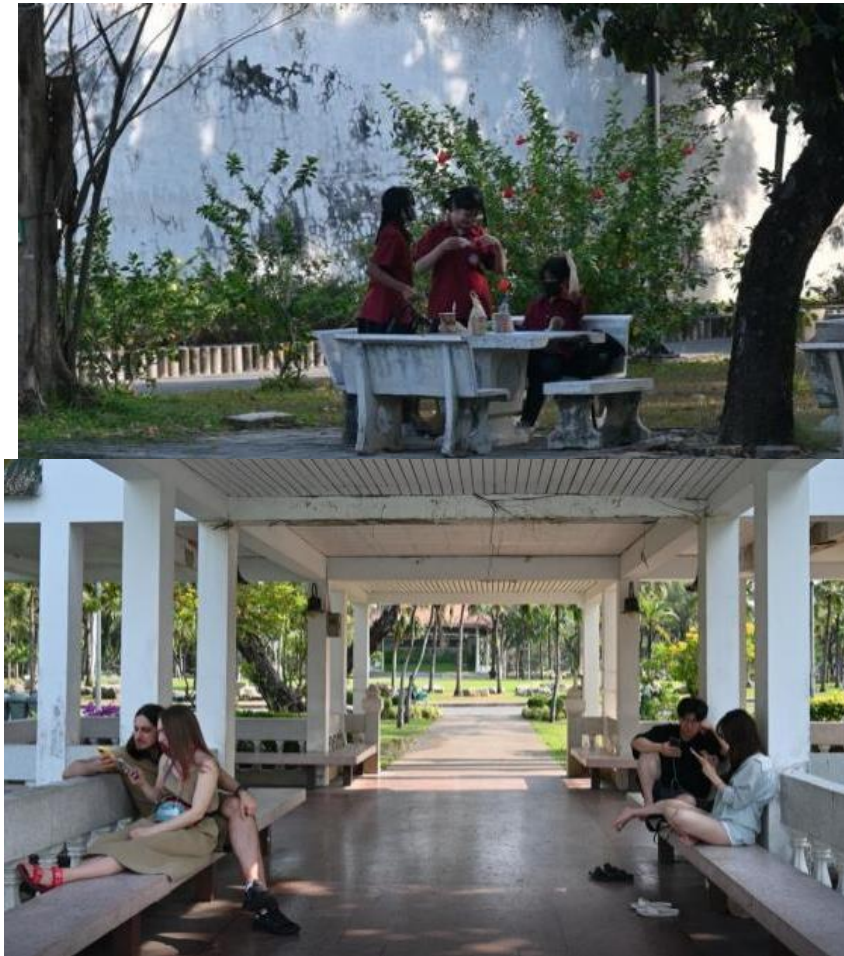


Figure 17: Usage status of different groups

Depending on the activity, such as playing chess, people will choose to sit opposite each other in order to complete this activity, which will require the user to find a dedicated resting space that is conducive to this activity.



Figure 18: chess-playing group

People also choose their resting space and seating through different behaviours, habits and activities. For example, gossiping, reading the newspaper, swinging, eating snacks, playing with their mobile phones, etc.



(Have time for the whole family to enjoy the sunshine together in the park)



(After school, the children will swing in the park again)

(Eating snacks on the park bench)



Figure 19: different behaviors of users

3.2.2 Behaviors of users staying park gather space

After choosing a location in the park, people have different behaviours and habits that lead to different states of rest. Children and young people like to sit on the ground and play, read books and sunbathe because they feel more at ease,

relaxed and uninhibited. The touch of vegetation and soil brings people closer to nature and makes them feel softer and more comfortable (Figure 11).



Figure 20: Users sitting on the ground

elderly people and users who have the habit of sitting on seats are more likely to choose to sit on seats than on the ground when resting in the park. Older people have more problems than children, young people and middle-aged people due to the curvature of the spine and the ageing of their muscles and knees. The process of sitting on a seat, slowly bending the knee joints and even needing the assistance of armrests. This is why older people in the park do not choose to sit on the ground, but only on seats (Figure12).



Figure 21: Users sitting on the seat

In addition to sitting on the floor and on the seat, some people like to lie down on the seat. Therefore, when designing the seating in the gathering space, it is important to design it according to the behavioural habits of the users, and it is possible to widen the surface of the chair so that the bench can sit and lie down.



Figure 22: users lying down on the seat

3.3 Interdisciplinary research

From the perspective of psychology and architecture, to analyse, explore and study the design of park gathering space, to change the way of thinking, can be more comprehensive, deeper and fuller to solve the deficiencies in park gathering space.

3.3.1 Centripetal architecture

The double-circle shape is one of the architectural features of the Tulou style and gives people a strong sense of centripetal force, a result of the demands of traditional clan culture. It is also a powerful way of preserving the 'family' culture for a long time. The double-circle form of the Tulou architectural style creates a strong focusing effect on the inhabitants, highlighting the position of the main Clan temple at the centre. The centripetal nature is retained in the design, as the inner circle gathering space is designed primarily for children, when people sit on the seats in the outer circle space, the centripetal force will drive the focus of attention towards the centre, a natural process of gathering attention.

3.3.2 Understanding of perception

In order to better serve the design and further integrate the Tulou elements into the design, it is important to pay more attention to the psychology of the user. I have learned about the psychological term 'perceptual comprehension'. Perceptual comprehension refers to the fact that people use their existing knowledge and experience as a basis for understanding and interpreting things. When people see a half-circle, for example, they subconsciously add the other half of the circle to form a complete shape, which is a reflection of their known experience. So when designing the children's bench for the inner circle of the gathering space, I also wanted to change the completeness of the circular bench in this way, breaking away from the standard double-ring shape and bringing a different sense of use to the inner circle. However, in people's consciousness, the concept of the double ring form of the earth building is still retained.

3.3.3 Boundary effect

Observing the park attached to Chinatown in Bangkok, observing the resting habits of citizens and tourists, it was found that people gathered in the park were at a certain distance between their spatial positions when resting, and the behaviour that produced the distance was conscious. The American psychologist Maslow believed that safety is a basic human need, so when resting in public, people choose to avoid contact with others as much as possible, which can be seen from the safety distance between people. Similarly, when choosing a seat in a restaurant, people will first consider a position to the side or against a wall. This is why the design of the outer ring rest area of the park gathering space can provide more resting seats against the wall to give users a sense of security, so that everyone can sit against the wall.

3.4 Experimentation : Form Exploration

By analysing the literature on Tulou architecture, it is understood that Tulou is an ancient dwelling with a long history. Through a long period of development, many architectural forms have evolved to suit the environment and conditions of the time, such as square earthen buildings, single-ring earthen buildings and double-ring earthen buildings.



Figure 23: square Tulou, single ring Tulou

Source https://m.sohu.com/a/357408713_180625?_trans_=010004_pcwzy



Figure 24: Three Ring Tulou

Source <https://huaban.com/pins/214270781/>

The ring shape with the earthen walls and the strong clan atmosphere are the most intuitive impressions of the Tulou architectural style, followed by impressive elements such as the tall, small windows and the solid, low stone walls. So it is from these impressive elements that the gathering space of Yuping Park is improved.

Short-term brainstorming and recording of inspiration. Select three design drafts that best fit the design objectives to create models to get a more intuitive feel for the relationship between shape and space, and the zoning of functional settings. The process of design experimentation also allows the researcher to identify hidden problems in the 2D design drafts, record the problems, analyse them and solve them before designing, advancing the design progress and obtaining a more complete design draft.

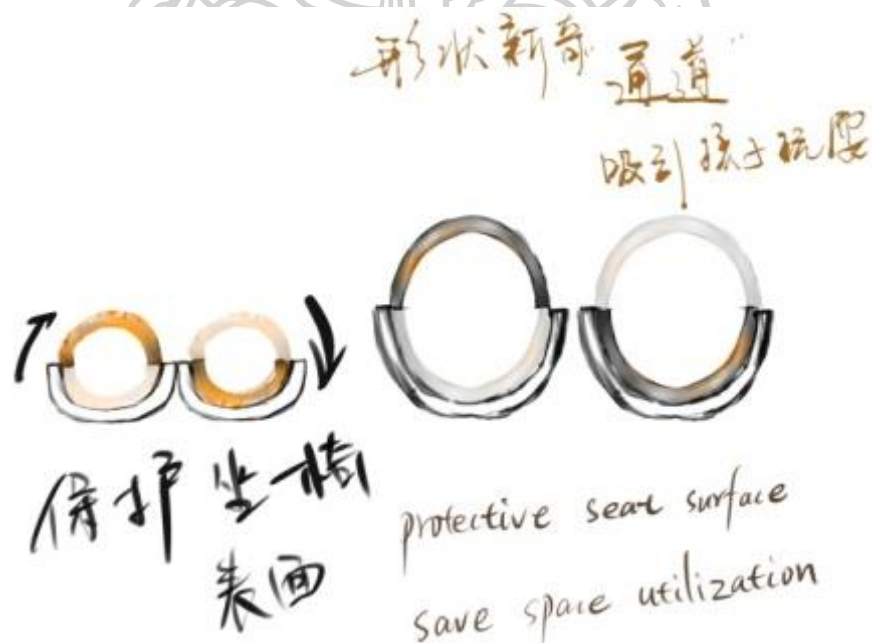
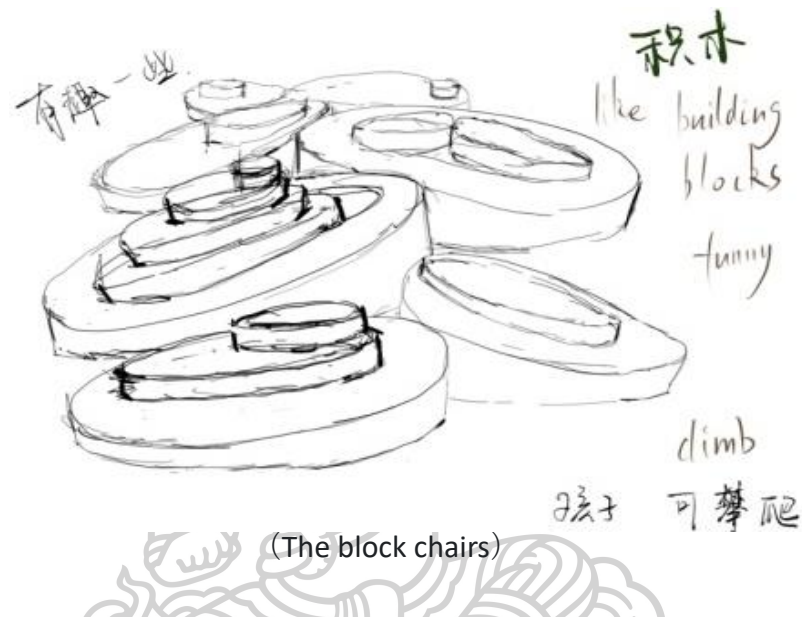


(The Bubble Chair)

The Bubble Chair and the Block Chair are park furniture facilities designed for children. The Bubble Chair is shaped like a ring of glued together bubbles. Since the exploration area is near the Baihua Lake, the inspiration comes from the foam in the lake water, so I hope this lounge bench can blend with the surrounding environment. Each bubble is a different size and can provide resting space for children of different heights. Children can enter the inner space with small sized bubbles.

There are more children in the large lawn area, and in order to allow more

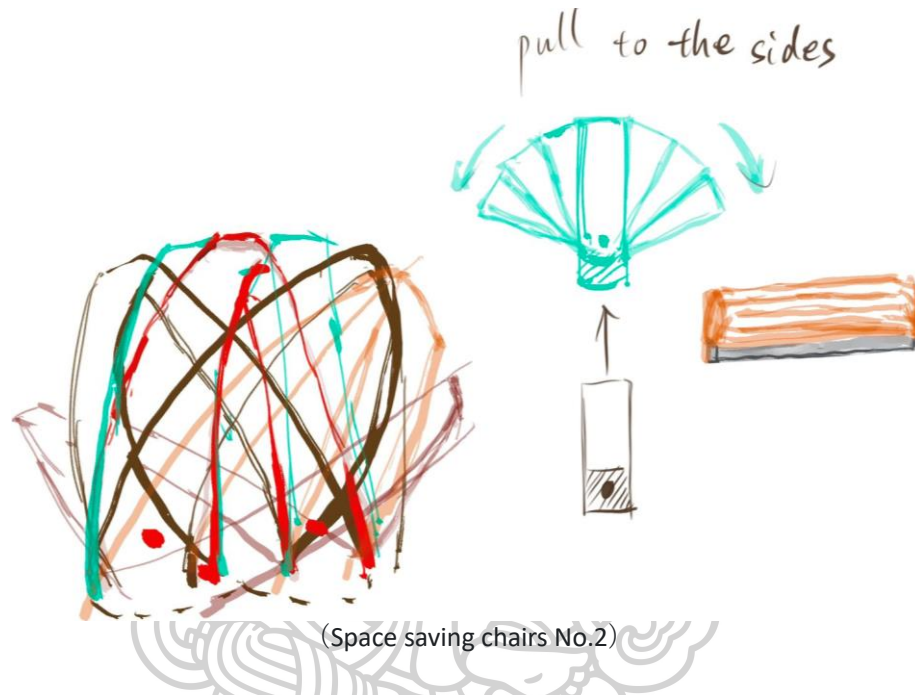
children to use benches, building block chairs have been designed. Building block chairs are composed of cylinders of different sizes stacked together, like stacked blocks that attract children's attention. Children can climb on each set of building blocks and also practice hand foot coordination. Make the chair not only have a resting function, but also provide exercise for children.



(Space saving chairs No.1)

Due to the frequent public activities in Yuping Park, the flow of people during the activities will be higher than usual. At this time, space saving chairs can be compressed to provide more space for tourists. Space saving chairs aim to expand

the available space in the park by reducing the seating surface. Given the weather conditions of frequent showers and heavy rainfall in Fujian Province in summer, in order to protect the seat surface and reduce wear, seat 1 can retract and seat 2 can rotate downwards.

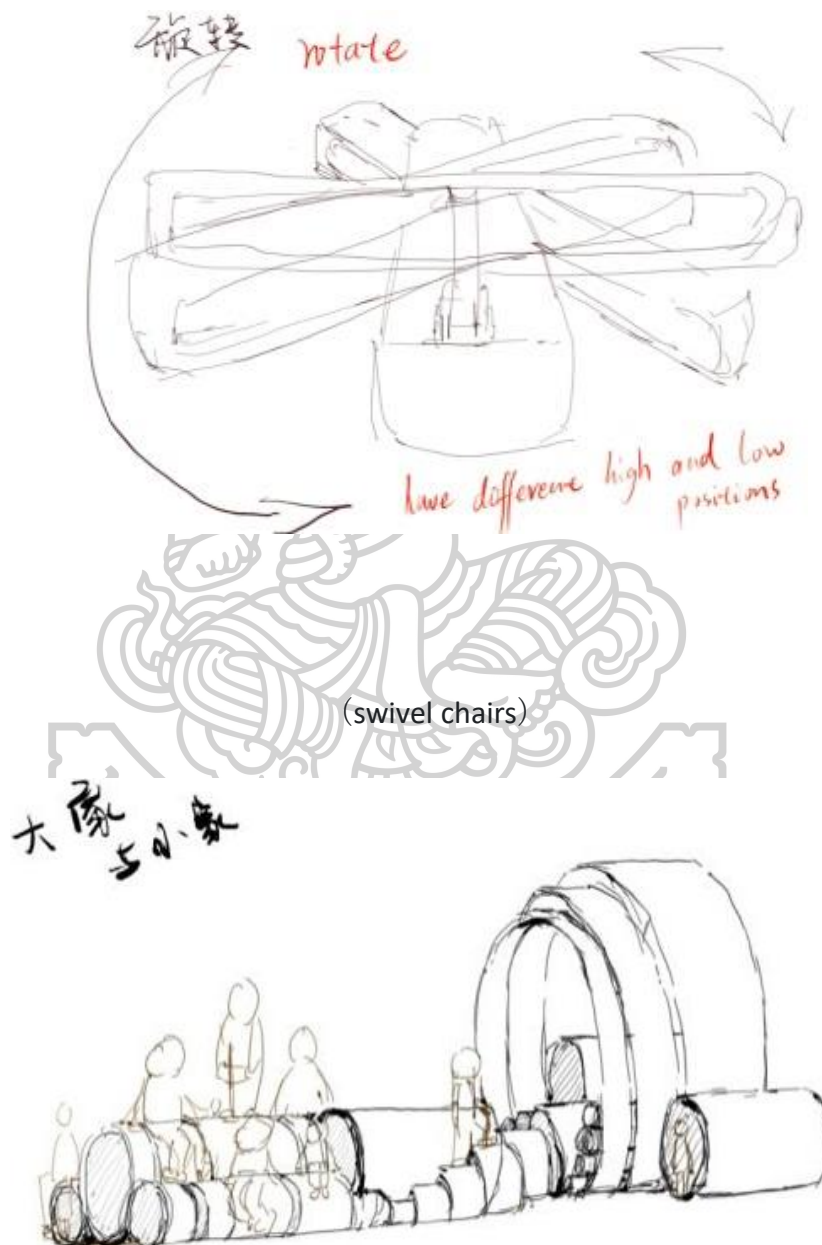


(Spring chairs)

The design of spring chairs and swivel chairs increases the fun and feeling of sitting on chairs. Considering that some users have knee problems and elderly people cannot bear their knees while sitting down, a spring chair has been designed. The spring chair is made of spring steel wire and is relatively high. When sitting down,

you can slowly sit down against the spring wire, which provides users with a certain amount of support and helps them complete the sitting motion.

The rotating chair can change the user's position by rotating the chair surface, providing users with more position selectivity and chair height selectivity. It also increases the interactivity between people.



(The Family Combination Bench No. 1)

In the gathering space of the park, there are many families participating. Considering that family members have different needs for seats, a modular combination method is adopted, consisting of modules of different sizes to form a

family combination bench. The family combination bench number 1 is thus born. Composed of hollow cylinders of different sizes, it can be used for users to communicate and rest, as well as for children to climb and play. The overall size is relatively large and can also be used as a sculpture in the park.

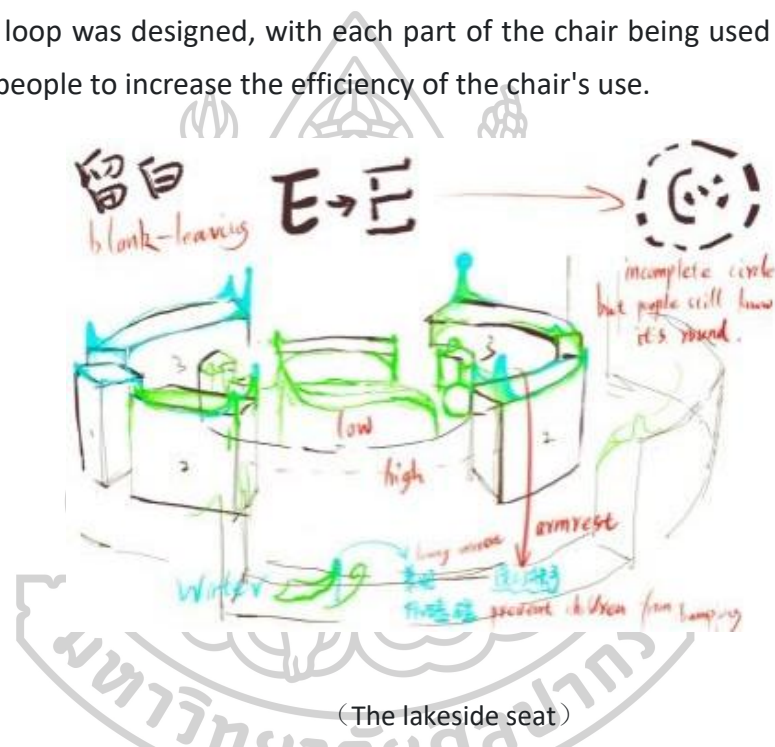
The family combination bench number 2 has a spiral shape that looks elastic and energetic. Users can have different resting positions when using the family combination bench No.2. You can sit, lie down, or climb higher positions. The overall size is large and can also be considered as a sculpture used in the park.



There are many people walking and running in the park, so I designed a sports tree pool suitable for sports personnel to use. The overall shape of the sports tree

pool comes from a square earth building, with its roof serving as the surface of the chair. The sloping chair surface is more suitable for users who rest after exercise than the flat chair surface. The square tree pool can also be planted with flowers, plants, and trees inside, making the chairs integrate with the surrounding environment.

Considering that the gathering space is located near Baihua Lake, I designed a lakeside seat. The corners of the bench resemble the shape of splashing water to prevent children from hitting it, and also serve as armrests to help those who have difficulty squatting. Due to the principle of understandable perception, an incomplete loop was designed, with each part of the chair being used by a different number of people to increase the efficiency of the chair's use.



The Ring Seating one has a fluctuating back wall for users to lean on, and the

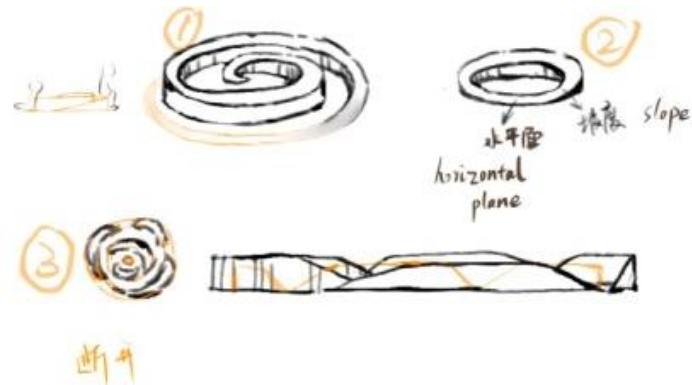
seat is divided into an inner and outer ring, which can seat 14 people. One can step into the inner circle from the low backrest wall. The inner circle as a whole is an enclosed space, while the outer circle of seats is separated by a wall, which also maintains a certain degree of privacy.

The Ring Seating II is inspired by the Ring Tulou and has seats of different heights on the wide ring wall, with users selecting seats according to their physical fitness and height. The park, as a place for outdoor recreation and relaxation, brings new opportunities for exercise, allowing people to burrow into the inner space from the low circular frame, or to step into the inner circle space from the shorter chairs.



(The Ring Seating II)

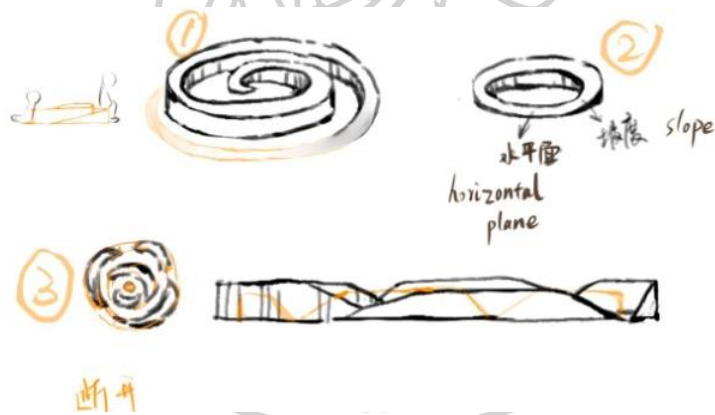
The Ring Seat III was created according to the behaviour of the users in the park, with the inner ring providing a resting seat for children with a lower seat surface and the outer ring designed for adults with a normal height seat, also taking into account those who like to lie down in the park, so a sloping surface is used as a backrest desi



(The Ring Seating II)

Figure 25: Draft brainstorm

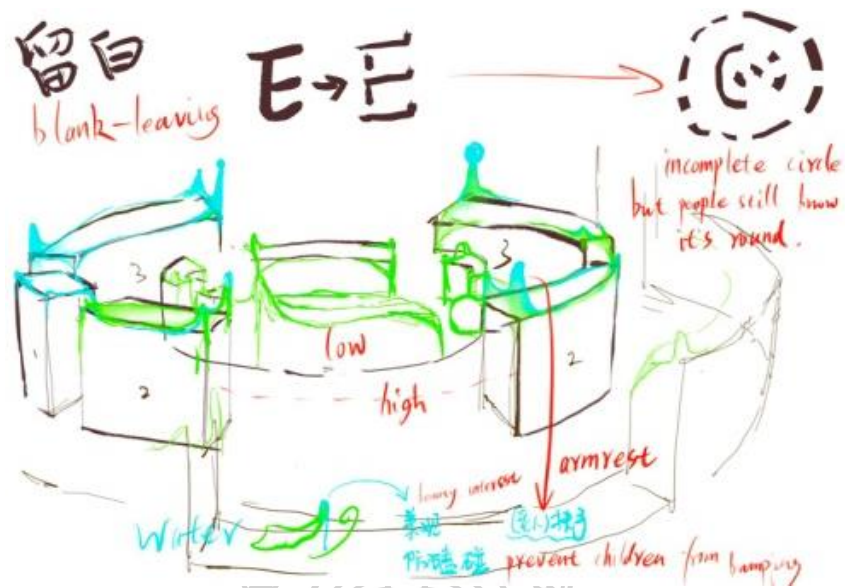
The brainstorming process resulted in a design draft that quickly captured my ideas for the architectural elements of the Toulou. Of course, these ideas are instant inspirations and do not take sufficient account of the gathering space in the park. So I chose three drafts from these that I think best fit the impression of Toulou and best express my feelings about it.



(Draft one)



(Draft two)



(Draft three)

Figure 26: Draft screening

The sketches only record ideas, and it is difficult to convey the full details of the design in a two-dimensional flat design. Therefore, the next step was to create a 3D model from the 2D draft. Through the process of making the model, I could also get a better feel of the shape and volume of the model, and think about the state of people when they enter the gathering space, their movement in the gathering space, and the range of activities of the crowd. The materials used to make the model are all discarded materials that I have accumulated in my daily life, as I want to carry out green practices throughout the design process.



Figure 27: Finished model

Looking at the overall model, it only has a seating function and needs further improvement to create a gathering space. For this reason, draft one and draft two were combined into a completely new design, giving it both a seating function and a space for movement. In order to satisfy people's perception that they can feel the architectural elements of the Tulou, a strong visual impression of the eaves was added.



Figure 28: Design improvement

The use of the seats takes into account the social distance and physical qualities of people, so the benches in the outer ring are divided into different lengths and different heights of chairs, suitable for different groups of people and different heights of users to rest. In addition to the fixed seats, swings have been added for users to choose from in order to give them a different experience.



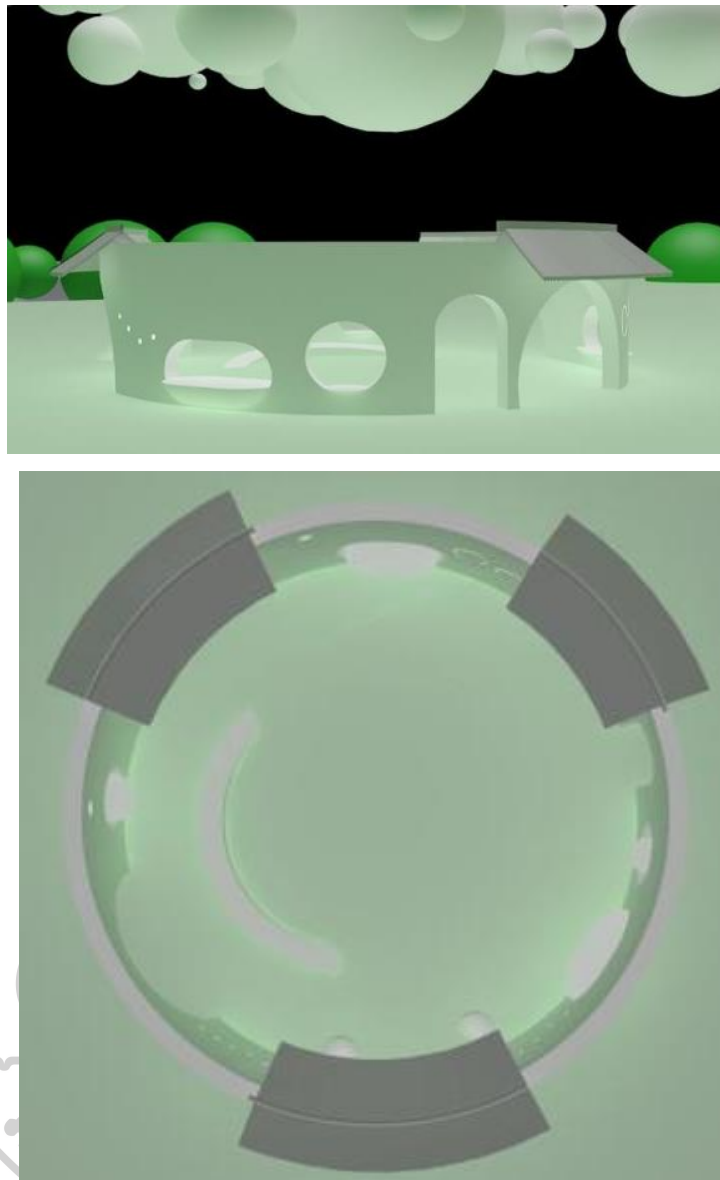


Figure 29: Models by 3d software

A model created using 3D Max software. It can provide me different perspectives.(Figure 29)

From the model produced by 3D Max software, it can be seen that the overall shape and form can fit the elements in the architectural style of Tulou. It is also suitable for placement in a gentle exploration area. The double ring form of Tulou architecture is also quite obvious.



Figure 30: Models

3.5 Summary

In this chapter, based on the analysis of the previous two chapters, the cultural and functional characteristics of the park gathering space are taken into account, and research is carried out in three aspects: spatial function, physical environment and users' needs, using observation, literature research, interdisciplinary methods and experimental methods respectively. In the process of analysing the research objects, the basic information of the park gathering space is sorted out, including the basic information of the people who use it, the overview of the activities and the basic overview of the location of the gathering space, the functional layout, the furniture and equipment, etc. At the same time, the gathering space is dissected in more depth and detail. The salient problems are studied and analysed: lack of public seating; old, functional and under-utilised facilities; and lack of distinctive regional cultural characteristics. It provides an objective basis for the contextual construction, contextual description and contextual use of park gathering space design.

Chapter 4

The result of Research

4.1 Design principles

4.1.1 Functional principle

Function is the basis of design, the design itself. The forms explored in this design are generated around the use of function. Functional areas are added in accordance with the user's activity needs, and then elements of the Tulu architectural style are combined to produce the final form.

4.1.2 Holistic principle

The design result is in line with the local culture, local environmental conditions and local people's needs in one, and is pursued to blend in with the overall general environment without being abrupt.

4.1.3 Humanization Principle

Starting from the behaviour and psychology of people themselves, the design should take care of users of all ages. Through this exploration, the conditions of park services will be improved and people's well-being will be enhanced.

4.1.4 Principle of sustainability

Considering the interaction of the design and the interactivity of the use process, I have included circular windows that can be rotated by the action of pushing. The two windows are of different heights so that more people can participate in the process, and turning the windows allows for different views. The outer circle has small holes in the wall at different heights, like cat's eyes in a door, to entice people to explore.

4.1.5 Principle of adapting to local conditions

The materials used for construction are: sand, bamboo, wood, glutinous rice, brown sugar, etc., all of which come from natural living materials. Do not change the soil, the use of local materials, people and nature in harmony. After demolition, it will not produce a large amount of construction waste like modern masonry and concrete houses, which is conducive to protecting the environment and achieving a green ecological cycle. Only by incorporating environmental concepts into design and making environmental protection a 'normal' thing will the living environment become better and better.



Figure 31: Build rammed earth walls

Source <https://zz.news.fang.com/open/37342796.html>

4.2 Construction technology

It has a very long history 4,5000 years ago, China has been using rammed earth method to build the wall, its biggest feature is very strong, according to local conditions, low cost. Early rammed earth techniques focused only on practicality, so walls built with rammed earth techniques were very uneven and did not care about shape and colour.



Figure 32: Ancient rammed earth walls

Source <https://baijiahao.baidu.com/s?id=1684478368984059497&wfr=spider&for=pc>

The technology of rammed earth is now upgraded. The walls are horizontal and smooth, a very significant improvement over previous techniques.

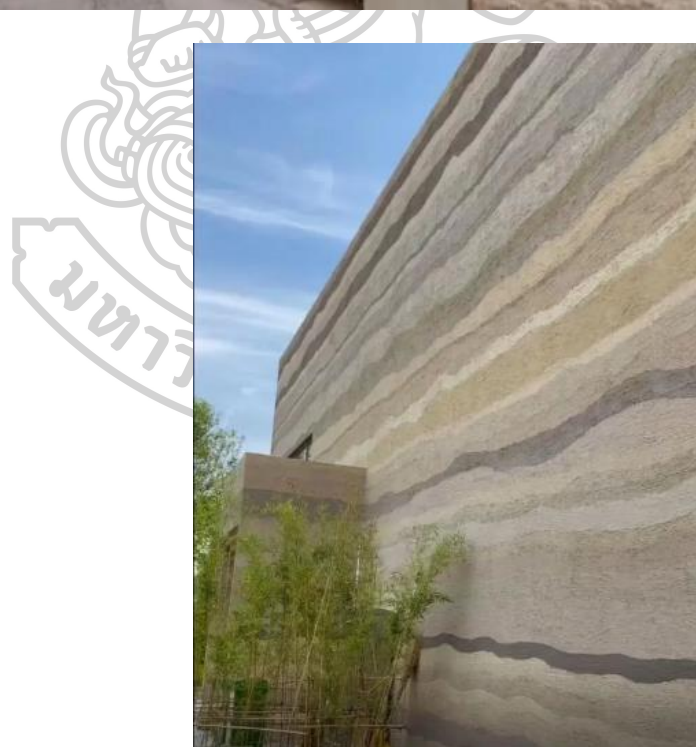


Figure 33: New rammed earth technology

Source <https://baijiahao.baidu.com/s?id=1708507796212745266&wfr=spider&for=pc>

4.3 Material

Fine sand, lime, bamboo, wood strips and so on, when glued to bricks and stones, the use of glutinous rice, brown sugar and other materials. The gravel used is fermented gravel.



Figure 34: sand soil composition

Source <https://baijiahao.baidu.com/s?id=1690955272475017651&wfr=spider&for=pc>



Figure 35: glutinous rice

Source <https://m.voc.com.cn/xhn/news/201608/14631323.html>



Figure 36: bamboo

Source <https://mr.baidu.com/r/X09MFYH54I?f=cp&u=0250a4c0f71677ae>



Figure 37: Brown Sugar

Source https://www.sohu.com/a/279027083_218843

The rammed earth material is one of the most representative elements of the Tulou architectural style.

4.4 Scheme effect display

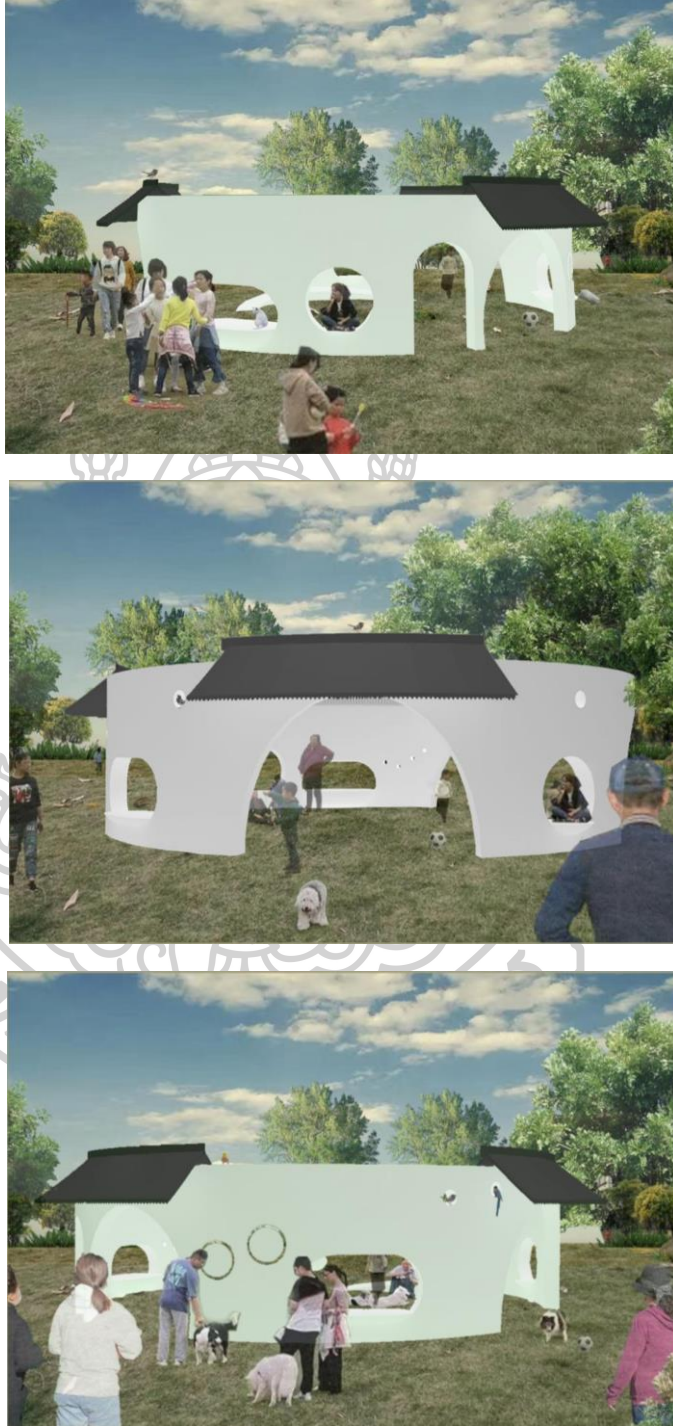


Figure 38: Models by photoshop

The scheme's rendering simulates the usage status of the park's gathering space

in a real scene. It shows the flow of people at the entrance and the interaction between users and the park gathering space when people stand, sit, chat with friends, play with pets, and so on in a real park gathering space.

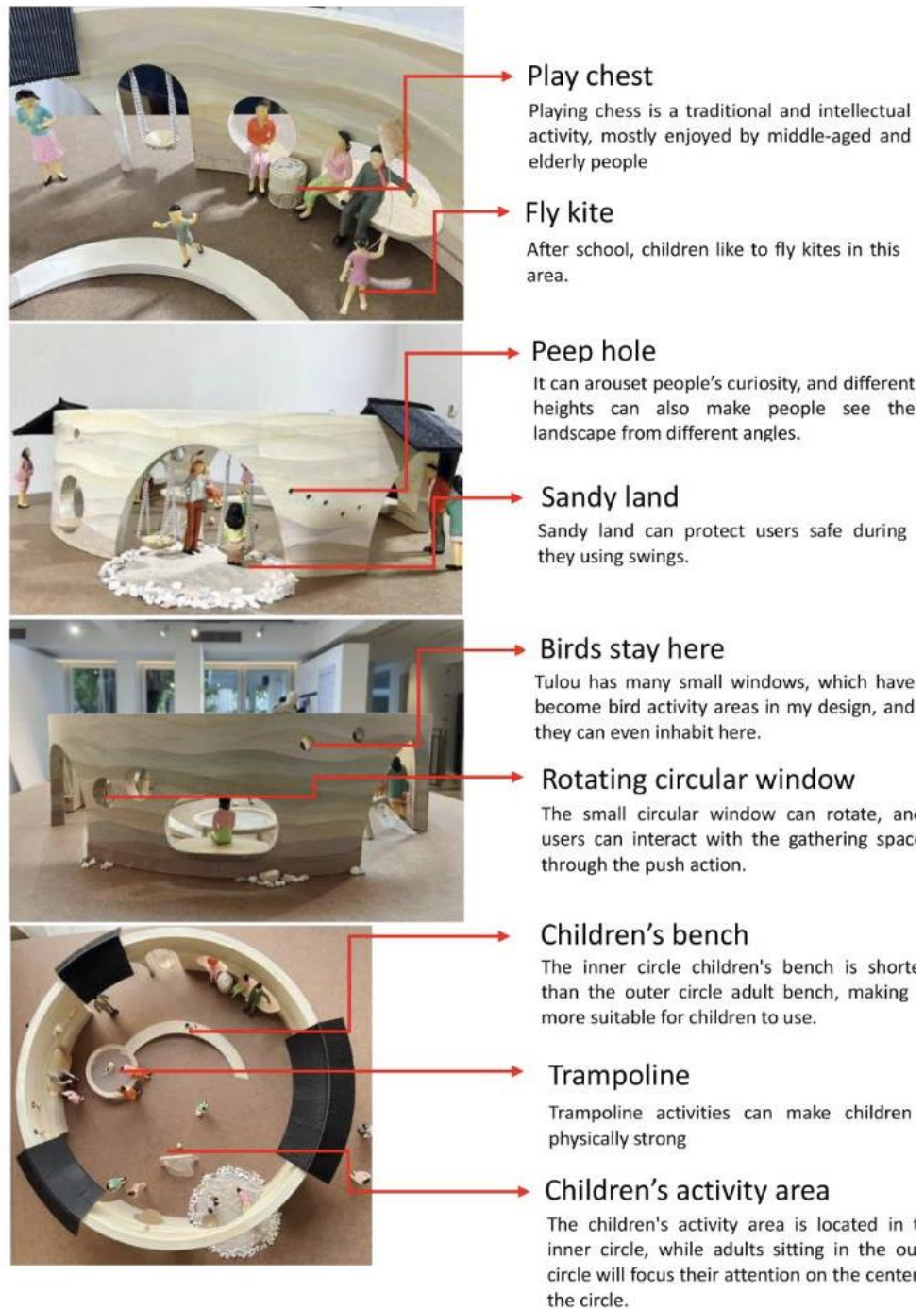


Figure 39: Exhibition models



Figure 40: Exhibition models



Figure 41: Exhibition models

4.5 summary

This chapter draws on the previous research on park gathering spaces, combined with a summary of Tulou's architectural style and an understanding of existing park gathering spaces, to summarise the design principles of park gathering spaces: the principles of functionality, wholeness, humanity, public participation and sustainability. It provides a reference for the design practice and also paves the way for the design results.



Chapter 5

Conclusion of the Research

5.1 Summary

This paper is a deeper exploration of gathering spaces in order to solve the problems that exist in park gathering spaces, through observation, analysis, research and design. The aim is to meet the needs of the public for park gathering spaces, to improve people's living standards and to add to the cultural atmosphere of the city. Firstly, the researcher's own personal experience of the problems in real life is presented. The state of use and problems of the park gathering space are observed; the connotation of the Tulou architectural style is elaborated, and the feasibility of integrating the Tulou architectural style into the gathering space is analysed and studied in depth. Based on a comprehensive research approach, the Tulou architectural style is integrated into the design of the gathering space.

The main findings of this paper are as follows:

1. A basic understanding of the concepts in gathering space and tulou architectural design is gained through the literature research method, and the consistency of the park gathering space and the tulou architectural style in serving society and conveying emotions is analysed.

2. The principles of gathering space design as well as design methods are proposed through the exploration of park gathering spaces.

3. Through observation, interdisciplinary research and experimental methods, we understand people's practical needs and psychological expectations of gathering spaces in park gathering spaces. Based on the three elements of human factors, the psychology of human behaviour in space and humanised space, the Tulou architectural style is applied to the design of the gathering space of Yuping Park in Yanping District, Nanping City, Fujian Province, and new design thinking and methods are investigated to achieve a reinvention of public services and modelling.

5.2 Limitation

The design of a park gathering space based on the Fujian Tulou architectural style requires research and data analysis on the behaviour and needs of the users of Yuping Park and parks with traditional architectural styles, but due to money constraints, it was not possible to visit Yuping Park to observe and research it. Due to

money constraints, it was not possible to visit any of the parks with traditional architecture, so the knowledge of these parks is too general and superficial. Due to the time constraints of the users of the study, which were concentrated within a month, some of the data obtained was incidental and may not be fully representative.

5.3 Suggestion

The design of park gathering spaces requires more attention and research from designers, who can explore different perspectives of design through their professional minds. Service design thinking can be introduced into the design of park gathering spaces to broaden the ideas and methods of park gathering space design, and provide new references for the development direction of intelligent and humanized park gathering space design. We should enhance the awareness of protection and development to make the vitality of ancient architecture more durable. The design should not go against the laws of nature, and more consideration should be given to the relationship between design and nature, and the relationship between construction materials and the natural environment in the exploration process, so that the development of ancient architecture can enter a sustainable process. In order to make the park gathering space design better for visitors and citizens, there must be a set of relative management and maintenance system to maintain the normal use of the space. The summary of the principles of park gathering space design in the Fujian Tulou architectural style in the thesis is based on fieldwork research, literature studies, successful case studies and modelling practice. Therefore, in order to ensure the reliability and feasibility of the principles, a more in-depth analysis of the findings is needed, as well as the collection, screening and analysis of more relevant case studies for a more comprehensive exploration of the research content.

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