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Integrating BIM and Feng shui for the assessmen t of user experience based on blockchain

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Submitted August 2018, in partial fulfilment of

the conditions of the award of the degree MRes. in

Sustainable Energy and Building Technology

I hereby declare that this dissertation is all my own work,

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Abstract

As human needs evolve, information technologies and natural e nvironments require a wider perspective of sustainable development, especially when examining the built environment that impacts the central of social-ecological systems. The use of fengshui views and environmental psychology can provide a reliable basis for all decis ion-making in the design, construction and maintenance cycle, optim ize engineering design, reduce the possibility of error loss and rewo rk caused by in human design or violation of ergonomics during th e construction phase, in violation of physical knowledge. It also con siders the integration between BIM and human psychology to impr ove the practical application of BIM in human life. The primary p urpose of this study paper was to establish a conception which Chi nese traditional Fengshui could be used in BIM and design a digita l Fengshui model in BIM software and achieve rational distribution in AEC projects.

Keyword： BIM; Fengshui; environmental

Acknowledgements

I could not be able to finish my dissertation study without the guidance of my supervisor and support from my family. Therefore, I would like to express my deepest gratitude to my supervisor, Professor Llewellyn Tang, for her excellent guidance and patience. In addition, I would also like to thank my parents. They were always encouraging me with their best wishes.

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Chapter One Introduction

1.1objective

The architectural environment affects the central position of the social ecosystem. It refers to any man-made structure or environment that provides support for society and economy. When implementing sustainable practices in building environments, it is important to involve building stakeholders (Petri et al. 2015). In recent years, in order to improve the application of building information modeling (BIM) in LEED authentication, a lot of research has been done. As one of the most popular and globally recognized green building standards, it is essential to evaluate site location and transportation's sustainable impact on ecosystem and human life in LEED (leading energy and environmental design)(Chen, & Nguyen. 2016). In the design and construction of green buildings, it is a key and arduous task to evaluate the sustainable impact of site selection and transportation on the ecosystem and human life. Work on these matters requires experience, time, Labour and manual calculation. With the gradual maturity of BIM technology, many researches are strengthening the application of building information modeling in green building certification(Chen, & Nguyen. 2017).The ultimate goal of the

development of science and technology is to adapt to the survival and development of people, sustainable development needs to take into account the combination of knowledge in all fields. This paper will describe a new creative attempt which combine BIM technology and Chinese traditional Fengshui， which similar to astrology in western.

In order to determine the feasibility of this kind of technology application，we carried out a pilot study about Fengshui's history in China also market in the world. To evaluate the importance to contemporary building fields， the construction Fengshui study enjoys the lofty status in the Chinese history of architecture. To describe the origin textbook of Fengshui，which called ‘The Books Of Changes (Ching)’， the ancient book is a study of change in human life. The belief is that understanding the pattern and cycle of change will prepare the person for future events and help with making right decisions. In addition，the paper review the role and future development of human psychology and human behavior factors in the integration of BIM.

1.2problem statement

1.2.1Basic overview of BIM

The earliest authoritative definition of BIM came from The definition of The first BIM given by The National Building

Information Modeling Standards Committee (NBIMS) as follows:

A Building Information Model (BIM) is A digital representation of physical and functional characteristics of A facility,As such it serves As A Shared knowledge resource for Information about A facility Forming a reliable basis for decisious during its life-cycle from inception. A basic premise of BIM is collaboration by different customers at different phases of the life-cycle of a Facility to insert, extract, update or modity information in the BIM process to support and reflect the roles of that stakeholder. The BIM is a Shared digital representation founded on open standards For interoperability.

The new definition gives the meaning of BIM, which is to use software technology to provide information system for project design, construction and operation and break the traditional design thinking of project life.

The design software based on BIM technology has three features:

(1) the result of BIM software design is an information model established in the three-dimensional space, in which each component is accompanied by rich information and recorded in a digital form in the model database, which is called and Shared at any time. It is this characteristic that distinguishes BIM from other

software.

(2) the BIM software could create real-time and consistency in the database connection, all the information from the same project, such as drawing and material list are linked to each other, can achieve a change change everywhere, saving a large amount of tedious modification work, also ensure the high uniformity and the accuracy of the model, improve the quality of the project of simulation analysis.

(3) BIM software can support the excuse of a large number of analysis software. The model of BIM software can be imported into various calculation, simulation and analysis software, and the project related information can be obtained through the analysis of the model. This Extensible Markuo Language (XML) can transmit information on the network, so BIM software is equivalent to creating a Shared environment, realizing the maximum utilization of project model, saving a lot of time for engineers to model, and it is an efficient software.

1.2.2The basic explanation of Fengshui

Fengshui is a science that integrates astronomy, geography, environmental science, architecture, aesthetics, psychology and ethics. Generally speaking, Fengshui is the science of choosing the environment.Because the concept of fengshui is more complicated,

it can display Fengshui systems through a simple drawing by X. Li(1993) .

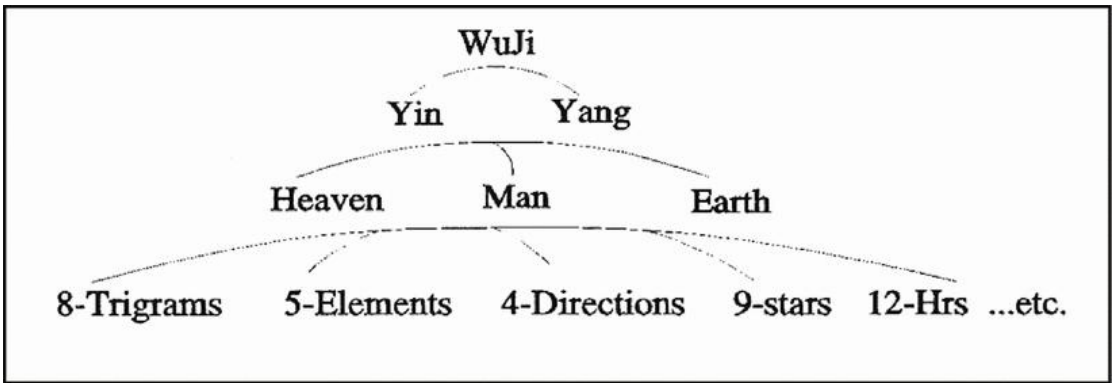

Figure 1. brief system of Fehnsghui. (Source:“ X. Li, 1993 [8])

1.3scope of research

Fengshui is an extremely rigorous science, no less rigorous than that of mathematics, chemistry, physics and other natural sciences

Comprehensive believe that fengshui is the ancient lineage of a cultural phenomenon, a kind of pick an auspicious day and avoid the number, a widely circulated folk, a relevant environment and learning, a kind of the combination of theory and practice. Yoon(2017) He defines the basic principles of fengshui as places that are more suitable than other buildings for human construction, such as houses, tombs, temples, cities and villages. The auspiciousness of a place depends on the availability of a lively or domineering being able to flow in a particular direction under

certain topographical conditions. In traditional way, fengshui can be divided into two parts: the ‘yangzhai’and the ‘Yinzhai’, which are places for the living to live in, and the Yin zhai, which is the tomb of the dead. fengshui theory of the physical trend and principle of the distinction between the former emphasis on the situation of mountains and rivers on good and evil, the latter on Yin and Yang, gua theory on good and evil. The core of fengshui is ‘qi’ . Its concept is very complex, involving the dragon vein, acupoint, river, direction and so on. It has many taboos and pays attention to time and location.

Obringer(2005) said that Fengshui is based on a number of complex ideas related to cosmology.The natural philosophy, astrology and astronomy of general organization.The possibility that the universe and organization affect human life.It mainly involves finding the best possible arrangement in space.Turn to the word fengshui, which is now most commonly used.fengshui is the most famous word outside China.Feng and shui mean "wind and water" and refer to two natural elements.In the history of China, whether concrete or rational, is extremely important.The wind was especially strong in ancient China. In the shang dynasty (18th-11th century), it was a nourishing god.Associated with grain, as a messenger with the words of the emperor. In the context of

divination and ritual. Indeed, it is the object of ritual. In Paton(2013)'s Five Classics of Fengshui, this book tells the basic concept of Fengshui and the relationship between Fengshui and geography.According to Paton(2013),fengshui has become increasingly global and people need a meaningful system of humanistic knowledge to ease their rejection of scientism.Paton regarded fengshui as the thought of Chinese spiritual geography. In Fengshui, a classic expression comes from The book of Burial, where an entity is given life when Qi is transported through The terrain. Qi is an abstract concept, is refers to the cohesion in building the atmosphere of a kind of touched, The maximization of gas depends on the active flow of energy, material, species, information, and the harmonious interaction between the mountains and the two elements of the wind and water. To find the best energy analogy in the land assessment to find the suitability of the land. Hong, Song and Wu(2006) mentioned that the spatial distribution and connectivity of mountain streams will have a significant impact the ecological function of the landscape. Degraded or non productive functional landscapes can be enhanced by adding new landscape elements. Fengshui, as a spatial theory, is similar to the concept of landscape architecture.

However, from a scientific point of view, fengshui is the space

of the magnetic field, magnetic field can affect a person's life, career, family and even marriage. For example, if you live in a place where the magnetic field is not suitable for you, it is easy to affect your mood or quarrel with others, which will lead to a negative attitude in the long run. In ancient China, the core of the fengshui is the harmony of man and nature, based on the investigation to the geography, the understanding of the natural environment, and to modify the environment and use, to choose and the people live or burial environment, the construction of the magnetic field can to conform to the master, to create a good living environment. fengshui is an important reference factor in the design and construction of modern buildings, according to Madeddu and Zhang(2017), In ancient China, the main task of urban planning was to choose a suitable city location,In ancient times, fengshui provided a framework for a person to arrange urban space. Today, the channels through which values are expressed are part of a broader system of urban governance, including public planning and design rules, and extend to private interests and their impact on development outcomes. fengshui had long been considered a “determinative factor” (Meyer ,1978).In order to explore the further research value, it is essential to distinguish Fengshui from counterword in traditional implication. Looking for the scientific

nature of Fengshui, Elizabeth (2000) said that in China, geography "earth station", or "the place on the earth", this also means "principles", or "reasons", and fengshui explains why different regions have different development results, due to different wind water.

In the other hand, there are some points of view that fengshui is a superstition, as Bruun wrote in his journal ‘The Fengshui Resurgence in China: Conflicting Cosmologies Between State and Peasantry’,As early as the Tang Dynasty, the Empire tried to quell "untrue". Since Mao's reform and Deng Xiaoping's reform, many revitalization activities in China's old cities have been revival of unofficial folk religious space, the concepts of fengshui gradually began to revive. As a traditional culture, fengshui is still inseparable from the life of Chinese people, mentioned by Abramson（2011），similar with Wu(2004), pointed out that although the fengshui has never been lacking in books, those published on the mainland are aimed at introducing fengshui principles and technologies themselves, and providing a search for "scientific elements", which are said to help "abandon falsehood and retain the most true," while most publications in the West are "guide" to "Oriental wisdom", providing "complementarity" means to improve life or business performance. However, few people devoted themselves to the role

of fengshui in the society, especially its extensive social influence in contemporary China. Further more Fengshui is also a controversial topic in the cultural exchange between China and the West. Seeking common ground while reserving differences has made fengshui a place in contemporary social culture.

Even under the influence of Fengshui in different regions and natural conditions of the same area. This angle to comply with the general definition of geographical in Europe and America is quite good,According to Elizabeth(2000), Fengshui deserves serious scrutiny from geographers.It says fengshui has always been shaping a very important influence of the human environment in the Chinese cultural field for at least 4000 years, and it is also working hard for the contemporary society.As a culture, fengshui not only affects Chinese people, but also affects architecture, navigation and even Chinese medicine. Beyond, Mak (1998) shows that “most of the major cities in China conform to the criteria of the ideal fengshui model” (Figure 2).

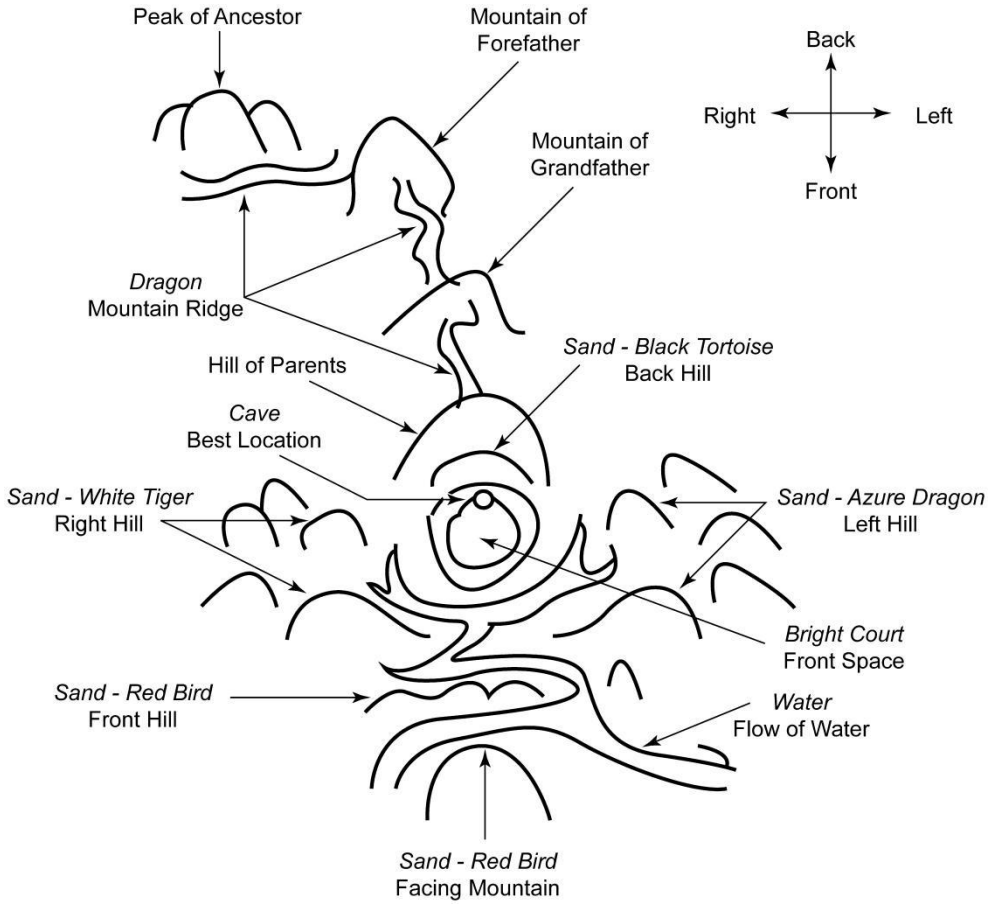

Figure 2. The characteristics of fengshui on Chinese architecture

Fengshui is an important carrier of ancient Chinese traditional architecture. Later generations have concluded that it is more suitable for survival and development by summarizing the experience of predecessors. An ideal topographic condition for preserving vitality is a flat water basin with a background mountain shaped like a horseshoe, house, tomb or city shelter and in front of the waterway. Such terrain conditions are recommended, because life energy through the background mountain to the auspicious locations (cities, for example), and because the energy cannot be saved through the water in this place (Guo Pu 1875, 1). The

direction south is a complex fengshui compass. Most traditional Chinese and other historically important east Asian cities have applied these two key fengshui standards to their urban planning. Most of these cities have background mountains and cities (especially palaces) at the end of the foothills overlooking the flat land in front of them and a nearby waterway.

In ancient China, when people chose to build houses, they would consider many aspects, close to water source, convenient for living and conducive to agricultural irrigation. Choose the upstream part of the river or the junction of the river. It can be seen from the site selection of ancient buildings and fengshui that people in ancient times were very fastidious about the site selection. It is very difficult to build the village in ancient buildings and geomantic villages, and the basic villages are behind the mountains, which are favorable to resist the cold wind in winter, and the wind that can blow to the south of the summer is also conducive to the growth of grain and grass, and the relationship between the building and the wind water can get some experience, the sun, the slope and so on.

In the learning of Fengshui, it prefers all things together as soul, nature and humanity, previously in the ancient decades, has already mastered the stars, the sun, the moon and vital determine the running law of water and fire, from which determine the

relationship between weather and natural disasters, and so on. Modern architecture must take its essence, use scientific concept to the paper expounds the relationship between Chinese classical architecture and fengshui, it uses the penetrating of the ancient geomantic learn to let more people to understand the modern value of fengshui, centered on the urban construction in modern society, and most cities lack of rivers and mountains and rivers. Yoon(2017) pointed in his article that City builders have always tried to justify location selection by using fengshui. This is why cities are often built on a south slope on a back slope overlooking the flat ground. There are three key Some of the key fengshui principles to consider when building an office building which he mentioned:

(1) The building itself should have a balanced and peaceful solution prospect (not a dangerous exterior design);

(2) Buildings should form a harmonious relationship with nearby environments.

(3) Buildings or furniture (such as desks) should be placed in the rear with a strong protective mountain (or interior design wall) and an open space (window) in the front.

Many examples show that fengshui is becoming a major factor for people to choose place for living, Wu， Yau and Lu(2012) did a marketing research about fengshui, they figures out fengshui

principle has important influence on the housing choice of Chinese social consumers. However, the importance of this belief in consumer decision-making has not been studied in previous studies. The results show that consumers tend to pay more attention to housing, have good accessibility, no harmful objects, positive direction, and harmony between fengshui and human beings.

1.4benefit of research

In FengShui knowledge also seek the families and businesses in today's China community, even overseas. From ancient China, Fengshui has become an important reference for architecture.In the basic theory of fengshui, the unity of man and nature is an important concept, fengshui runs through the various processes of traditional Chinese architectural activities, from site selection planning, architectural monomer, interior decoration, outdoor decoration and construction. Liu (2011), the traditional architectural style, originated from the traditional dwelling of Tujia people, "reclusiving" in the southeastern part of Chongqing. This is the ancient living wisdom, because it is "the beautiful home of China" from the perspective of historical origin, from the contemporary wisdom of geomorphology, climate, technology concept, economy and way of life.It is clear that Chinese traditional architectural style has merged the elements of Fengshui water from the beginning.

People believe and rely on Fengshui water and hope that Fengshui water can bring prosperity. All of these have scientific basis.Lu (2010) also proposed Yuyuan garden's physical order hiding - take garden as an example in Methods of Fengshui, played an important role in garden design.For example, in a garden's spatial structure, the "one circle" walking system, the channel like the tree and the tree, form an irregular fractal system. Some people think that the structure of these rules generated, mainly caused by between similarity and complexity of and part of the garden, are deeply influenced in the principle of I Ching ,which called “The Books Of Changes (I Ching) ” ， the ancient book is a study of change in human life. Belief is the mode and cycle of understanding change. It will prepare for future events and help to make the right decisions.The theory of Fengshui is a major research result of the book of changes. In 1996, Ronald (1996) used the folk beliefs guided by Fengshui to develop the relationship between the evolution of Chinese rural settlements and their contents, Since 1949, in Taiwan and coastal areas, different political and economic systems have affected the geometry and shape of villages, affecting the inheritance and function of villages. This article investigates and compares the reshaping of rural settlements in Taiwan and Fujian in the past 50 years under the influence of

Fengshui.Generally speaking, Fengshui theory can be applied to the construction of bridges or gardens, even the reconstruction of villages or cities.

The use of fengshui in architecture is not only popular in China. Kalland(1996) analyzed the layout of Japanese society in fengshui.

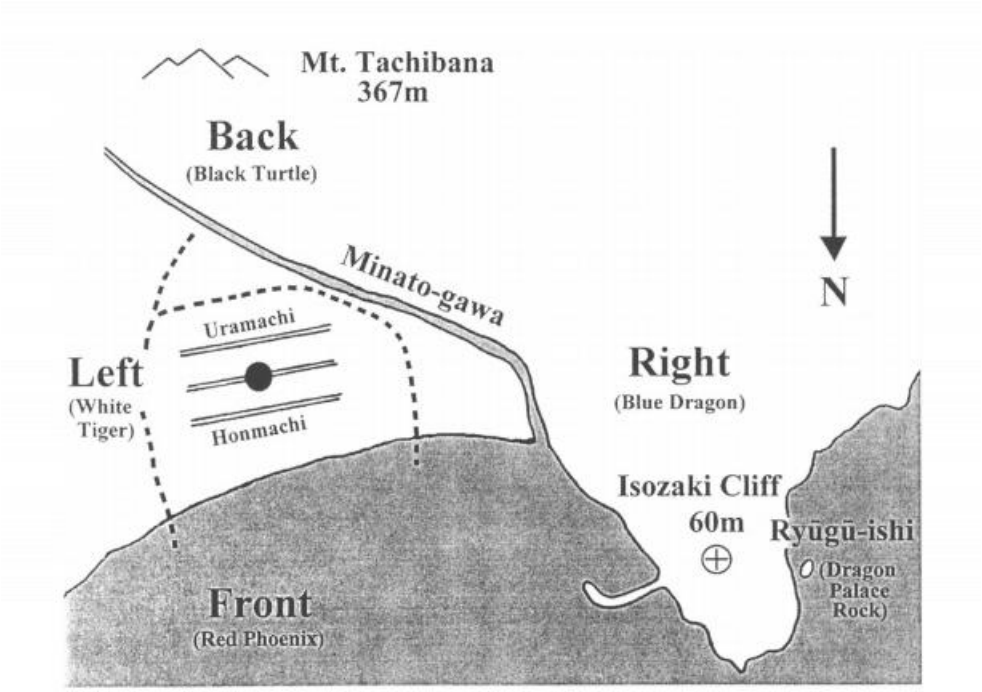

Figure 3. *Map of Shingi and the Form School*

Taking a small Japanese fishing village and school as an example, he explained that the construction of villages and schools conforms to the corresponding principles of fengshui. For example，regarded landscape a cardinal point, each directions of the school has its own stand for:

right	east	blue	dragon	spring	wood	sour

front	south	red	phoenix	summer	fire	bitter
center	center	yellow			earth	sweet
left	west	white	tiger	autumn	metal	hot
back	north	black	turtle	winter	water	salty

Kalland(1996) thought that the architectural environment is full of meaning and communication, information about social relations and world view. Through the fengshui， the location and layout of the Japanese community speak metaphorically.

1.5overview

In the contemporary world, we use the Chinese classical architecture geomantic learn slightly flexible, regarded the mountains and rivers as high-rise buildings, compared the river to the road extending in all directions,in brief, fengshui is the use of environmental research, which could find the most suitable environment reasonably.

Beyond that, the management of urban landscape is strongly influenced by fengshui. The private homes of city dwellers are often built by consulting a professional fengshui practitioner who considers the principles of fengshui. In this sense, it is almost impossible to understand the urban orientation and urban design of a city without understanding the principles of fengshui. fengshui is an important factor for modern Chinese commercial real estate

developers and urban residences.

Chapter Two Feng shui influences the design of modern residential buildings

2.1Direct impact

Influenced by thousands of years of traditional feng shui, traditional Chinese architectural design is influenced by the traditional feng shui theory, which forms the typical residential environment pattern of Chinese cultural landscape, and provides an ideal prototype for modern residential architecture. Among them, the living environment model of "mountain surrounded by water" became the standard. Most typical is "four spirit beast" living space model.

Traditional geomantic theory pursues "angry" as the core element of human living environment. In the mountainous and hilly area, the situation of the mountain range rises and falls like a dragon, the point should be right, have "vitality", can enjoy the blessing of the natural environment, otherwise otherwise. The overall landscape environment forms the so-called "four spirit beasts" pattern of left green dragon, right white tiger, front rosefinch and back basaltic, that is, buildings are surrounded by mountains and surrounded by water system. A model that is highly recommended in both male and female homes. After thousands of

years of theoretical and practical deliberation, this model has a unique aesthetic value of landscape, so today, it also has a traditional aesthetic flavor of art.

Ideal model of plain yangzhai base: backwater, surface street. It also reflects the environmental features of "Yang sheng Yin decayed in pingyangdi, as long as the water is around and flows in one place, with the dragon as the dragon vein and water as the protection". Nowadays, it is difficult to find such a peaceful living environment. Only in the environment surrounded by mountains and rivers can we get air. This serves as a reference model for today's environmental choices.

These two basic modes leave us with a large, hierarchical and orderly aesthetic view of the landscape environment. It is also a classic of thousands of years of traditional feng shui culture.

Nowadays, these classic patterns are hard to find, only scattered in local areas, but such environmental patterns have a profound impact on people's psychology. Therefore, in today's residential and architectural environment, such a model will be referred to, promoting the improvement of the cultural landscape environment.

In order to survive and live, human beings make great demands on nature. The aim of traditional feng shui theory is to

protect and improve the original natural environment. Feng shui stresses the harmonious coexistence of architecture and environment to create an ideal environment of "harmony between heaven and man". "Although there is someone doing it, it is just the requirement of ecological living environment, and also the ultimate pursuit and feedback of human beings to nature. The design of ancient garden is the essence of fengshui theory, and it also has the idea of humanistic landscape. In the present urban living environment, it provides a good reference for the garden design.

2.2Indirect influence

Traditional geomantic science has very strong practicality, in the development of thousands of years and exploration, already imperceptibly to people spirit level produces deep influence. It should be said that today's environmental choices are affected by the invisible. Of course, this pattern of landscape environment is basically determined by the environmental conditions and social conditions that people live in.

The jiangnan garden with the characteristics of Chinese literati and officialdom is affected by the immateriality of fengshui. The shaping of this landscape environment virtually reflects people's aesthetics of living landscape environment. Under such a reference aesthetic model, the beautiful scenery such as "no way out of doubt

and no way out of doubt" forms people's evaluation standard of beauty of current living environment, and thus can react with the geomantic theory. As a matter of fact, the application of fengshui theory goes deeper into the shaping of ancient Chinese gardens, which is embodied in the renovation and perfection of landscape environment and the enjoyment of nature, rather than the deliberate reproduction and reconstruction. Nowadays, the traditional fengshui theory is more reflected in the guidance of the overall environment in the residential architectural design. As an architect, we should not only strengthen the in-depth analysis and understanding of the natural landscape, optimize the aesthetics, but also pursue a harmonious, elegant, tranquil and balanced public aesthetics. For a long time, people have been deeply affected by the adaptation and transformation of the geomantic theory to the environment.

In addition, in the traditional fengshui theory and the thought of "qi", the Chinese traditional architectural view reflects a kind of harmonious and unified, simple and authentic, profound consciousness. In modern urban residential buildings, this simple view of living is also upheld: only the harmonious relationship between the sky, the earth and the human can create perfect conditions for any design elements that are not isolated individuals.

2.3The principles of fengshui on the site selection of

architectural planning

Just as the description of mountain situation by "a thousand feet is potential and a hundred feet is shape", the relationship between architecture and environment is not a rigid, general, abstract or even dogmatic environmental choice. "If you take the situation as your body, the spring as your blood, the land as your skin, the grass and trees as your hair, the house as your clothing, and the door as your cordage, if you get what you have, it is a matter of strict elegance and good luck." These claims in the emperor's residence sutra also indicate that the traditional geomantic science requires full attention to the integrity of the environment. One is like the people's pithy place cloud: "the Yin residence must choose good topography, backmountain surface water is called the human heart. The mountain has come long hair, the water must surround to make ring, the Ming hall is wide to have the blessing, the water mouth collects accumulate ten thousand gold, close very two square to have no obstacle, bright and bright door court." Geomantic learn to the relation composition of environment and building, main principle is integral sex principle.

The ideal pattern of geomantic theory is to depend on mountains and waters. Mountain is the skeleton of the earth, water is the blood of the earth, without blood, all things can not survive.

From the earliest human settlements development, all cannot leave the water area. According to the situation of mountain, house construction has two kinds of situation one is, three sides circle mountain, form cave ground, the house is built in cave ground.

May as well take nanjing for example, as six dynasties ancient capital, the waterfront near the Yangtze river, surrounded by mountains, has the potential of dragons and tigers. From the southwest to the northeast, there are stone mountain, ma 'anshan and shogun mountain. West fugui mountain: south has egret and long life island to form the jiajiang. The whole hill is integrated with the building.

As mentioned before, geomantic to the geological location is very exquisite, and has certain scientific nature. There are countless arguments for this.

Testing of soil properties. Soil contains elements such as selenium, lead and fluorine, which are emitted into the air under photosynthesis and directly affect people's health. In Hiroshima of Japan, for example, the gases produced by photosynthesis directly affect human health. The form of loose soil and terrain all affect the building site selection. If it is built on loose land, it is likely to produce debris flow and landslide.

Temperature test: wet or smelly place, resulting in a variety of

diseases in the body, in this place, should not build a house.

Magnetic field test: the earth is a planet with magnetic field, and magnetic field is the existence of two characteristics. Too large magnetic field produces harmful magnetic field for people, small magnetic field also affects people, and even causes dizziness and drowsiness, etc., which are hard to be seen in human eyes. Feng shui masters often say that stone and sharp Angle are adverse to door and window, it is the effect that the magnetic field of thing produces actually.

Detection of harmful waves: if there are complex geological structures under the residential buildings, long seismic waves and pollution radiation can be emitted, resulting in uncomfortable, vertigo, endocrine disorders and other symptoms.

Above a few kinds of circumstance, the application that analyses traditional geomantic from contemporary science Angle. The ancient fengshui masters, who knew what they were doing but didn't know what they were doing, could not be explained by scientific knowledge. In practice, traditional "fengshui methods" were used to solve problems. For example, fengshui masters ground the earth with their hands, tasted the earth with their mouth, even dug the earth to check the soil quality and water quality, and leaned forward to listen to the direction of underground water and sound.

Although it is not scientific in form, its attitude towards factual verification is worthy of affirmation, and the result is not entirely wrong.

The choice of sitting north and south is that China basically belongs to the northern hemisphere, with sunshine mainly facing south. Sunshine benefits people a lot. Children prevent detention house disease, sterilization strengthens human immunity. In other words, the principle of sitting north and south is people's understanding of the natural environment, requiring people to conform to the nature and obey the nature. In this way, people can get the essence of the earth, the earth, the mountains, the rivers, the sun, the moon and the stars.

The geographical environment, site conditions and site climate characteristics of the site are all influencing factors of building orientation. Among them, mouth lighting, ventilation and thermal radiation are the main climatic factors influencing building orientation, and choosing a good building orientation is the premise of building energy conservation. In the early stage of project design, we used BIM technology to scientifically analyze the climatic conditions of the project site. The next step is to determine the best orientation of the building according to the previous site climate data, combined with the analysis of mouth lighting, ventilation and

thermal radiation.

The understanding of humanistic environment may be difficult to be clarified with the ancient fengshui theory, but the typical examples of "meng mu SAN qian" in history are all due to the role of environment and the consideration of environment, which reflects the fundamental and importance of environmental thoughts and environmental awareness in the geomantic theory. The so-called "yishanbangshui", "things, tianbao", "earth spirit people" and so on, is from the good living environment to improve the inner mood, and then to achieve the integration of human heart and nature. From some data analysis, it can be seen that the talent generation in some regions in history seems to be no accident. For example, in the Ming dynasty, the "apricot blossom spring rain jiangnan" area of shanshui yitong produced more than 100 famous scholars, accounting for half of the famous scholars in this historical period, which is an objective evidence of the historical origin of the above idiom.

2.4Reviw

Fengshui theory is a valuable element in the application prospect of China's urbanization development, which requires that special attention should be paid to excavating local traditional architectural art images, innovating the application of regional

architectural technology with strong climatic characteristics, and using local materials to express regional colors. Traditional residential culture is not simply in a traditional form of living space as the highest pursuit of the goal, but want to be in a scientific, modernized sublation, more widely and more in-depth mining and make public its cultural connotation and essence, for the lack of modern design methods, to make up for, innovation, and create again, and to effectively resist the serious destruction of ecological environment unhealthy tendencies in its purpose and the appearance of the rationality of the contemporary value.

Chapter Three The influence and importance of human psychology

Human emotions are easily influenced by the surrounding environment and buildings. A reasonable architectural design can stabilize human emotions. The expression of human emotions usually comes from psychological reactions. In 1928 the Austrian architect and engineer Franz Löwitsch (1894–1946) published ‘the space and the feeling of modern architecture’,Lowitsch think a mass unity of psychological structure leads to the formation of space concept, formed a reflect the concept of building, and includes a "satisfactory" the power of the symbols, these symbols were regarded by the most people with a specific time and place. But Lowitsch theory not only proved the usefulness of psychoanalysis theory as the humanities methodology, he provides a scientific explanation, in the construction practice, the space for residents can be measured, the influence of the interpretation and use. Later people did a lot of experiments on this point, for instance, Astuti and Hanan(2012) did an experiment to prove that consumer behavior of goods in the eating place is seriously affected by design factors, whether it is the atmosphere or service facilities.

As mentioned above, psychology is a research field of fengshui and an important link between fengshui and human life. In the process of building, applying human psychology to study people's demand for building structure and use is conducive to the rationalization and benefit maximization of building. Rance(1996) recommends social scientists focus on modernization to psychological stress brought by the people, he believed that modernization is one of the consequences of emotional distress degree rise, he thought in Chinese traditional society, fengshui is a way to alleviate psychological pressure.He also mentioned the concept of the ‘yuan’ in fengshui, which presents ‘sky’ and reunite. On the contrary, the square represents the earth in fengshui, Chinese believe ‘orbicular sky and rectangular earth’, for it means fair weather comes after rain.

In research of fengshui for the assessment of user experience in construction field,it is important to focus on the combination of human behavior and fengshui.Human behavior has become a link between fengshui and architecture.

The interaction between the city landscape human activities and the natural environment is the result of the accumulation of space allocation. It has the important influence of traditional philosophy and cultural heritage, on the East Asian city

development and planning. This shows that Fengshui theory always serves people's behavior for people to build their place, and they are satisfied with the proposal. As a historical and cultural background, Fengshui plays an important role in local sustainable development.

Zhao (2011) set up rich historical and traditional culture. The integrity of rural living space is increasingly being challenged by the development of modern economy. Unless these spaces are protected, the sustainable development of these villages will be unrealistic , on the basis of the introduction and analysis of the living space of Yuhu village and the introduction and analysis of the important tourist attractions in Lijiang. The protection of residential space is based on historical background and current situation. Although Yuhu village is a good place for local people and tourists to visit, the traditional land use, pastoral scenery, native tree species and culture need protection.This comprehensive effort will help create a balance between heritage protection and economic development and create a complete historical legacy of a modern harmonious society.

In 2012, Attaianese(2012) shows that the link between human beings and sustainability seems to be clearly linked to the social dimension of sustainable development to ensure corporate social responsibility and global value creation. But it is necessary to build

a balance between the resources used by the people's activities and support the sustainable development. Evidence shows that the contribution of human factors can be effectively extended to other aspects, especially in architectural design. In fact, the sustainable architecture is a contribution to ensure sustainable development, while reducing the impact of resource use and environment, health growth, and the comfort and safety of the resident. According to Attaianese(2012), it is essential to analyze the contribution of human factors to sustainable architectural design in a broad sense. The emphasis is that ergonomics, methodology and technology can improve the architectural design and improve the sustainability of the building in the whole life cycle. Similar to Attaianese(2012), Xue(2016) is more and more concerned about human factors in green buildings, and is imperative in high-rise and high-density urban environment. Xue (2016) describes how we explore the impact of green characteristics in the workplace (such as green certification, ventilation). Health patterns (individual feeling, sensory hypothesis, healing performance) -- Based on surveys in Hongkong and Singapore.

The results verify the relationship between green features and environment health concept. It is worth noting that people from air-conditioned offices reveal significantly more anxious health

problems than those from mixed ventilation offices.

Mixed ventilation design as a bridge connecting the indoor environment and the outdoor space, make contact with nature. In addition, the priority building form place, is a building complex rather than a single construction mode. The complex forms of integrated configuration of platform gardens, courtyards, balcony greening, public squares, courtyards and other types of open spaces are helpful to better health concepts.

The research in this paper is helpful to rationalize and optimize the passive climate adaptability design strategy.Compared Xue(2016) to Attaianese(2012), they all combined human factors to sustainable buildings, Xue(2016) even in the participants' experiments show that the green features and the environmental hygiene concept of the workplace from the relationship between the air-conditioned offices are significant in building a greenhouse.Since fengshui and architecture are all responsible for human beings, it becomes a possibility to combine them. In addition, as an extension of human psychology, fengshui has made important contributions to the change of ecological environment.As things stand, global warming has become a global warning. Ecological design is one of the most urgent tasks for architects in our agenda, suggested by Wu(2010). In addition, Wu(2010) thought the basic

idea of Fengshui is to determine the ideal location with the highest ecological potential and coordinate human construction environment in the existing natural environment. It has minimal impact on the existing environment and is therefore one of the most ecological design methods. It is feasible to regard fengshui as a search principle in ecological design as an important design precedent. Avoiding superstition, fengshui has plenty of precedents related to ecological design or ecological concepts. Wu (2010) used in Ming dynasty, fengshui manuscript "salty Perseus following the" the only copy of design, will be a series of typical fengshui pattern recognition through calculation programming and architecture design of terrain said, used to study the ideal model of fengshui and explore the ecological potential, he used a model to reflect the geographical position and the surrounding environment, summarizes four contributes to the characteristics of the ecological environment improvement, which has led to a high potential ecological and related ecological performance.

For example, through the extension of the north-south line in the figure, the characteristics are good orientation, better sunshine and good natural ventilation. Beside this, all of these patterns suggest that the building environment is always in the center.This brings a safe psychological feeling and reflects the traditional

Chinese aesthetics.

The collision between Fengshui and architecture in academic

The ancient principle of fengshui in China seems to have the same goal as total building performance (TBP), that is, to provide the best environment for occupants of their health, raised by Sui Pheng, L., Xiaopeng, D., & Li Ting, Q. (2012).They did a research about assimilating total building performance mandates with fengshui principles.The finding attested the hypothesis that there are generalities between Chinese geomancy and TBP. The practical implication of research isThis study examines the requirements of six kinds of architectural properties of fengshui in China from the aspects of psychology, physiology, sociology and economy. With the support of existing literature, China's fengshui principles and situations have been assimilated in the context of the TBP mission.The greatest significance of the research is that provides a macroscopic perspective on the relevance and applicability of Chinese fengshui principles and reveals possible limitations in practical application. Fengshui can be assimilated in TBP mandates and achieve some application practices. However, it is also observed that the specific situation of the Chinese fengshui, including gap, the key takes place, building height, the trees and roads shall not apply to all cases, the cause of these include the

climate differences and backward technology, and fengshui after long time of evolution.

Prior to the idea of combining fengshui with BIM, scientists have explored the effectiveness of fengshui in architectural environments, focusing on urban planning, architecture and interior design. To increase understanding of fengshui practices in facility management (FM), Low(2018) did a research to explore the relevance of and relationship between fengshui and FM principles. He interviewed three groups of people, the fengshui practitioners, facilities managers and fengshui practitioners who are major in architecture –were also committed to the integration of the two disciplines.The study verified the validity of the relationship between the 15 fengshui principles and the three FM activities. fengshui has been neglected in the study of architectural environment. Such research can help clarify and provide a logical and scientific explanation of how fengshui actually works.

3.1The application of human behavior in integrated BIM

The view that both fengshui and BIM are consistent with sustainability,Sustainability is a measure related to architecture. For structural engineers, the recent design standards focus on sustainable development capabilities as part of the structural

integrity of the traditional standards and the cost of construction. Further confirmation of the close relationship between Bim and human behavior， Seung and Yun (2018) developed a research that uses human behavior simulation to test the relationship between previously unknown, equipment independent, intelligent virtual users and students' self experimental performance in fire evacuation planning. The research method involved real curriculum design, and put forward a simulated plane plan for shelter before and after office building 70 students. Then they use their experience according to the simulation. The statistical analysis of these results shows that using human behavior simulation can help students find unexpected problems, evaluate the effectiveness and functionality of the design scheme, carry out the experimental process more effectively, and determine the solution relatively easily.

The main reasons for these results are specific positioning, analysis, and virtual human observation representation, their operating parameters, and human behavior simulation and building information modeling between an integrated system. The results of this study are helpful for the reasonable calculation of fire evacuation planning and education. This proves to a great extent that the use of human behavior factors can bring beneficial effects to the life cycle of buildings and play a role in the use of buildings.

In addition, the study of combining fengshui with BIM is to reduce the consumption of existing energy resources.A good example is that Motawa(2010) said, 'For a sustainable building, the use of energy always concerns clients and designers'. In this respect, the UK national regulation on energy performance and 'carbon' accounting has asked for a greater consistency of construction information to achieve the CO_2 emission target. Therefore, the customer and industry should jointly plan to make the transition to low carbon building feasible in order to meet emissions targets CO_2. In this case, building information modeling (BIM) can play a key role, in addition to its ability to create more homogeneous supply chain.For energy analysis software, designers usually receive feedback from their designs, such as how much energy the building will consume, and how much carbon dioxide emissions are emitted if the building passes performance standards.

From the point of view of human life security, BIM can not resist the occurrence of natural disasters, but to a certain extent, the disaster defense system, such as the flexibility of the fire system, can be considered at the beginning of the architectural design. Rüppel, Uwe(2011) point in his paper that in the past ten years, the importance of emergency management in public infrastructure has increased as a result of changes in security conditions around the

world, which has led to the necessity of computer aided emergency assessment in extreme cases. Almost every day there are natural disasters, fire disasters or terrorist attacks in the news, and show the importance of building environment as safe as possible. Especially in the field of fire safety, engineers face many challenges. Population growth leads to urbanization, resulting in densely populated megacities. In these areas, the type and age of buildings are widespread: high buildings, buildings and historical monuments, airports, railway stations, and shopping centers - only a few people stand side by side. The reduction in the number of new building and refurbished building permits by the German Federal Statistical Office (DestaS) indicates that construction stocks are slowly being renovated in Germany. For this reason, the average building age is getting older. The first phase of the research project of the serious human rescue game. A new serious game method based on building information modeling (BIM) is proposed to explore the influence of building conditions on human behavior in evacuation process. In reality, it is impossible to conduct human rescue experiments in a burning building. Therefore, the existing data collection methods of evacuation simulation models are limited to individual human factors. To overcome these limitations, it is assumed that human behavior can be explored with serious computer games: the

decisions of the people in the game should be comparable to those in the extreme circumstances of the real world. To test this hypothesis, this paper introduces a serious game method to analyze human behavior in extreme situations. In order to achieve a serious game, developers usually use 3D modeling software to generate game content. After that, game logic needs to be added to the contents of the computer game specific software development kit. Every new game scenario must be built from scratch. This is a technology that connects the real world with the virtual game world through games.

BIM application of energy analysis is improved, the process is in the design stage. However, for the post use stage, it is true that the design energy standards are really met with the needs of the practice. Although it is not suggested that Fengshui can be applied to this system to solve these problems, it may be a bold and innovative idea because they all conform to sustainable buildings.This research mainly explains how to put fengshui experience in the design link of BIM. In order to avoid confusion between art and Science in Fengshui, it is important to focus on the research of human behavior and psyhology in Fengshui.

3.2Fengshui and human behavior research in future BIM

In the BIM field, Zhang(2016) have done a project about BIM and ancient wooden buildings. In order to strengthen the correlation between digital information and building entities, also meet demand for cultural relic protection, the BIM project has managed architecture, heritage protection theory, logistics information and information management. As a result, a scientific and effective management system for archives management, operation, maintenance, management and exhibition is established by using the building information model. In the same way, Fais(2018) used a new kind of noninvasive methods for diagnosing stone building materials use of historic buildings, the method including in-situ application integration sequence of proximal sensing method using optical and scanning electron microscope to study the stone to the study of petrology. He thinks that there are two factors contributed to BIM technology is more and more important in the process of protecting cultural heritage, memorial building material is very scarce, the internal structure of stone material is difficult to study, the latest technology in the field of non-invasive and scientific development for different types of materials, VE diagnostic technique for and support the huge multidisciplinary data set acquisition, processing and interpretation.The restoration of ancient buildings or cultural

heritage is faced with a problem, which requires complete and accurate data. Only in this way can historical buildings be preserved as they are. There are errors in traditional 2D drawing, which is very difficult to collect historical building data. It is neither accurate nor double-checked, which will lead to design errors and delay of construction period. The BIM model can not only eliminate the error of traditional 2D drawing, but also maintain the required standards to enhance the information exchange between architectural services department and stakeholders.

3.3The barriers in the combination with BIM and Fengshui

The core goal of fengshui and BIM's cooperation is to provide a better building environment and achieve sustainable development. However, there are also many uncertainties and obstacles to development.In summary, there are three obvious barriers. First, scientific though can be proved in fengshui, fengshui is not the same as always reliable data and invariable rule, fengshui is a discipline of flexibility, with the uncertainty and complexity, for the BIM modeling, usually need more stable data, which increased the difficulty of the maintenance phase. In the other hand, fengshui as a kind of social culture, has a certain reputation and status in Chinese culture, although the Chinese and western communication makes

the fengshui to the world, fengshui is not always a culture which popular with different kinds of people , the combination of interdisciplinary eventually became a question is whether it is acceptable. Finally, Fengshui and BIM have their own rigorous systems, and there is compatibility between the two, so how to program them is a difficult problem. Despite these problems, according to BIM's current situation, fengshui has a role to play, at least in restoring ancient buildings. Due to the novelty of the topic, there is not much experience in global to ensure that these problems are resolved or to anticipate future obstacles. The combination of fengshui and BIM requires more researches to optimize research and development.

3.4Review

Because BIM has the characteristics of visualization, simulation and graphics, it is possible to combine BIM with Fengshui. By designing the scientific system in geomantic science as a standard in the design stage of BIM, and screening the psychological behavior that human beings tend to in the simulation stage, this will make the modeling more humanized, greatly reduce the cost in the construction stage, and to a certain extent, it strengthen the maintenance of the later stage. On the other hand, BIM and fengshui both have an important role in the restoration of

ancient buildings. The geomantic water itself is used in ancient Chinese architecture, and it has an important reference for the restoration of ancient buildings.

Because of fengshui has its long history, and BIM is an emerging technology in architecture discipline, through the integration of the two has become a research problem, research in this area lack of documentation, there is no clear study of the combination of research, BIM Technology is a new research aspect.This requires more investigation and experiment to confirm the fengshui can become a reliable factor is applied to the BIM, in order to put the two in a research platform, the human behavior as a connecting tool, is expected to make the new technology and traditional culture of a collision which could commit to a sustainable construction achievement.

Chapter Four People's psychological needs for the built environment

4.1Behavioral psychology

Human beings have complex souls, and human psychology is a combination of innate instinct and acquired behavior. The study of human nature in China can be traced back to the spring and autumn period, which led to the debate and discussion of "inherent evil of human nature" and "inherent good of human nature". "Nature" refers to human perception and emotion; "Indoctrination" refers to the control of people by the order generated by society. Sometimes people are very conscious about what they want and what they are doing, and sometimes they don't understand their behavior or psychology at all. In some cases, people have complete control over their actions, while in others, they have no complete control over themselves.

4.2Building space requirements of people

Motivation is a central role in people's behavior, and all studies on how people's behavior relates to the spatial environment must be aware of this powerful force. Motivation is a combination of factors and shapes. It depends not only on personality and cultural background, but also on time and circumstance. In daily life, people

really seems to be driven by internal basic demand, on the basic requirements of various internal rankings, people seek a high level of demand to meet first, then go to a lower level, such as demand for warm ranked in the aesthetic demand, and so people only after solved the space environment of warm just may have the ability and energy to focus on the aesthetic space environment.

Residential area landscape in all is the life of the city landscape construction, therefore in the residential area landscape design the designer must follow the requirement to the stimulation of People's Daily life, this need people to landscape design of the space environment, both need to attract attention, give a person the center of the novelty to break the mediocre environment, stimulation to the person; And can not be a disorderly piling center, people dazzling, because of too much stimulation and irritability psychological. The control of degree in this residential area depends on the experience design of the order of landscape space.

The space environment, whether or not it is part of a particular region, creates a sense of security that is important to people when they enter a neighborhood, the environment has been set. Can be a people to identify the characteristics of residential area to give people the psychological stability, imagine if people into a new residential area, in people's minds, which the appearance of a

residential area, and the sight is a landscape of urban square in scale, even if people are sure this is what people want to go to places, people's hearts will produce a certain degree of panic and sense of surprise, and this fear and surprise not people daily life need stability in the sense of security and predictability can tolerate.

Chapter Five

BIM and Feng shui for the assessment of user experience

Today's BIM technology can realize the real virtual of the project and achieve what you see. In the preliminary planning and design stage of the project, the project site topographic map can be displayed with Autodesk Civil 3D software. BIM has been quite mature in this respect. If the terrain of the project site is complex and engineers cannot make on-site mapping, photos can be taken by drones and transmitted to Autodesk Civil 3D to form accurate 3D topographic maps, which brings great convenience to the preliminary planning of the project. After the completion of the project planning, the Revit model can also be used to export the XML format into the outdoor wind simulation software, which can simulate and analyze the outdoor wind environment. In this way, the design scheme can be adjusted and improved through software analysis. After the completion of the scheme stage, it enters the stage of preliminary design of construction drawing and deepening design of construction drawing. In the construction drawing stage, architecture major, structure major, water supply and drainage major, hvac major and electrical major respectively use Revit

software to directly build their own professional models. This software can directly generate 3d models by adding height information to 2d environment modeling and drawing. After the building model comes out, the software Ecotect is imported to simulate the natural lighting effect in the room, and the position and size of the external window are adjusted. It can also be imported into the internal wind environment of the svervent software simulation room and adjust the position of the indoor door hole. After the professional models are built, they are aggregated into one model. Then it is imported into Navswork to conduct collision experiments of various majors, so as to find out various errors in construction drawing design. After correcting the errors in the design drawings in the design stage, we avoid contacting the design institute to change the drawings or even rework the drawings after finding the errors in the later construction stage. This saves a lot of construction time and cost. BIM construction management platform software is available in the construction stage. In construction stage, BIM construction platform software can obtain a lot of progress, cost information, the information associated with the project model after 5 d, can simulate the whole construction process, and before the actual construction, BIM software can analyze each detail, such as preparation of reinforcement quantity and the arrangement of the

workers, also can choose the most appropriate construction scheme simulation scheme. Finally, after the completion of the project construction, it enters the operation stage. BIM technology provides a complete set of technical support for the operation and maintenance stage, which is reflected in the following aspects: equipment operation monitoring, concealed engineering management, energy operation management, tenant management, security management, garage management, emergency management, etc.

fengshui was originally developed to meet the needs of human survival and security needs. Later, in addition to meeting the most basic needs, it also meets the psychological needs of human beings and the needs of human health. fengshui theory that "man is an integral part of nature, moral or ethical code of conduct that ` humanitarian ', should also be consistent with that of heaven can not violate the act heaven, more not haughty human with nature, can and must understand, grasp and conform to heaven and by coincidence for the model of operation, to achieve the unity of nature and to the good state, meet people's inner needs. The general requirement of building fengshui is that the building should carry the water on the mountain surface, sit on the north and face south, the "cave" pattern of forelark, hind xuanwu, left qinglong and right

white tiger, which is actually an ecological system. From the perspective of climatology, geography and ecology, back mountain can block the cold wind from the north and increase the thermal insulation of buildings. Surface water is conducive to the ventilation in summer. Because "there is water in front of the hole, there is a mountain behind the hole, and the mountains and waters are unevenly heated by sunshine and sky radiation during the day and night, and there will also be alternating local winds. During the day, air flows from the water surface to the hillside, and at night air flows from the hillside to the water surface. At the same time, surface water is also conducive to life, irrigation and so on. Sitting in the north and south is conducive to more light, health and quality of life. The "hole" pattern satisfies the daily needs of human beings, and is also conducive to the material metabolism, energy flow and information transmission in this small ecological system, forming a virtuous ecological cycle, and naturally becoming the geomantic treasure that everyone pursues.

BIM and fengshui is its integration with the advantage of combination of architecture construction projects at various stages each classification work, should be unified to the same information in the model, all kinds of information will be kept intact and interconnected, eliminates the traditional an inter-bank across the

stage in the design of information loss, reduce the waste of resources caused by industry fragmentation, avoid collision with different professional produce errors, and allow people to a more intuitive to see the overall construction of fengshui, choose suitable for their own housing, in people's deep experience in the process of construction, construction of the above using the ideas of fengshui to Chinese architecture. The study of building fengshui culture with BIM makes many people better realize that fengshui is not all superstitious, and many of them are in line with the current development of social environment, which will play a significant role in human's choice of residence. The reasonable content of traditional geomancy is integrated with modern BIM architecture to achieve a beautiful state of unity between man and nature.

The construction of a harmonious society in China has brought fengshui into a new stage along with Chinese culture. China's ancient fengshui philosophy and its wonderful effects on the relationship between architecture and heaven, earth, man, time, place, and man have made it popular, hence the world's "fengshui fever". The digital information model is based on the information analysis and management of the computer database, replacing the traditional management platform based on manual operation. The graph element in BIM is linked with the parameter attribute, so as

to avoid the error caused by operation error. The establishment of computer digital model requires parameterized adjustment and input to replace the traditional fuzzy design based on experience of designers, so as to avoid design errors caused by lack of experience. The combination of the two is more conducive to optimizing chinese-style architecture, which embodies the cohesion of Chinese culture. The combination of modern science and technology and fengshui inherited from China has made chinese-style architecture more in line with people's aesthetics.

Ancient Chinese began to discuss the relationship between heaven, earth and man very early, which formed the concept of organic earth theory of nature. The concept of organic nature of the earth permeates every corner of China's ancient cultural life, and fengshui is inevitable. Geomantic omen thinks sky, ground is united an organic whole, day, person is united in one relation, day, ground, person is in equal position, namely "person and heaven and earth are same". Ecological thoughts such as "earth as mother" and "nature and man as one" are also included. Based on this idea, we can start to choose homestead, namely "point the hole". McGraw-hill vice President Harvey Bernsteln said, even as the green building in the United States as well as design and construction process, BIM has the potential, promote efficiency of

innovation, design and construction, to lead the global ideas and business development, the report said, with a growing share of the green building in the construction industry, the value of BIM can get wider acceptance. Therefore, BIM can effectively improve the efficiency of design, construction and project operation by using digital models, which will be adopted more widely. fengshui regards the earth as a whole organism, and thinks that the earth is connected with each other through a vein point similar to the human body. In the book of water dragons and the book of water law, it is said that "stone is the bone of the mountain, earth is the flesh of the mountain, water is the vein of the mountain, grass and wood are the fur of the mountain, all of which are connected by blood." It can be seen from this, in geomantic science, the house also included the system that day, ground, person 3 circulates in, regard the house as a living object, and attach great importance to environmental element. In this chapter, the environmental factors in the residential geomancy system, including terrain factors, wind factors, light factors, water factors, soil factors, gas factors, and human factors, including social factors and cultural factors, are mainly analyzed. The most important significance of BIM is that it reintegrates the process of architectural design. The life cycle management (BLM) of construction projects involved in BIM is also the focus and

influence object of fengshui architectural design.

The explanation for assessment of user experience in integrating BIM and Fengshui

Although BIM technology is maturing and fengshui has a strong theoretical basis, it is not easy to evaluate user experience only by fengshui theory, but many researchers have done a lot of experiments in this regard. Ting and jia (2017) did research on BIM to promote emergency decision-making in 2017, such as evacuation of supervision and inspection and indoor location of fire hazards. This study suggests that in emergency situations, evacuees will push others to the exit as soon as possible, but their feet will trample on each other and the door will be easily blocked, which will delay people's escape to a certain extent. The root cause of this confusion and obstacle is the psychological pressure from the flow of emergency crowd. This paper focuses on the research of psychology, behavior discovery and the progress of pedestrian modeling and simulation, and establishes a new export analysis model. The theory of fengshui is mostly related to human psychology. Taking fire escape as an example, when people's psychology suffers from the pressure from fear of fire, we can use fengshui theory to reduce people's psychological pressure.

According to the unity of the five elements, water is the opposite of fire, while white, blue and black symbolize the attributes of water. In escape exits, we can have this kind of color design to reduce the pressure of escapees. On the contrary, if the exit is surrounded by red or yellow, when people see the color similar to the fire, the psychological pressure will rise.Although BIM can simulate some human behavior, in evaluating human psychological activities, we need to use fengshui to study the universality of human psychology, that is, geomantic omen theorem to explore the vast majority of human psychology, such as the vast majority of human resistance to sharp objects, or do not like extreme cold or hot weather, and resistance to strong light. Through these universal laws and more questionnaires, we have a better understanding of people's physiological and psychological needs in the light of rules of fengshui, because fengshui is more targeted at the general public.

The trend of fengshui architecture design and analysis

The BIM model will first enable architects to make simulation analysis possible in the early stage of building fengshui design and adjust the design according to the analysis results. At present, the basic design principle of most domestic design institutes is to meet the national building fengshui design standards. The process of

design institutes is to analyze and calculate after the design is completed or even the construction drawings are produced, which is only to meet the standards. This design process is not from the earliest stage of building fengshui design to make full use of natural ventilation, sunlight, sunshine and other natural resources to meet the specifications. With the BIM model designed in the initial stage, the BIM model is imported into some professional building performance analysis software, which makes simulation analysis possible at the early stage of design through calculation, and then guides the architectural design with the analysis results.

BIM technology subverts the process of traditional architectural design, and BIM technology can provide data support for the analysis of buildings at all stages of architectural life and provide technical guarantee for the geomancy design of buildings. Building feng shui design is based on a comprehensive range of professional fields. Feng shui architectural technology includes architectural appearance and structure, architectural orientation, landscape and other majors, which need to be integrated. BIM model can bring technical convenience to these feng shui requirements. The BIM model realizes the coordinated design and information integration of various types of work, and integrates various professional BIM models together with Naviswork and

other software to conduct collision analysis, so as to correct errors in design and ensure that the design can achieve zero errors. The implementation of BIM technology can analyze the physical information of building feng shui design in the model diagram in advance, which is helpful for architects to adjust and make decisions on the scheme and construction drawing design according to the architectural physical information analyzed by BIM model, so as to make it "green" in the most scientific and economic way. After the BIM model is built, it can be rendered in real time through Lumion, which can outline the effect after the building is built. In a word, when we have a BIM model with sufficient information about the project, we can use it to analyze the project for any user.

Chapter Six *The scientific application of feng shui combined with BIM in fulin new town*

By analyzing the discipline knowledge of fengshui through modern scientific theories, and enriching its intrinsic scientific value, it also provides theoretical basis for modern residential architecture design combined with BIM. Therefore, this chapter elaborates the application of fengshui combined with BIM in modern residential architecture design through the actual cases of fulin new town.

Fulin new town is located in the new district of yifeng county, yichun city, jiangxi province. The whole city is surrounded by mountains on three sides.

6.1Architectural design

With the continuous development of social economy, people's requirements on architectural appearance are not only simple square form, but also practical and beautiful. They even require buildings to have some spiritual symbols or hope that buildings can become a kind of logo. For these buildings with complex shapes, we should not only consider the rationality of the architectural form and the practicability of the internal structure, but also consider the design

of the architectural form to achieve the purpose of building energy conservation. At this point, we need to use the BIM technology to parameterize the design and visual design to quickly carry out the concept modeling.

In Revit software, there is parameterized design function - adaptive function. This function is used to locate and model components according to several points in the adaptive family. By collecting the target points sequentially, the original designated points can be corresponded to the target points one by one, and the shape ADAPTS to the new geometric member actively. Under the control of some parameters, the adaptive group can produce regular volume or skin effect. You can even superimpose changes in the parameters to produce unexpectedly complex results. The advantage of parameterized design is that the description of the shape is quickly and efficiently modeled with the help of the parameters. When the model is modified with variable parameters, the system can automatically keep all the invariable parameters and ensure the information coordination. Therefore, the design efficiency is greatly improved.

The visual design can be viewed from different angles at will. The viewpoint can be either indoor or outdoor, or it can be a bit of perspective, or it can be a bird 's-eye view of the overall effect of

the building. In addition to the overall effect, BIM model can be conveniently observed locally, which brings great convenience to the design and adjustment of scheme details.

In the preliminary design stage of feng shui architecture, on the one hand, designers should fully consider the building space to provide appropriate functions for various activities, achieve the optimization of use performance, and eliminate the adverse factors of micro-environment use performance as much as possible. On the other hand, should give full consideration to the involved factors affecting the performance of the natural environment, from the air (outdoor, indoor wind, wind and artificial flow organization) light, heat, sound, energy multiple aspects considering the maximize the use of natural energy, conventional energy saving the maximization of optimization design, fully improve the architectural design of sex education purport.

With BIM technology to simulate wind, light, after the completion of the project (daylighting, visibility), hot (temperature, radiation, according to mouth), acoustic (sound, noise), energy (energy consumption, resource consumption) outside conditions, through the performance simulation, can be used to examine actual project plan ahead of time performance, and forecast operation after completion of the evaluation results, the necessary technical

measures to adjust and to optimize the design of the building, so as to achieve maximum optimization design scheme, make construction feng shui architecture evaluation grades of target.

6.2"Wind" in fengshui construction of fulin new town

It is the wind and water that feng shui experts have relied on for generations. Two important factors. "Tibetan wind" is one of the most important feng shui conditions. Apart from the emphasis on its importance, few literatures discuss "wind" in detail. In my opinion, wind and "gas" are different existing states of the same substance. No matter "gas" have how material form existence, but in geomantic theory, want to be angry not easy swing dispersive, it is good to reside. Therefore, "fashion" is nothing more than "a comprehensive abstract body of natural factors that the ancients had an important impact on the human body and its ecological environment through human sensory organs but could not figure out clearly".

Ancient geomantic medium place advocate classic pattern, depend on hill and come near water, hill encircles water to embrace. The topography of the sand body. Of course, it's hard to find such good terrain. Good pattern "qi" is led down the dragon vein, there are about tiger sand clamping, "if not the dragon and tiger clamping straight water side, water moving hall and gas dispersing", this is

the ancient standard Tibetan wind pattern. From the perspective of its location, fulin new city is located at the foot of a mountain, in a trapezoidal shape. It is just east, wide and narrow in the shape of dendrobium. It seems that the air flow reaches its destination. Here, the left-right dragon and tiger sand mountain (i.e., mountain is referred to above as "shape", i.e. classic pattern shapes the situation, at this time, it is like a container, containing "hidden and unknown" "gas". The author thinks that, from the actual site, lam metro from belongs to the small environment of yifeng, it only enjoy the advantage of the environment, but the region must be the actual analysis of the environment of the small, small lam metro environment and standard pattern of feng shui has certain difference, and the formation of the surrounding environment lack of sand body guard a little, so it is important to the shaping of the day after tomorrow. By combining the site survey with the planning and design of feng shui, the topography "dendrobiform" is used to hold the "gas" tightly, which can be said to be "water tight". Through "qi", "shape" mutually supplement each other, wide accept the ziqi east, the sheng harvest heaven and earth's gas, in line with "house as the shape of dendrobium, prosperous people" said. Although there are some superstitious language elements, it undoubtedly gives a good situation space, and it will take a long time to prove whether

the concrete results can be obtained.

Natural geomantic treasure ground is in urbanized development circumstance nowadays, look for very hard. Therefore, in the absence of congenital conditions, the sand body is utilized and modified to perfect the topographic pattern. The volume of the building is used to replace the sand body, forming the accumulation and dredging of the surrounding air. In this case, the most adverse layout is the "point" architectural layout, which is easy to be scattered. "Ventilated" the sex is good, but the wind is too straight come straight, this is geomantic learn to the requirement of gas is big avoid. Therefore, the point layout is not conducive to air accumulation. The board layout or the design layout combined with the point layout can easily form an effective open space with a suitable small environment. Such layout and classic landscape pattern same feng shui effect.

The requirement of ventilation is not only the demand of ancient geomantic science but also the demand of modern residential architecture. In fulin new town district, the planning layout is divided into two sections: south courtyard and north courtyard. Overall plot plan still undertakes layout according to geomantic a few major fundamental principles, the combination of board type and point type basically USES board type and board

type direct "tuyere" namely too "one" word arrange, avoid the passageway between the building that does not have block next to wind and building, form the so-called "tuyere" in our life. As the entrance of "wind", the buildings on both sides of the village surround and gather air with the mountains on the east side, and the intermediate point forms a unified whole with air. Therefore, the buildings in the courtyard become the best selling living space in this community, and also become the "building king" of the community. The sitting room of each household of small area and advocate the balcony all is set in the south of the residence, assure housing shows sit in north face south layout, advantageous ventilated daylighting, satisfy Yin and Yang moderate, beneficial body and mind is healthy.

The BIM information model covers the physical, geometric and functional information of the project. The visualization can extract the above information directly from the BIM model, and the visualization model can be changed with the change of BIM design to ensure the consistency between visualization and design.

6.3"Water" in fengshui construction of fulin new town

In the planning and design of fulin new town, the natural geographical position cannot live near the water, and it is built near the water from the overall environment. Because, water is the

source of life, all living things cannot live without it, water is the essence of life, people both depend on water and fear water. According to the book of Confucius, when he encountered water, he had to watch it. He believed that water, like a noble character, is the source of all things. Water also has courage and passion, no matter what encountered will go forward, test it. "The world is not weak in water, and the strength of the attack is not able to win." Water is weak, also be strong, geomantic on have "get water for go up, hide wind next" saying. When a feng shui master looks at the ground, he often looks at the water before he looks at the mountain. In the geography, the surface water system is discussed according to the landscape, but from the origin of the water system. The pipe.waterscape says, "the blood and gas of the earth, as well as the venation of the vein." Water is good for "gathering wind and gathering air". In fact, the principle of feng shui requires water to "come to the mystery, to bend, to bend, to hold against, to keep the flow smooth, to store to clarify, to hold do not want to be afraid of the north do not want to rush, far do not want small near do not want to cut, big do not want to swing, to do not want to incline". From this basically can see, the size of the current, shape, urgent is to judge the good or ill luck of water, water means wealth, in order to bring wealth, before having the accumulation of flowing water is

necessary, channel meeting can make flowing water is slow, the flowing water of advection is the condition that geomantic place asks. Thus it can be seen that the water in the vicinity cannot be a slow flow.

When choosing the location of fulin new urban area, the quality of water must be tested and measured. Using modern science and technology, the test of water quality can be operated by modern instruments, while the ancient fengshui thought that the good and evil of the earth veins could be judged by the taste of water. Usually through pingchuan taste well water, mountain taste moist water. Water is valued for its fragrance, but acid is not. Look from the color of water, temperature, like clear commonly avoid turbid, winter appropriate lukewarm embellish summer appropriate cool. Commonly known as the mountain tube person, the water pipe wealth, therefore "auspicious land cannot be without water" from the environment waving a small environment, the so-called "natural gas" "vital". Fengshuixiang soil, water, soil quality identification of a variety of good and bad said: such as keshan disease, disease and other endemic geographical geological survey, proved. Although the operation did not use scientific means, from the side reflects the ancient geomantic science to the water cognition has certain truth.

The relationship between fulin new town project and water

system is not very close, but no matter what the housing tends to look like, in the overall environment, traditional fengshui has its own requirements for water selection, as the ancients said: "the source is appropriate to embrace love, not direct fire closed, close to the mouth to close, most afraid to go straight to no yield." From the overall pattern analysis, yifeng county's yaxi river, winding, smooth flow, surrounded the entire urban center, it can be seen from its own base of origin has a good image of the dynamic, also facilitate future development. The shape of yaxi river also conforms to the pattern of "gradual accumulation of air by water" and "curving of air by water". The key point is the flow direction of the shuikou. The overall flow direction of the yaxi river is from north to south, and as the flow direction of south, it just forms the beginning of the left circle and right circle of "two mountains interpose the chishui river. Namely geomantic in so - called "cry" bit ji fang. Also accord with "south for gas mouth gas flow." The water potential pattern of large natural environment is broken, yifeng county is in a more advantageous position.

From the perspective of mountain trend, mountains are basically continuous, and fulin new town basically relies on the foot of mountains, forming a tendency of "mountain surrounded by water" from the general environment. But in the small location is

not the ideal "mountain surrounded by water" the best model, also can not be identified as the superior good feng shui.

From the project of fulin new city, its location is basically the area divided by superior planning, which has some limitations on the selection of the location environment, which is also a major problem faced by living architectural design nowadays. In terms of location choice, the traditional fengshui theory has the following problems in the application of residential architectural design:

In the limited environment, how to apply traditional feng shui to the living environment scientifically

The lack of water environment, on the whole, how to make the residential area become the pattern of the mountain surrounded by water and the molding of the internal water environment is also an important issue for the formation of regional environment.

The traditional architectural situation is wide and profound, but the modern residential area develops to the sky, and the two architectural development forms are complete. How does the traditional fengshui theory plan the development mode of the modern residential area?

6.4"Road" in feng shui construction of fulin new town

Road traffic occupies a very important position in today's urban development. Different from some planning theories in the

west, the requirements of liu yi road in the replacement of water in accordance with local conditions. The bending of the bend, the straight of the straight, can not be copied mechanically, it has a great impact on the Chinese natural garden. It can be said that fengshui theory guides the planning of roads. In recent years, in the urban development, according to the needs of The Times, and according to the principles of Chinese fengshui, a theory developed.

6.5Road planning requirements in modern residential areas

Adjust to local conditions. To understand the local natural environment, mountain trend, road planning, can not apply to the hard model; Roads are clearly graded and interlinked. Road grading is mainly to reduce safety and noise to residential areas. On the premise of environmental pollution, each road connects smoothly and does not hinder traffic operation; Group partitioning. For large cluster areas, they are separated and cut by road. The group connects through external traffic, but it is not smooth between external and internal roads, so as to avoid the influence of vehicles on the normal life order of the community. Sunshine ventilation sunshine ventilation is mainly based on the conditions stipulated in the technical management of urban planning in the region, and planning layout is carried out if it meets the requirements.

In feng shui theory, the road is actually the implied meaning of "water" : "heavy traffic" explains how the flow of traffic moves like the flow of water. Lam new town on the road system is mainly in the transportation problem and peripheral cities thousands of links, now more and more roads in the area of a fire lane, and vehicle directly into the basement, adding more green space landscape, the traditional geomantic learn to modern residential building design has a certain meaning, to the landscape garden is available in the traditional geomantic learn to plan design. But from the planning principle of road system, traditional geomantic plan has 4 avoid: avoid fold, avoid slant shoot, avoid 4 positive, avoid naked walk. Urban planning development in China is mostly influenced by western planning, freestyle, central radial and geometric.

Bend: in canalized traffic and three-dimensional traffic, the bend of the road will inevitably appear, "reverse bow" damage adjacent to the neighborhood of feng shui. If such a situation is inevitable, landscape greening can be arranged in the vicinity of the junction to block the digestion gas field.

Generally speaking, qu qu has feelings, mainly in the use of the woods and paths in the landscape, to experience its human feelings.

Oblique firing: it is common in the radial urban road network

system of the center, and its disadvantages include: first, it causes a large number of land parcels in the main road division to be uneven, not square, and damages the geomantic value of land use. Second, the main road lacks good orientation, which affects the image of the city and makes the layout of the building difficult. Slant door, geomantic avoid. From the analysis of traffic planning, the central radiological network planning is not uniform in flow, which can easily cause local traffic paralysis.

Four positive: four refers to the direction of the son, noon, MAO, youyou, namely the compass code (zi, noon, MAO, youyou) north, south, west and east. That is to say, the urban trunk road, not the north and south, east and west. Chinese architecture traditionally eschews the meridian line. Feng shui, the traditional view is that zhengziwu is not suitable for residential, only for sacrificial building. If the alignment of thousands of roads is "four positive", there must be many thousands of roads as well, causing difficulties in housing location. The south of China is mainly ventilated, with south by east (within the coincidence degree). North to daylighting, heating - based, mostly south by west (within 15 degrees). It is scientifically determined that the daily heat axis of the cold season in the north of China's building climate zone I is not at meridian but about 10 degrees to the west.

The simple speaking of "road break" is that the road and road form bad pattern, cause the influence to the residential area, the gas field that its form is a kind of brake, hence common name "road break". On how the road will go, will be in the back of the bow to form an inertial "air rush." High - speed flow of various gases, dust, sound waves and other field forces directly hit the house.

Feng shui has developed so far, with numerous scholars' experience and accumulation, there is a focus of "road evil".

The gun down. There is a straight road in the center of the front of the house. (analysis: visual depression, like a straight sword, strikes directly at itself, producing a strong impact. Psychologically there is an overreaction.

Knife evil spirit. The road becomes an arc in front of the house and runs directly to the house, which is unfavorable to "knife evil" (analysis: suppose the house is a person, the curve shape of the road is like pressing a knife on the back);Evil spirit. A bifurcated road has a branch that points obliquely toward the house;Back down. The road directly refers to the residence from the back, adverse (analysis: behind the residence is a straight road, like a sword is pointed at the back and the gun is close.);Very light. The front of the house faces a building whose exterior walls are made of glass or reflective materials(analysis: light pollution, glass is mainly to the

surrounding residential or office impact, strong reflection on the vision of people have a strong impact or night glare lighting impact residential.)

Day cut evil spirit: there is a narrow space between two tall buildings just opposite before building, disadvantageous. (analysis: when the air flows rapidly through the narrow space, large airflow will be generated and strong impulse force will be exerted on the household.)

Through the understanding of the traditional geomantic science to the road planning, in the district road design of fulin new city, provides the very good reference basis, avoids the occurrence some regular mistake. Although there is little involved in road planning and design in this project, some basic requirements of road planning and design in large areas are understood from this case.

6.6Reviw

This chapter focuses on the control of apoplexy and microclimate in fulin new town, the cognition of water, the design of architectural monomer, the feng shui planning and layout of residential roads and plants, so as to make a more intuitive understanding of the scientific application of traditional feng shui to residential buildings.

In the fengshui planning and application of fulin new town, the

ecological environment suitable for the residents is created, and the external plants are introduced appropriately in the optimized local space environment to enrich the landscape environment space, so that people can enjoy the rich cultural landscape environment in it.

Water is the essence of Chinese garden thought. A small amount of water is set in fulin new city, which, together with mountains, rocks and plants, can be reflected in a small area to create a more beautiful artistic conception.

Road planning and path design is one of the important factors in residential area. In fulin new town, road planning is as simple as possible. Among them, we should pay attention to the taboo of feng shui, avoid the appearance of road rushing, and at the same time, the road should be closed. Therefore, in the planning and design, adverse designs such as "dead road" and "guillotine road" should not appear.

The monomer building has evolved from the ancient architectural form. Its basic functions are more simplified and dissolved into a small living space. The functional requirements still have to follow certain planning and "feng shui" principles. So as little as possible the irregular space such as triangle, special Angle, give a person incomplete psychological feeling.

Build an elegant, halcyon living landscape environment space,

did not have the cooperation of the plant, again good space also can not get best reflect.

Chapter Seven Engineering example

(1) Questionnaire in the library of the University of Nottingham in Ningbo

Feng shui is also a very important part of the living environment. To some extent, it is manageable. Want to have good luck, there are also a lot of Feng shg Shui change decoration skills, believe it or not. Yang Zhai Feng Shui research expert Lushang said: "Feng Shui is good, so that you can live in an environment; Feng shui is not good, just minus points. Fenui alone is not a factor that will completely change our fate or living environment. "

This survey selected the library of the University of Nottingham in Ningbo as an example, its external physical image is shown below. Through questionnaires, some teachers and students in the school were interviewed. Through surveys, they found that everyone had their own understanding of the feng shui of the library, but most people's ideas were relatively consistent.

FIG 4.Library Example Map

When asked about the indoor environment color of the library, 74 % of the teachers and students thought that the interior layout of the library had a pleasant feeling, allowing people to calm down to read and give people a good atmosphere. feeling, This affects the teachers and students who study in the library all the time. When reading tired, look at the colors around them to make them feel happy.

When asked about the direction of the library's indoor environment to the individual's senses, 82 % of the population said that there was a feeling of open vision. No matter which direction it was, it would give people a feeling of spacious and bright, making them feel very comfortable in their hearts, facing toward the North and facing south. In line with the basic elements of Chinese feng

shui architecture.

As shown in the figure below, when you first enter the library, you will feel spacious and bright. The white and simple design will give you a sense of warmth in the book and keep you in a good mood.

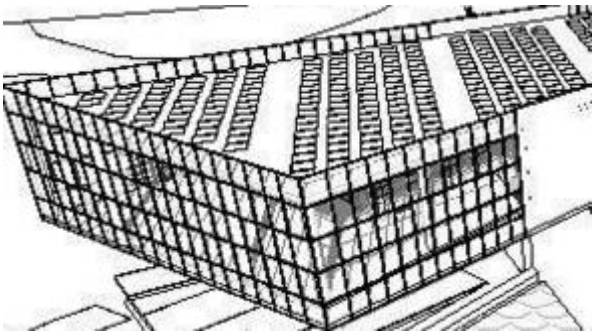

FIG 5.Library Architecture Design

When asked about the lighting situation in the library's indoor environment, 86 % of teachers and students believed that sunlight can be reflected into the library all year round. It does not give people a dark feeling, and summer is not particularly dazzling, making people feel relaxed and happy. feeling.

When asked about the ventilation in the indoor environment of the library, 68 % of the teachers and students thought that the ventilation was good and did not produce a sense of boredom. When the window was opened, the gentle breeze was refreshing because it was close to the lake. Summer gives a very refreshing

feeling, bringing the aroma of lake water and grassland. Let a person indulge in study in be unable to extricate oneself.

FIG 6.Library interior map

(2) The stylistic center of a certain region

The project is the stylistic center of a certain region, and the design goal is green building and national green evaluation standard 3 stars. The building is divided into two parts: above ground and below ground. The total construction area is 11660 m2. The project adopts BIM technology for design. In addition, BIM technology was adopted for performance and energy consumption simulation analysis, and passive design measures were selected for the project,

providing strong support for the green energy saving design goal of the project.

This project adopts BIM technology design in four stages, including the early stage of design, scheme design stage, preliminary design stage and construction drawing design stage.

1. In the early stage of the design, analyze and understand the site topography, the surrounding environment, the site climate, with the help of BIM technology.

(1) the project begins to use Auto CAD software to model the site through terrain data provided by party a, import model information, and analyze the terrain site.

(2) use EcoteC software to conduct site climate analysis and provide scientific guidance for building overall layout and building shape. The analysis results are shown in *figure 4*.

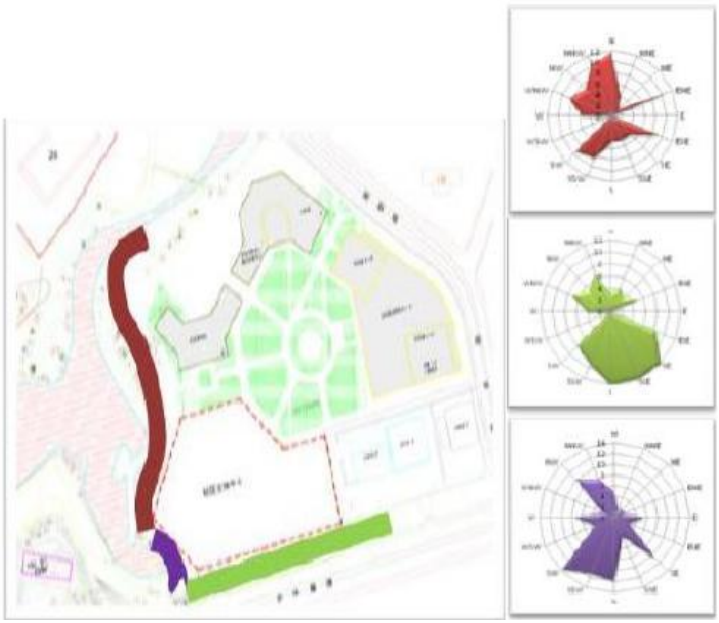

FIG 7. site environment analysis simulation using BIM technology

2. Scheme design stage

(1) design of architectural forms. According to the results of the simulation analysis in the early stage of the design, BIM parameterization and visualization technologies were used for modeling of various sizes and forms, and the following four architectural forms were obtained through analysis.

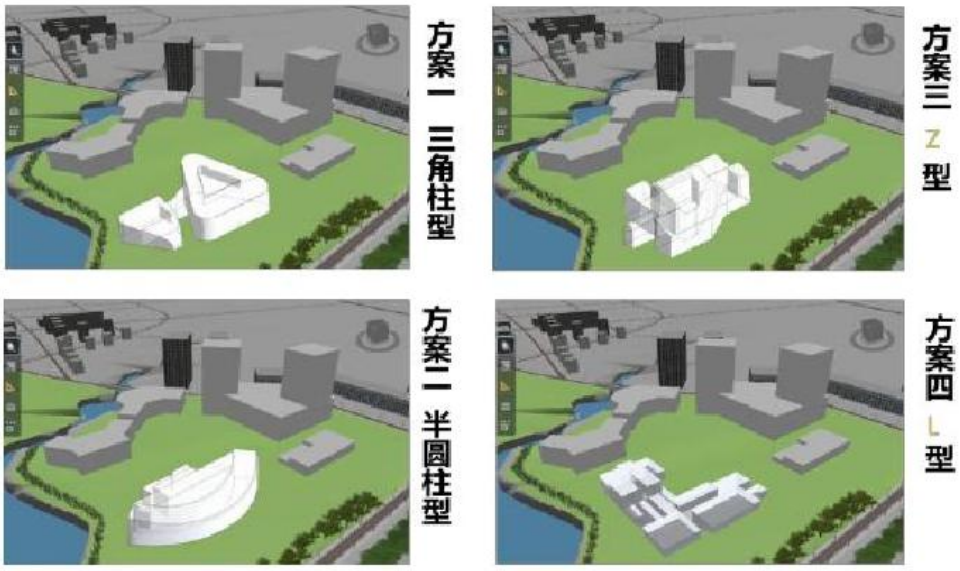

Figure 8.four types of shape schemes established by previous analysis

(2) perform various performance simulation analysis and simple energy consumption simulation on the four types of building body shapes mentioned above to obtain the analysis results, and then select the best orientation and body shape of the building to select the best scheme.

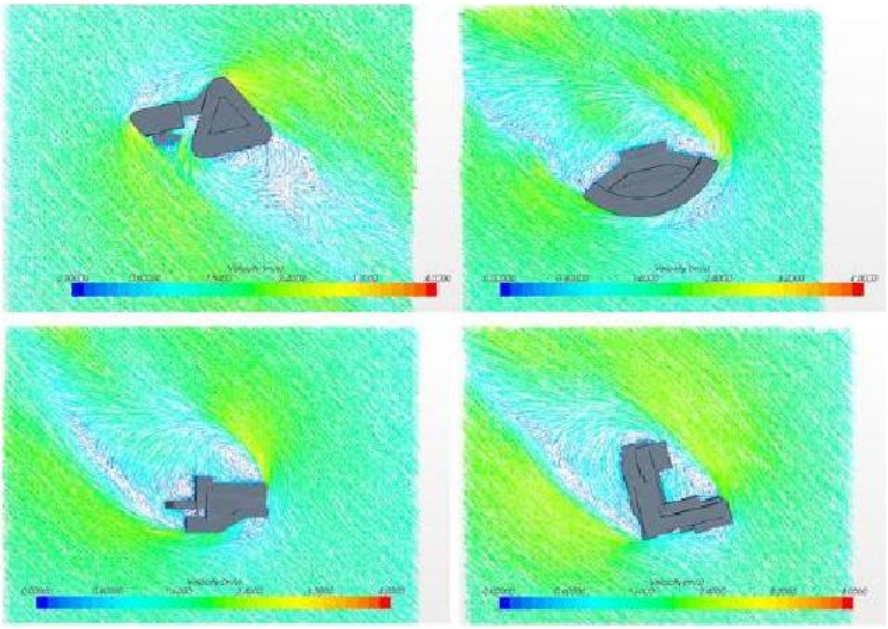

FIG 9. site wind simulation of the model using CFD software

(3) through a series of analysis and simulation, the analysis results of the above four schemes are compared and balanced, and the best shape is finally selected, which is the one that meets the requirements of the concept of low-carbon energy saving. At this time, the designer conducts further optimization design for the best shape.

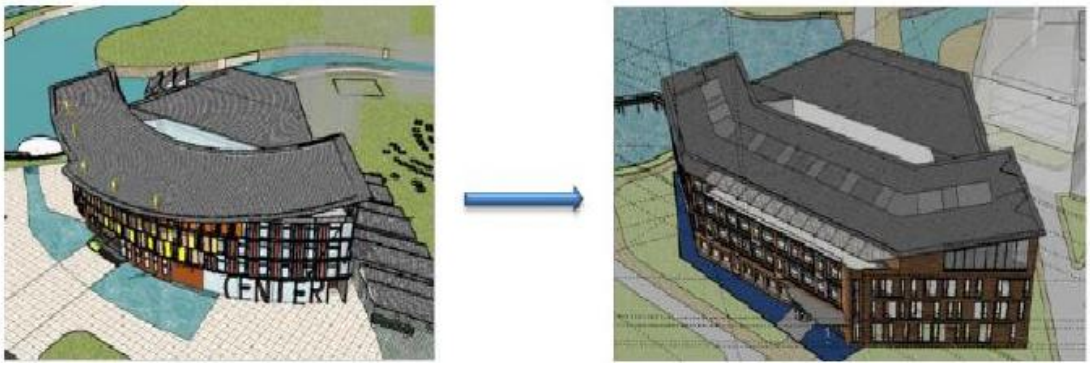

Figure 10. optimal scheme diagram

3. Preliminary design stage

Preliminary design stage is the detailed design of building

model, and in the process of design through the performance simulation analysis, using the Ecotect, IES, STARCCM + the energy-saving analysis software, based on these analysis results give the professional designers choose suitability of energy-saving measures, to air conditioning, hvac equipment, lighting equipment active energy saving measures, such as integration, and further optimization. Finally, the detailed model is obtained with the continuous optimization of the scheme. By using BIM technology, the model was imported into IES analysis software, and basic climate data were input into the software to conduct lighting simulation for the whole building model, optimize indoor lighting and meet the lighting requirements in the building room. At the same time, I coordinated and communicated with the electrical design major. According to the analysis results of Ecotect, I tried to choose the range and intensity of the energy-saving lighting equipment to supplement the lighting, so as to meet the indoor lighting conditions.

4. Construction drawing stage

(1) in the construction drawing stage, the BIM technology is used for collaborative and visual comprehensive pipeline layout. In order to provide guarantee for the construction, collision simulation analysis of the comprehensive pipeline is required at last. And

optimize the collision place.

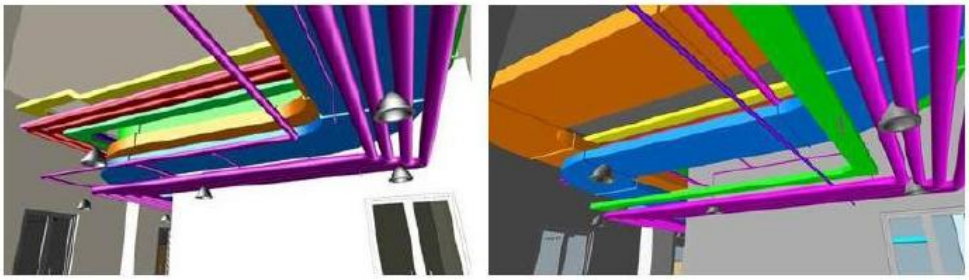

Figure 11. visual layout and optimization of integrated pipeline

(2) use BIM model to derive 2d profile drawings, and generate renderings of project BIM model.

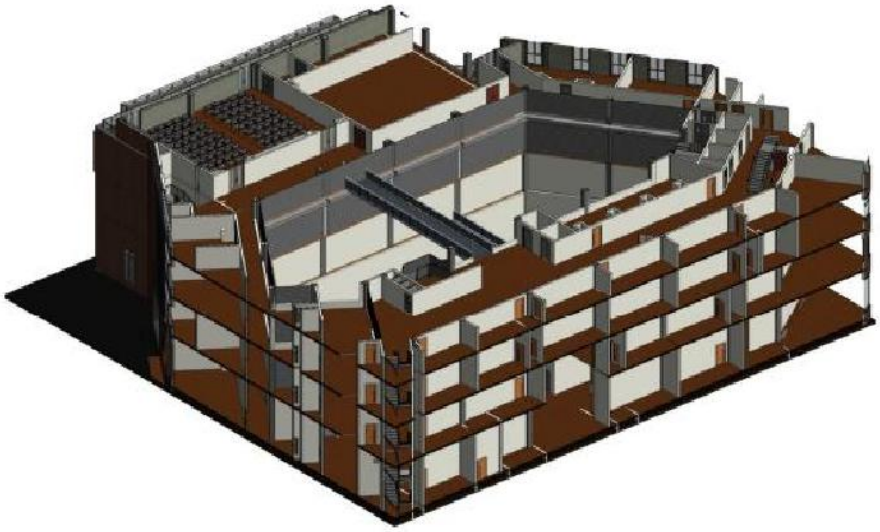

FIG 12. renderings of BIM model

7.1Environmental parameters in feng shui

Application of BIM technology combined with a feng shui for scientific site choice, at the same time using the modeling and the feng shui in combination with fully understanding the climate, as

far as possible using passive design technology, sort out the humanized architectural design technology strategy, on the basis of the model analysis of ground elevation, slope, drainage, etc, according to the analysis results are scientific and rational site planning and design.

Of course, from the perspective of modern scientific forms and technical standards, it is far from enough to extract the modern scientific properties and nutrients from the traditional fengshui theory. In other words, as the original theory of architectural environment, its mode of production and life experience of microscopic observation, the unique contribution to build building climate environment, and to satisfy people's aesthetic taste and cultural personality and the rationality of the and so on, make it on their body also constitutes the reason requires constant modernization BIM technology development; It is difficult to verify the theory of good and evil, but it does not prevent the modern hermeneutic significance of its times.

7.2Combination of humanistic environment

The understanding of human psychology may be difficult to make clear with the ancient fengshui theory, but the typical examples of "meng mu SAN qian" in Chinese history are all due to the role of the environment and the consideration of the

environment, which reflects the fundamental and importance of the environment thought and environmental awareness in the geomantic theory. The so-called "yishanbangshui", "things, tianbao", "earth spirit people" and so on, is from the good living environment to improve the inner mood, and then to achieve the integration of human heart and nature. The construction of this project has fully considered the architectural style in line with people's psychology, enabling people to identify with the architectural style in their hearts and fully reflecting the people-oriented architectural concept.

Conclusion

BIM emphasizes the concept of full life cycle, which has a wide range of applications. While enhancing its application depth, it should also expand its application breadth. This study attempts to introduce BIM concept and technology into building feng shui design. Through practice, people can deeply feel that BIM is not only an auxiliary technology, but also a change of design thinking. In the design process of building feng shui, starting from the suitability and returning to the suitability, the design of building feng shui is no longer the "piling up of technology", but the optimization and improvement of the traditional residence and the protection of the present living environment. With the update and development of BIM technology, with the popularization of architectural feng shui design, users are truly involved in the design. From the perspective of users, users are finally evaluated on the basis of their feelings of use, and the requirements of sustainable design are truly achieved, so as to build a real feng shui house.

This study is a brand-new exploration, and there are certain deficiencies in theoretical basis, data support and practical application. Due to the immature existing theories and technologies

of BIM, the differences in China's evaluation of feng shui architecture, and the author's limited experience in practice, there are still many regrets and deficiencies in this study. It is hoped that the research results of this paper can provide a new perspective and focus for future architectural development and design, and make its decision-making process and implementation content more rational and scientific direction exhibition.

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Appendix

CSET Indoor Environment Quality Questionnaire

This questionnaire is to evaluate if students are comfortable in CSET, if they feel hot or cold during winter/summer days and if they suffer from any of the symptoms of the sick building syndrome.

☐ I have read the Participant Information Sheet and the nature and purpose of the research project has been explained to me. I understand and agree to take part.

☐ I understand the purpose of the research project and my involvement in it.

☐ I understand that while information gained during the study may be published, I will not be identified and my personal results will remain confidential.

☐ I understand that data will be stored in accordance with data protection laws.

☐ I understand that I may contact the researcher or supervisor if I require more information about the research, and that I may contact the Research Ethics Sub-Committee of the University of Nottingham, Ningbo if I wish to make a complaint related to my involvement in the research.

Gender: Male ☐ Female ☐ Age _____

How long do you use the building? ___ Months

Which floor do you usually use?

☐ Ground floor – Studio ☐ Second floor - Lab

☐ Third floor – PhD students' office ☐ Fourth floor – Teachers' office

1. How would you evaluate temperature in winter (Hot/Cold)?

Too hot 1 ☐☐☐☐☐☐☐ 7 Too cold

Comfortable

2. How would you evaluate temperature in winter (Overall)?

Uncomfortable 1 ☐☐☐☐☐☐☐ 7 Comfortable

3. How would you evaluate temperature in winter (Varies/Stable)?

Varies 1 ☐☐☐☐☐☐☐ 7 Stable

4. How would you evaluate temperature in summer (Hot/Cold)?

Too hot 1 ☐☐☐☐☐☐☐ 7 Too cold

Comfortable

5. How would you evaluate temperature in summer (Overall)?

Uncomfortable 1 ☐☐☐☐☐☐☐ 7 Comfortable

6. How would you evaluate temperature in summer (Varies/Stable)?

Varies 1 ☐☐☐☐☐☐☐ 7 Stable

7. How would you evaluate illuminance level (Not enough light/Enough light)?

Not enough light 1 ☐☐☐☐☐☐☐ 7 Enough light

8. How would you evaluate background sound level (Too loud/Quiet)?

Too loud 1 ☐☐☐☐☐☐☐ 7 Quiet

How many hours a day do you stay in the building? _____ Hours

Do you have any of these feelings after spending more than two hours in the building? (Mark every suitable option)

☐ Fatigue and drowsiness

☐ Nausea and dizziness

☐ Eyes irritation

☐ Sore throat

☐ Nose discomfort

☐ Headache

☐ None