Body, Mind and Spirit: Feng Shui Applications for a Healing Environment Prototype

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BODY, MIND AND SPIRIT: FENG SHUI APPLICATIONS FOR A HEALING ENVIRONMENT PROTOTYPE

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For My Family
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ABSTRACT

This thesis project explored the merging of eastern design theories with modern western building methods. More specifically, the thesis examined Feng Shui principles, specifically the methods used in the Form School. These Form School theories were synthesized together and used as a basis to inform the design of a cancer treatment facility prototype. Feng Shui emphasizes harmony with nature and surroundings, with the goal of creating and maintaining positive chi, or energy. In this project, design decisions were based on what would create the most suitable environment for healing.

Feng Shui has made a significant contribution to design in the eastern world for many centuries. In western society, the primary concern when constructing a building has included methods involved in scientific analysis using measurable data. These western scientific approaches have included bioclimatic design, ecological design, and environmental psychology. This scientific approach has become the norm for many designers and architects in the west. Although Feng Shui principles have become more commonplace in western countries in the last fifteen years, many architects and designers still view these principles as lacking a scientific foundation and little more than superstition.

This thesis challenged the notion that Feng Shui is based on superstition and has no value in contemporary design practice. In addition, this thesis project illustrates the potential for incorporating these eastern philosophies, alongside western principles, into other healing environments.
CHAPTER 1: INTRODUCTION

Historically, Feng Shui is the most important design tool used in China as a basis for creating a better living environment. The Form School, the most well known school of thought in Feng Shui, is the primary theory used in this study. The Form School analyzes the natural landforms and energy flow of sites as well as utilizes the spiritual, religious concepts and traditional science to establish its principles. Instead of just telling the rules, this study intends to explore the value of this ancient design method by scientific analysis.

Using scientific analysis and equipment, researchers have been working toward achieving a better understanding of the connection between human well-being and nature. Many projects in architecture practices have been developed toward this goal. For instance, organic architecture follows ecological principles and bioclimatic design follows the climatic factors. All these lead architecture and design to utilize the influence of nature.

The contemporary design theories of Bioclimatic design, Ecological design and Environmental psychology, are used as the comparison in this study. The objective of this study is to compare these design theories with Feng Shui and to discover the connection and similarity between them. The study culminates with the design of a health care building that utilizes Feng Shui principles.
Purpose of this Study

Feng Shui is a traditional Chinese philosophy which includes knowledge accumulated over generations. Today, in the early twenty first century, many people misunderstand Feng Shui as a superstition, and they assume that “truths” proven by positivistic science are somehow superior to ancient beliefs. However, it is possible to gain insight from a scientific perspective of the study of Feng Shui. This paper aims to establish a linkage between ancient Feng Shui and modern science, and thereby recover the treasure of this ancient wisdom to benefit human health and wealth.

The main goal of Feng Shui is to improve human health and wealth by analyzing the natural impact on human settlements. Chinese ancients believed that a building or a design must follow the natural setting and characteristics of the site and maximize the benefit and harmony offered by nature (Fang, 2000). There are two main systems of Feng Shui, compass and landform analysis, to investigate the natural site. This paper will focus on the branch of Feng Shui called the Form School which concerns itself with the landform and the surrounding environment of the site (Mak, & Ng, 2004).

Instead of following Feng Shui tradition, the author will employ bioclimatic and ecological design principles and environmental psychology to explain the value of Feng Shui philosophy. More specifically, this paper will explore the role and applications of Feng Shui terminology in the context of designing for health. Furthermore, the results of the research will be applied to a design project, specifically a cancer treatment facility.
A Brief Description of the Design Problem

The project will involve the design of a healing environment for a cancer treatment facility. Using Feng Shui methods, the proposed site will be studied and the author will develop a design solution that will generate maximum healing benefits. The potential site is the Capital Medical Center of Tallahassee which provides diverse medical services, including surgical, cancer, cardiac, dental and ophthalmic treatment. The design project will encompass healing and medical functions and take advantage of the natural environment to support patient healing.

Goals of the Project

The goals of this project include applying ancient Feng Shui to the design of a cancer treatment facility. The site analysis will help establish the best orientation using Feng Shui philosophy as well as scientific design methods. Furthermore, the project intends to illustrate how Feng Shui principles can be incorporated into twenty-first century design solutions.
Research Fields and Study Progress

This research first focuses on the definition of Feng Shui philosophy and the scientific design theories of Environmental Psychology, Bioclimatic design and Ecological design. All of these components have a strong relationship with nature. Furthermore, it outlines the primary concerns of the scientific design methods and then explores the relationship between these methods and the Form School of Feng Shui. Finally, the research is incorporated into the design of a health care facility (see Figure 2.1).

![Diagram of Research Fields and Study Progress]

**Figure 2.1**
Components of the Form School
CHAPTER 2: REVIEW OF LITERATURE

The Philosophy of Feng Shui

Feng Shui philosophy is one of the most important ancient Chinese principles for examining building sites and arranging interior spaces. The literal meaning of “Feng” is wind and “Shui” is water (Chuen, 1995). Feng and Shui create mountains, rivers and plants as the most indispensable elements for creatures on earth. Therefore, the ancient Chinese believed that people should always follow natural guidelines to choose a place for living. Based on ancient Taoist philosophy, humans follow earth, earth follows heaven, heaven follows Tao, and Tao follows nature. The foundations of Feng Shui are derived from the beliefs of Taoism. Therefore, Feng Shui teaches the idea that people should live in harmony with nature, and people activities should be designed with nature in mind (Yu, 1994).

“Feng Shui advocates living in harmony with the earth's environment and its energy lines so that there is a proper balance between the forces of nature” (Too, 1997, p.12). The two main sources of energy in Feng Shui philosophy are Ying Chi and Yang Chi which contain contrary characteristics. These two forces are always in a state of flux, thereby causing change as they interact (see Figure 2.2). Ying and Yang are interrelated. Thus, without dark, there is no light. Without cold, there is no heat. Achieving the balance between Ying Chi and Yang Chi for human comfort is the central thought of Feng Shui (Too, 1997).
Feng Shui should be regarded as a philosophy instead of faith or a religion. It brings together several fields of knowledge which include astronomy, climatology, geology, topography, ecology, and landscape (Xu, 2003). Due to the diverse approaches, Feng Shui is mainly separated into two schools of thought: the Form School and the Compass School. The Form School stresses the manifestations on the surface of the Earth and the Compass School emphasizes the cosmic patterns and Magnetic Fields.

Figure 2.2
Ying and Yang Concept
(Too, p.51)
The Theory of Form School

Five Primary Concerns in Form School Theory

The Book of Burial (276-324 AD), the first written literature on the Form School, stated that there are five primary concerns of the Form School: Chi, Wind-Water, Four Emblems, Form, and Direction. The most significant concept of Feng Shui theory is the aggregation of living Chi, which is an essential concern for choosing a good location. There are two main criteria to arrange Chi; to be dispersed by the wind, and to be gathered by the water (Gu, 1995). Therefore, Chi, wind and water are inseparable concepts in the Form School.

The Four Emblems Theory is derived from the discoveries of ancient Chinese astronomy. They divided the 28 constellations into four groups. Because of the shapes, the Four Emblems are also known as the Four Animals which include the Azure Dragon, Red Phoenix, White Tiger and Black Tortoise. The Four Animals also represent East, South, West, and North respectively (Pu, 2004). Figure 2.3 provides an illustration of the Four Emblem concept. The Chinese used the Four Animal theory to define the directions and landforms on earth. This is the foundation of Form School Theory.
The Form School is based on the understanding of the physical outline of the site and its surrounding environment. The first step in practicing Form Theory is to observe the structure of the land and terrain. The second step is to decide the orientation and location (Michael & S. Thomas, 2004). The theory says that orientation, landform, wind, water, and the surrounding environment can influence the Chi of a space (Xu, 2003). In addition, the physical forms of buildings and natural hills also produce varying energy including fire, water, metal, wood and earth by different shapes, which are illustrated in the figure 2.4. To be exact, triangle generates the Chi of fire, flowing shape generates the Chi of water, square generate the Chi of earth and wood and circle generate the Chi of metal. Feng Shui analysis assesses how these energies interact with each other and balance each other to generate good or bad Feng Shui and influence human comfort (Too, 1997).
Building direction is one of the most important concerns in Feng Shui theory. Before studying the Feng Shui orientation, researchers should have a basic understanding of the climatic conditions in China. Basically, the winter wind comes from north of China. In contrary, the summer breeze comes from the south. These seasonal characteristics can be understood more easily in the figure 2.5. The Feng Shui direction follows the seasonal wind and sun direction. Buildings are designed to gain the gentle summer breezes from the south and to block the cold wind from the north. That’s why the buildings designed using Feng Shui principles typically have southern oriented residences (Jhang & Syu, 2004).
Feng Shui masters followed the Form School theory to construct multiform Chinese architecture for diverse climatic conditions. Based on prior experience using these practices, Feng Shui masters further developed the theory of “Box within Box” as well as the tools of “Form School Geographical Factors.” Both these theories made the Feng Shui philosophy more concrete.

“Box within Box” Theory

The “Box within Box” Theory is a holistic Feng Shui model of the ideal landscape which contains four types of topological characters: Ming Tang, Chi Vein, Water Mouth and the Feng Shui Spot. The Feng Shui spots are surrounded by mountains (Chi Vein), connected with the outside by the gate (Water mouth) and located behind a flat area (Ming Tang). To be exact, the Feng Shui spot means the best location for the city or country. The outlet of the city or country would be the Water Mouth. The barrier mountain is the primary Chi Vein. Furthermore, Ming Tang provides great vision for the Feng Shui spot (Yu, 1994).

In addition to describing the configuration of hills and rivers, the concept of “box within box” compares human body with the structure of nature. This theory of the Form School is developed from micro to macro scale. A human’s body, a desk, a room, a house, a city, even an entire country can be a Feng Shui space as shown in the figures 2.6. The ideal Feng Shui model is similar to a chair embracing and protecting the one who sits in it. How people utilize the natural elements to create securable, suitable residential areas is the main purpose of the Form School (Pu, 2004; Yu, 1994).
Primary Geographical Factors

During the late Tang Dynasty period (618-907 AD.), Yang Junsong, the master of Form School, created a general methodology for analyzing the shape of mountains and hills, the direction of water and the relationship between hills and water bodies. Combining the five concerns of Form School and “Box within Box” Theory, Yang established the Feng Shui spot exploratory method that includes Five Geographical Factors. The five geographical factors include the dragon, water, cave, sand and direction (Mak & Ng, 2004).

Dragon

In the Form School Theory, dragon veins refer to the Chi lines residing in mountain chains or large man-made constructions. Therefore, analyzing the form and location of mountains is the first step in selecting an optimal Feng shui spot. Moreover, the ancient Chinese believed that the mountain ridge represents a spirit wall; therefore, they tend to build sacred temples on the top of mountains to keep evil influences away.

Water, which can gather chi, is also seen as a dragon in Form School. Generally speaking, a qualified Feng Shui spot combines mountains and water. Water, which
means prosperity, can also be interpreted as relatively flat and open spaces. Therefore, a good site for people is near water or a flat open space, or at the end of a mountain ridge. The longer the mountain ridge is, the better the Feng Shui is considered to be (Hansley, 2002; Mak & Ng, 2004).

Cave

The cave represents the best Feng Shui location. Much of Feng Shui literature proposes that the ideal site includes the mountain vein around the perimeter of the cave and the river (namely dragon) embracing it with a smooth curvilinear gesture (Lee, 1986). Furthermore, the open space (Ming Tang) in front of the cave is enclosed by the Sand (enfolding hills) with only a small entrance connecting inside with outside. The ideal cave should be flat and higher than the bottomland to avoid excessive Ying energy from the ground (Yu, 1994).

Another important concern of the quality of the “cave” is the ecological condition. Yu (1994) stated that “In Feng Shui, vegetation is considered as the hair of Mother Earth; the natural land forms are the bones, soil is the flesh, and water is the blood. Therefore, for keeping the living Chi, we need to protect the vegetation, keep water clean, and protect land from being torn and the soil from being exhausted” (Yu, 1994, p320-337). The Form School is not only concerned about the shape and direction of the site, but also the circulation of the whole environment (Mak & Ng, 2004).

Sand

“Sand” means the hills surrounding and protecting the Cave from enemies or strong winds. In the Form School, according to different directions, Sand can be classified by the Four Emblem (Yu, 1994). The symbolisms and characters of the Four Emblems include the dragon, tiger, phoenix and tortoise (see Figure 2.3).
The dragon refers to folding hills, which soar above the ground on the left side and receive the information gathered by birds, and symbolizes the wisdom of one’s mind. The main activities should occur on the dragon side. The tiger means lower hills, and is always ready to jump out from the right side, and symbolizes the physical strength and violence. The minor activities should occur on the tiger side. The tortoise represents the wide and high mountains, which is at the back, and symbolizes a sense of security and freedom. The phoenix means an open and great vision area, which flies far ahead to the front. This represents great vision (Chuen, 1995; Yu, 1994).

Water

Water symbolizes the flowing Chi which can be translated as “vital energy flow” or the “breath of nature”, because Chi can be gathered by water and flowing energy (Xu, 2003). Furthermore, Chi is generated by the river bypassing the site and the roads and streets that carry the traffic flow. Moreover, living Chi can be accumulated by water, which is why the Form School model recommends that an optimum design should have water on the site. This water could be in the form of a stream and should be calm and smooth (Yu, 1994).

The Water Mouth is the most vital point for a Feng Shui spot, because it’s a gate for inducing and locking in living Chi and keeping out evil forces. Actually, the Water Mouth is the spot where the water body gathers and flows out the living area. It can also describe an entrance to a room, building or site. Historically, residents gather unconsciously near the Water Mouth for activities and defense, for news and more information from the outside (Mak & Ng, 2004).

Direction

The Chinese believed that the best direction for a building would be to face south. This allows the building to use the solar energy and prevent strong winds from the north.
The best Feng Shui site direction would be the red phoenix in the front (South), Azure Dragon on the left (East), White Tiger on the right (West) and Black Tortoise at the back (North) (Mak & Ng, 2004). Furthermore, the dragon is the major side and tiger is the minor side in a space. Therefore, the left hand side of buildings would be higher and contain more activities than the right hand side. In short, the preferred sites should get protection on the back and side as well as have great vision in the front.

Ideal Feng Shui Model

Zitao Fang (2000) stated that there are three typical site models for the Feng Shui theory in site planning and design, which are the four-sided enclosed site, the half-enclosed site and the site between mountain and water. All of these models follow the philosophy of the Form School.

The Four-Sided Enclosed Feng Shui Site

This kind of site may be threatened by flooding during the rainy season, so in this model, the ancient Chinese always chose the location where the ground level is higher. Chinese people believe that the cave should be located halfway up, where the elevation is above Ming Tang and Chi is harmoniously balanced by Ying and Yang (Fang, 2000). In this Feng Shui design, there are multiple layers of construction and each of these layers of construction obtains its own Feng Shui pattern (see Figure 2.7). Moreover, the direction of the building always faces the sun but has an angle which helps to reduce excessive heat in the summer (Fang, 2000).
The Half-Enclosed Feng Shui Site

Also called “Armchair Mountain Formation”, the half closed mountain can block cold wind from the north and west and allow summer breezes to enter from the south. Therefore, the landscape architecture elements of this Feng Shui model usually face to the south with a pond or stream in front of it and with mountains behind it. This provides locations with a favorable microclimate (Fang, 2000) (see Figure 2.8).
A Feng Shui Site Between Mountain and Water

According to this Feng Shui model, one of the best spots for a building is a location halfway up a south-facing slope to absorb the maximum winter solar radiation and avoid the high speed winds of the hilltops. Moreover, vegetation and a pond are the most significant natural elements on this site plan, which might even change the micro-bioclimate of the area. Vegetation provides shade in summer while the pond and stream make evaporative cooling for the prevailing summer wind (Fang, 2000) (see Figure 2.9).

Figure 2.9
Feng Shui Site Between Mountain and Water

Feng Shui in Building Design

Buildings designed using Feng Shui principles seek for the natural harmony and the feeling of security for the residents. Therefore, they are built by following the natural condition of the site, such as local climate, vegetation, and topography (Fang, 2000). The author compiled five primary Feng Shui building styles, which are Si He Yane, Yao-dong, Tunnel house, Kejia house and Stilted house. These Feng Shui buildings are distributed through at different areas of China and are designed for different natural environments (see Figure 2.10).
The Si He Yane

Si He Yane, which means four-sided closed courtyard, occurs in the big cities of China where residents need more security and have less access to the natural environment (Fu, Guo, Lin, Pan, Qiao & Sun, 2002). In addition to using proper direction, Si He Yane also utilizes the window design and material selection in order to have better interaction with natural energy. The windows facing the interior courtyard are larger than the windows on the exterior walls, which makes the interior space gain more sunlight from the courtyard. Moreover, the exterior walls made by local thermal mass materials are thick enough to preserve adequate latent heat energy and block the winter wind from the north. The dark color also helps to absorb solar energy (Fang, 2000) (see Figures 2.11 to 2.14).
Figure 2.11
Typical Si He Yane Plan and Elevation

Figure 2.12
Perspective of Two-section Si He Yane
(Fu, Guo, Lin, Pan, Qiao & Sun, p.302)
Figure 2.13

Figure 2.14
The Exterior Door of Si He Yane
(Fu, Guo, Lin, Pan, Qiao & Sun, p.303)
The Yao-dong

The Yao-dong style can be found in the northwestern area of China, where the weather is arid and windy and the topography is mountainous. Therefore, Yao-dong is designed for buildings on the slope of hills and excavated in the mountain to avoid the prevailing wind in the winter. This ladder building was developed for the local topography and climatology (Boyd, 1962). Moreover, the flat land in front of the house provides a reflector for sunlight and better air movement (Fang, 2000) (see Figures 2.15 to 2.17).

Figure 2.15
Typical Yao-dong Plan and Elevation
Figure 2.16

Figure 2.17
Yao-dong in Shanbei
(Fu, Guo, Lin, Pan, Qiao, Sun, p.311)
The Tunnel House

Tunnel house appears primarily in the mesa area of mid-west China where the strong winds carry a great deal of sand. The ancient Chinese dug networks of tunnels and made them their dwellings (Fang, 2000). The tunnel home is not only well suited to sheltering people from dust storms but also in keeping the residential areas warm in winter and cool in summer (Fu, Guo, Lin, Pan, Qiao & Sun, 2002). The central courtyard can still receive natural light and fresh air from the exterior. In addition, this design makes the best use of the sustainable and economical concepts by utilizing the ground as the building wall (Fang, 2000) (see Figures 2.18 to 2.19).

Figure 2.18
Typical Tunnel House Plan and Elevation
The Kejia House

The Kejia house was made in the form of a square or round fortress. It appeared when the Kejia people migrated to the south of China from central China between the third and fourth centuries (Boyd, 1962). This kind of dwelling can accommodate hundreds of people and can support daily living within. Located in the summer storm zone, the round form can reduce the drag of wind. Typically, the main windows and doors of the rooms open inward and the main entrance faces south. In the outer walls, there are only a few entrance gates, which helps to defend the enemy from outside (Lou, 2002) (Lou & Wang, 2001) (See Figures 2.20 to 2.22).
Figure 2.20
Kejia House Plan
(Boyd, p.109)

Figure 2.21
Perspective of Kejia House
(Fu, Guo, Lin, Pan, Qiao & Sun, p.308)
The Stilted House

Stilted houses are located primarily in the southeastern and southwestern parts of China. In these areas, there is complex topography and few stretches of flat land. Furthermore, the weather is hot and humid. Stilted houses offer a dry and safe space as well as better ventilation than a slab on grade house (Fu, Guo, Lin, Pan, Qiao, & Sun, 2002). They are built on wooden or bamboo stilts according to the rise and fall of the landform (Lou, 2002). Typically, these houses have open corridors and sitting areas with overhanging eaves in front of the rooms for daily activities (Fu, Guo, Lin, Pan, Qiao, & Sun, 2002) (See Figures 2.23 to 2.24).
Figure 2.23
Perspective of Stilted House. Retrieved March 15, 2006 from http://www.5k5k.net/Html/Article/Class1/Class6/1085

Figure 2.24
Stilted House
(Fu, Guo, Lin, Pan, Qiao & Sun, p.312)
Scientific Theories Related to Human Comfort and the Natural Environment

Bioclimatic Design

In bioclimatic design, there are four major climatic factors, including air temperature, solar radiation, air movement and relative humidity. All four climatic factors are vital elements for human comfort. Using these natural sources to enhance the well-being of humans in the built environment is the greatest concern in bioclimatic design (Xu, 2003). Victor Olgyay’s *Design with Climate: Bioclimatic Approach to Architectural Regionalism* (1973) reflects a valuable design theory which emphasizes that the construction should be built according to the biological needs of humans and in harmony with nature (Sobin, 1963). Furthermore, he also stated that the characteristics of regional architecture could be found in response to certain climates, although they have diverse cultures and geographic locations (Xu, 2003).

Organizing the space according to the different needs of air temperature, lighting and ventilation can facilitate energy savings. The north side of a building is the coolest zone during the winter because of the lack of direct sunlight. On the other hand, the south side of the building will be the warmest zone because it receives sunlight throughout the day. Over the period of daytime, the west side will be slightly warmer than the east side because of the effect of solar radiation and higher afternoon air temperature. The ideas are illustrated in the figure 2.25 (Shaw 1989).
Bioclimatic design aims to establish a better indoor environment by taking advantage of nature. An example of a bioclimatic principle would be the capturing of thermal energy and providing protection from winter wind, versus the conventional use of a mechanical apparatus (Sobin, 1963). In the design process, the location of the sun is very important for calculating the shadows cast around a building. The design needs to know which faces of a building are sunlit and how to adjust the altitude and azimuth of the sunlight (Markus & Morris, 1980). The sun affects buildings primarily through solar radiation, which is composed of three different components: direct radiation from the sun, diffuse radiation from the sky vault and reflected radiation from the ground and nearby buildings, which is shown in Figure 2.26 (Shaw, 1989). In the cold zone, the way buildings increase solar gain is by providing reflectors to concentrate insulation, avoiding shading, and using clear glazing. In the hot zone, the buildings decrease solar gain by decreasing the surface exposed to radiation and increasing reflectance.
Another important datum for bioclimatic design is the winter wind direction which influences the exposure and location of buildings. In addition to taking advantage of a dominant breeze by setting the direction, bioclimatic design construction is orientated and internally planned to avoid sudden cold storm winds blowing from outside (Fry & Drew, 1956). Moreover, the local wind direction data can help the designer decide how to design the operable windows, intentional openings, and the landscape. With adequately insulated walls, the indoor climate depends on ventilation more than on solar irradiation. In this case, the primary physiological comfort requirement emphasized is the air motion of the structure (Givoni, 1969). Architects can follow bioclimatic design principles to make better decisions regarding a building’s orientation as illustrated in the figures 2.27 & 2.28.
Relative humidity is the relationship between air temperature and its water content, which is an important concern in bioclimatic design. Measuring air temperature and relative humidity can help designers figure out how air and vapor move from outside to inside the building, and how architects should arrange the space to enhance human health. Normally, if the water content or the temperature of the air is greater in one space than another, the moisture or air will migrate from the higher vapor pressure area or temperature area to the lower one. This movement will continue until the air temperature and vapor pressure reach the balance. Therefore, bioclimatic design utilizes the structure of architecture to control the movement of moisture and air to achieve ideal living conditions (Brown, 1996).
Eco-logical Design

There are two basic concepts for Eco-logical design, also known as sustainable design. First, any technology, construction or product should be able to function within any era, policy or institution. Second, “design methods should be changed from ‘transforming nature’ to ‘transforming society’ to enhance the sustainability of the environment. By doing so, we can improve the life quality and the relationships of all living beings, communities and the natural built environment” (Birkeland, 2002, p5-6).

Eco-logical design can be utilized in many stages of development ranging from product development to regional development. Eco-logical designers reduce the amount of toxic materials used in product design as well as use solar design and healthy materials in building design. They also reduce the construction impact caused by transporting materials, as well as use construction waste management processes. Furthermore, Birkeland (2002) stated that designers should practice the principles of eco-design, eco-architecture, and construction ecology to reduce the environment impacts of settlement at the neighborhood scale. They should seek economies in production process at the industrial design, reducing transport, energy and infrastructure requirements at the city design. Furthermore, designers should also attempt to influence the public to achieve the ecological attributes and to balance the ecosystems. The relationship of these concepts is explained in the figure 2.29.
“Deep Ecology” presents itself as a possible alternative to the common dominant worldview of technocratic-industrial societies that regards humans as isolated and fundamentally separated from the rest of nature, as superior to, and in charge of, the rest of creation” (Lomba-Ortiz, 2003). The main concerns of ecological design are the materials, orientations, air circulation of buildings as well as the geology, climate and hydrology of the site. In practice, more and more research and methods are being developed to analyze the interaction between human living conditions and natural elements. These methods include climate analysis, topography analysis, geology analysis, hydrology analysis, and vegetation analysis (Xu, 2003).

By analyzing the relationship between the climate and topography, scientists found that air temperature is impacted by not only varying solar and wind direction but also by varying topography, which can influence the movement of air. Normally, the air movement acts similarly to water movement, which means cold air gathers in the lowest
area. However, it should not be assumed that the temperature of a plateau is higher than the temperature of a valley. There are a series of small air circulations on the slopes. Interacting with this circulation, the cold air on the slopes mixes with the warm air nearby, creating a heat reservoir on the slopes. In this situation, “the plateau is cold and the valley floor, very cold, but the higher part of the side slopes are warm” (Aronin, 1953, p.158). The figure 2.30 illustrates this statement.

![Figure 2.30](image)

**Figure 2.30**
Schematic Representation of the Origin of the Warm Slop Zone
(Aronin, p.158)
From vegetation analysis, people can understand not only the vegetation but also the geographic and hydrologic condition of a site. Vegetation changes the microclimate in a place. It makes shade and reduces the solar reflection from ground in a hot area, and also provides protections from strong and cold wind in a cold area (see Figure 2.31). Furthermore, designers and architects use sustainable landscapes to create better living spaces by improving air quality, ameliorating climate, reducing noise and energy waste and increasing the biological richness of an area. To be exact, the contribution of vegetation may help improve the environmental problems which might originally require economic and political solutions (Fry & Drew, 1956; Dunnett & Clayden, 2000).

Figure 2.31
The Effect of Vegetation on Building Structures (Fry & Drew, p.58)
A well-known set of Eco-logical Design Principles, the Hannover Principles, developed by William McDonough and Michael Braungart for the ‘2000 World’s Fair’, is recognized as the first step of ecological design. William McDonough and Michael Braungart strove for a definition of the universal principles based on the rules of nature. Indeed, these principles stimulated the worldwide evolution of cradle-to-cradle design and turned the ecological design theory into a practical design tool. These principles, as listed below, state that designers should use ecological design to create buildings that are natural beneficial for people and the natural surroundings (McDonough & Braungart, 2003).

Hannover Principles

1. Insist on rights of humanity and nature to co-exist in a healthy, supportive, diverse and sustainable condition.
2. Recognize interdependence. (The interaction between human design and natural world.)
3. Respect relationships between spirit and matter. (Consider human setting and connection between spiritual and material consciousness.)
4. Accept responsibility for the consequences of design decisions upon human well-being, the viability of natural system and their right to co-exist.
5. Create safe objects of long-term value.
6. Eliminate the concept of waste.
7. Rely on natural energy flows. (Incorporate energy efficiently and safely for responsible use.)
8. Understand the limitations of design. (Treat nature as a model and mentor, not as an inconvenience to be evaded or controlled.)
9. Seek constant improvement by the sharing of knowledge.

(McDonough & Braungart, 2003)
Environmental Psychology

Today, there are a significant amount of research projects focusing on human health and the connection between the environments and human psychological responses. The fundamental hypothesis of this body of research is that "since the earliest evolutionary phases of human life, we have had a visceral, survivalist need to be sensitive and responsive to our surroundings" (Bilchik, 2002, p.10). In Feng Shui theory, there are also many concepts related to human psychological responses, such as the Five Elements Theory, the typical Feng Shui site and the Feng Shui colors. This thesis includes the impact of noise, shapes and the natural environment as part of the human psychological response.

Bilchik (2002) stated that the research on hospital noise levels found that loud noise could increase the heart and breathing rates, and elevate blood pressure levels. It also stated that noisy environments made people feel stressful, anxious and made it difficult to concentrate. Therefore, it was recommended that patient rooms have some protection in order to reduce exposure to noise and to create feelings of security (Bilchik, 2002).

Other research argues that humans have different psychological responses to different shapes which influence our emotions, actions and feelings. Generally speaking, the simple shapes are the square, rectangle, circle, ellipse, and triangle. They are the basic forms which can be used as the foundation for all other shapes. Each one of the shapes possesses its own character (Kator, 2003). “Squares and rectangles are familiar, safe, and comfortable” (Kator, 2003). They represent a sense of stability and truth, and make people feel safe and even-tempered. “Triangles symbolize action because of movement from the corners “pointing” in a direction” (Kator, 2003). They contain feelings of growth, activity, and danger. “Circles symbolize infinity, completion,
softness, and security” (Kator, 2003). Ellipses are similar to circles, but they induce feelings of freedom and ease. Instead of defining these responses as merely visual perceptions, they make a sustained effect to the complex phenomenon of architectural spaces and affect one’s emotional status (Moller, 1968).

The natural environment impacts not only the physical health but also the psychological health of human beings (Sundstrom, Bell, Busby & Asmus, 1996). There are many studies in environmental psychology research related to the effect of natural elements. For example, in hospitals, sunny patient rooms expedite recovery from severe depressions (Beauchemin, 1996). Moreover, in offices, the window size and sunlight penetration impact the worker’s mood (Sundstrom, Bell, Busby & Asmus, 1996).

This paper uses the data of a psychology study done by the USDA Forest Service and the Newhouse Communications Center at Syracuse University entitled A Comparison of Viewer Reactions to Outdoor Scenes and Photographs of those Scenes. In this study, the respondents were asked to look at eight different scenes as well as the photographs of these scenes and record their feeling about each scene on 27 bi-polar, seven-step adjective scales as cited in (Shafer & Richards, 1974). The natural scenes used in this research include a stone-crushing plant, a lake with stone-crushing plant, a forest environment and lake with mountain in background, and a waterfall in a forest setting (see Figure 2.32-2.35).
The Summary of the Strongest Psychological Response within the Study

![Figure 2.32](image1)
A stone-crushing plant
(Shafer & Richards, p.74)

Strong feeling: Masculine
Disruptive
Strong

![Figure 2.33](image2)
A lake with stone-crushing plant
(Shafer & Richards, p.74)

Strong feeling: Beautiful
Interesting
Warm
Pleasant
Fresh
Like
Peaceful
Figure 2.34
A forest environment and lake with mountain in background
(Shafer & Richards, p.76)

Strong feeling: Beautiful
Soft
Harmony
Happy
Ordered
Peaceful

Figure 2.35
A waterfall in a forest setting
(Shafer & Richards, p.76)

Strong feeling: Interesting
Unusual
Pleasant
Stimulating
Satisfying
Dynamic
Fresh
Like
Strong
Private
According to this research, the scenes of a forest environment and lake and mountains in the background, and a lake with the stone-crushing plant invoked the optimal healthy psychological responses, such as beautiful, harmony, happy and peaceful. Although other scenes also had strong responses, the views containing mountain, woods and water bodies had the best response for humans’ everyday living because of the comfortable and relaxing feeling.

The Connection between Scientific Design Methods and the Form School

The following tables explain the relationship between the Form School philosophies and scientific design methods. Table 1 shows a comparison of the Form School elements of bioclimatic design, ecological design and environmental psychology and reveals the overlapping philosophies. Moreover, Table 2 shows the connection between Feng Shui building and bioclimatic design, ecological design and environmental psychology and how the Feng Shui buildings are related to the modern design methods.

The Comparison of Form School and scientific Design Methods

The comparison table reveals several common points between Feng Shui philosophy and the contemporary design theories from different segments (see Table 1). All of them focus on the relationships among humankind, architecture and the natural environment. In theme or original theory, they mention the significance of the harmony in the universe. Further, although all these theories use dissimilar elements to investigate the ideal site location, the ultimate purpose would be living in harmony with nature and benefiting human health. In terms of nature, most of these theories study approximate elements, such as air movement, solar energy, mountain, vegetation and location, direction and form of the buildings, to better approach the aim of the theory.
Table 2.1  
Comparison of Form School and Scientific Design Methods

<table>
<thead>
<tr>
<th>Main Concept</th>
<th>Form School Theory</th>
<th>Bioclimatic Design</th>
<th>Ecological Design</th>
<th>Environmental Psychology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Concept</strong></td>
<td>Orientation, landform, wind &amp; water influence Chi character in the sites and buildings.</td>
<td>The characters of the regional architectures could be found in response to the certain climate.</td>
<td>Any technology, Construction or product should be worked within any anachronistic social, political and institutions and its natural environment. Design should improve the relationships of all living creatures, communities and the natural/built environment</td>
<td>The research focuses on the connection between environmental space and human psychological response.</td>
</tr>
<tr>
<td><strong>Theme or origin of theory</strong></td>
<td>“Box within box” - create the harmony chi from micro to macro space, ranging from the human body to the structure of natural features</td>
<td>The constructions should be in accordance with the biological needs of humans and in harmony with nature</td>
<td>An alternative to the dominant worldview that regards humans as fundamentally separated from the rest of nature. Operated in diverse scale of development ranging from product scale to regional scale.</td>
<td>Since the earliest evolutionary phases of human life, people have had a visceral, survivalist need to be sensitive and responsive to our surroundings (Bilchik, 2002).</td>
</tr>
</tbody>
</table>
Table 2.1 Continued

<table>
<thead>
<tr>
<th>Primary elements</th>
<th>Form School Theory</th>
<th>Bioclimatic Design</th>
<th>Ecological Design</th>
<th>Environmental Psychology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Namely Chi, Wind-Water, Four emblems( dragon, tiger, phoenix and tortoise ), Form and Direction</td>
<td>Air temperature, Solar, Air movement and Relative humidity</td>
<td>Materials, orientations and air circulation of buildings as well as the geology, climate and hydrology of the site.</td>
<td>A variety of factors, such as noise, shapes and natural environment which influence the psychical feeling of human</td>
<td></td>
</tr>
<tr>
<td>Ideal spot Consideration - Nature Effect</td>
<td>Feng Shui held the idea that people should live in harmony with nature and their activities should be designed with nature.</td>
<td>The constructions should be in according with the biological needs of human and in harmony with nature.</td>
<td>Insist on rights of humanity and nature to co-exist in a healthy, supportive, diverse and sustainable condition.</td>
<td>Natural environment impacts not only the physical health but also the psychological health of human being.</td>
</tr>
<tr>
<td>Flowing Chi (air movement &amp; water)</td>
<td>The flowing energy, translated as “vital energy flow” or the “breath of nature” Chi could be “dispersed by the wind” and be “gathered by the water” Feng Shui was founded by creating the harmonious chi</td>
<td>With the adequately insulated walls, the primary physiological comfort requirement will be for the air motion. Bioclimatic design utilizes the architecture form to control the movement of moisture and air to achieve the ideal living condition.</td>
<td>Eco-logical design uses climate analysis, topography analysis and geology analysis to measure the air movement of the sites</td>
<td>The view that contains mountain and lake makes the optimum healthy psychological responses A waterfall in a forest setting make people feel stimulating and dynamic</td>
</tr>
</tbody>
</table>
Table 2.1 Continued

<table>
<thead>
<tr>
<th>Feng Shui- Form School</th>
<th>Bioclimatic Design</th>
<th>Ecological Design</th>
<th>Environmental Psychology</th>
</tr>
</thead>
</table>
| **Solar Energy**       | Face South for catching more Yang Chi (Solar energy)  
The open space in front of rooms absorbs more heat from sun.  
The solar path indoor and the varying solar angle of the available nature light affect building heating, lighting, and the solar energy.  
The south side of the building will be the warmest zone because of receiving sunlight throughout the day. | One of the main concerns of ecological design is air temperature of the sites which impacted by solar, wind and topography. | Sunny hospital rooms expedite recovery from severe depressions.  
Window size and sunlight penetration impact worker’s mood. |
| **Winter Wind**        | Mountain on the north for blocking the frozen wind.  
Establish a better indoor environment by avoiding winter wind instead of the aid of mechanical apparatus. Winter wind direction influences the direction and location of buildings. | Air temperature is impacted by varying solar and wind direction |  |


Table 2.1 Continued

<table>
<thead>
<tr>
<th>Mountain</th>
<th>Feng Shui- Form School</th>
<th>Bioclimatic Design</th>
<th>Ecological Design</th>
<th>Environmental Psychology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dragon (Mountain)</td>
<td>Dragon (Mountain) keeps evil energy away. A good site is near water and at the end of a mountain range; the longer, the better.</td>
<td>No consideration about the geographical factors</td>
<td>Air temperature is impacted by the topographical height of the site which influences the movement of air.</td>
<td>The view that contains mountain and lake makes the optimum healthy psychological responses</td>
</tr>
</tbody>
</table>

| Vegetation        | Vegetation is the hair of the mother earth Soils are the bones and flesh | Vegetation changes the microclimate in a place, improves air quality, ameliorates climate, reduces noise and energy waste and increases the biological richness of an area. | Natural environment impacts not only the physical health but also the psychological health of human being. |

<p>| Location of the site | The ideal Cave would higher than the bottomland and the foot of the hills area for avoiding excessive Ying Chi from the Earth ground. | “the plateau is cold and the valley floor, very cold, but the higher part of the side slops are warm” (Aronin, 1953) | The view that contains mountain and lake makes the optimum healthy psychological responses |</p>
<table>
<thead>
<tr>
<th>Direction of the site</th>
<th>Feng Shui - Form School</th>
<th>Bioclimatic Design</th>
<th>Ecological Design</th>
<th>Environmental Psychology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tortoise-wide mountain on the north for blocking winter wind (back).</strong> Phoenix- flat area on the south for receiving summer breeze (front). Dragon-higher hills on the west. Tiger-lower hills on the east.</td>
<td>The north side- the coolest zone during the winter. The south side- the warmest zone. The west- slight warmer than the east side in the afternoon.</td>
<td>Eco-logical design relies on natural energy (solar, wind, topography....) flows. (Incorporate energy efficiently and safely for responsible use)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Spiritual influence of Shapes and Forms</strong></td>
<td>Physical buildings and mountains also produce varying energy such as fire, water, metal, wood and earth by different shapes or directions that affect the Feng Shui of the site.</td>
<td></td>
<td>Respect relationships between spirit and matter.</td>
<td>Human have different psychological response to the diverse forms which influence our emotion, action and feeling.</td>
</tr>
</tbody>
</table>
The Connection between Feng Shui Buildings and Scientific Design Methods

Table 2 uses modern design methods as tools to explain the rationality of the traditional Feng Shui building types. According to the table, each Feng Shui building answers to or is related to the contemporary design methods which includes air temperature and movement, sun direction, relative humidity, sustainable design, the analysis of climate, geology, hydrology and topography and environmental psychology. This table further reveals that Feng Shui building types do have the similar consideration with scientific design methods.

Si He Yane, Yao-dong, Tunnel house, Kejia house and stilted house are the typical Feng Shui buildings introduced previously. Their locations and architectural forms were decided by the Feng Shui principles, Ying and Yang balance, five emblems, five elements, and Box within Box theory. Instead of telling the Feng Shui construction rules, Table2 lists the primary considerations of modern design methods in order to find the connection and similarity between eastern and western design principles.

Using natural environment as a tool to build a better living space, both Feng Shui and modern design theories focus on the influence of nature forces. Healing design, one of the most popular design theories for human health, also discusses the nature impact. Having the comparison and connection tables, the author can further apply the results to the healing design project.
<table>
<thead>
<tr>
<th>Bioclimatic Design- Air temperature (Local Wind)</th>
<th>Si He Yane</th>
<th>Yao-dong</th>
<th>Tunnel house</th>
<th>Kejia house</th>
<th>Stilted house</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faces south for the summer breeze The exterior wall is enclosed and thick enough to block the winter wind.</td>
<td>Faces south for the summer breeze half of constructed space is built into the mountain to offer protection from strong wind</td>
<td>Built underground to avoid sandy wind blowing into living pace directly</td>
<td>The round form reduces the damage caused by frequent summer storms.</td>
<td>Utilizes natural terrain and location to avoid strong wind.</td>
<td></td>
</tr>
<tr>
<td>Solar Radiation (Sun Direction)</td>
<td>Faces south to absorb more solar energy The interior doors and windows are wide opened for better natural heating &amp; lighting Hanging eaves reduce direct intensive sunlight.</td>
<td>Faces south and keeps open space in front to obtaining more solar energy. The mountain wall retains more solar heat in winter and disperses it in summer.</td>
<td>The central open space (courtyard) receives more direct solar energy. Earth is a great insulation material for heat retention in winter.</td>
<td>The open central courtyard is exposed to more solar energy. The hanging eaves reduce the direct sunlight getting into the interior.</td>
<td>Has wide and open balconies or corridors where residents can gather for many activities, such as making fabrics and drying clothes, under sunlight.</td>
</tr>
</tbody>
</table>

Table 2.2
Connection between Feng Shui Building and Scientific Design Methods
<table>
<thead>
<tr>
<th></th>
<th>Si He Yane</th>
<th>Yao-dong</th>
<th>Tunnel house</th>
<th>Kejia house</th>
<th>Stilted house</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Movement</td>
<td>The open courtyard gets more fresh air and provides smooth air circulation.</td>
<td>The open space in front of buildings makes better air circulation.</td>
<td>The underground courtyard design tends to get fresh air, keep sandy wind away and creates smooth air circulation.</td>
<td>The round courtyard can get more fresh air and creates smooth air circulation.</td>
<td>Located in the south hilly area where the weather is hot and humid, the design of the stilted house raises the building for better ventilation and drainage.</td>
</tr>
<tr>
<td>(Ventilation)</td>
<td>The interior wide-opened windows accelerate air circulation inside.</td>
<td>The Sealed earth stops strong wind and slows down the air movement inside.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>Gaining the summer breeze and raising the ground level avoid excessive humidity.</td>
<td>Located in the dry area, Yao-dong gains mist by the summer breeze from south. Better drainage for draining extra water in the soil.</td>
<td>Located in dry area, tunnel house design can keep some underground moisture and stabilizes humidity</td>
<td>The sealed exterior walls stop the humid air and summer storm from outside.</td>
<td>For better ventilation, Stilted house raises the building and uses bamboo and wood as main construction material.</td>
</tr>
<tr>
<td>Eco-logical Design</td>
<td>Si He Yane</td>
<td>Yao-dong</td>
<td>Tunnel house</td>
<td>Kejia house</td>
<td>Stilted house</td>
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</tr>
<tr>
<td>Sustainable Design</td>
<td>Uses local materials, such as stone and grey clay brick, to build.</td>
<td>Utilizes the local soil and follows the natural landform to build.</td>
<td>Causes very little damage to the environment as the earth surface is generally untouched.</td>
<td>Utilizes local material to establish the building. Round shape saves more construction materials than the square one.</td>
<td>Local, recyclable materials and minimal over pavement</td>
</tr>
<tr>
<td>Climate Analysis</td>
<td>Faces southwest for less direct sunlight in the hot zone and faces southeast for more direct sunlight in the cold zone. Has bigger courtyard in South China and smaller one in North China because of different temperature.</td>
<td>Dry area provides hard and solid soil which is the foundation of Yao-dong design.</td>
<td>Located in dry and cold continental areas, the tunnel house keeps the interior warm in winter and cold in summer.</td>
<td>Located in hot and humid zones, the kejia house design protects the dwellers from strong winds and burning sun.</td>
<td>The slopping eave makes better drainage roof in the rainy zone.</td>
</tr>
<tr>
<td></td>
<td>Si He Yane</td>
<td>Yao-dong</td>
<td>Tunnel house</td>
<td>Kejia house</td>
<td>Stilted house</td>
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<td>--------------------------------------------------------------</td>
<td>-------------------------------------------------------</td>
<td>----------------------------------------------------</td>
</tr>
<tr>
<td><strong>Hydrology</strong></td>
<td></td>
<td>Firm soil and solid</td>
<td>Firm and solid underground soil is a significant concern of</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Analysis</strong></td>
<td></td>
<td>bed are the most</td>
<td>Tunnel house design.</td>
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<tr>
<td></td>
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<td>important concern of</td>
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<tr>
<td></td>
<td></td>
<td>Yao-dong design.</td>
<td></td>
<td></td>
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<tr>
<td><strong>Topography</strong></td>
<td></td>
<td>The location needs to</td>
<td>Tunnel house is designed for the dry and non-floods area.</td>
<td>The location needs to be easy to get water which</td>
<td>Stilted house can be built near rivers or lakes</td>
</tr>
<tr>
<td><strong>Analysis</strong></td>
<td></td>
<td>be easy to get water</td>
<td></td>
<td>should be calm and clean</td>
<td>where there might not be many flats.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>which should be calm and clean</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Environmental</strong></td>
<td></td>
<td>Needs flat and open</td>
<td>Yao-dong adapts to the hilly area.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Psychology</strong></td>
<td></td>
<td>space</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Noise</strong></td>
<td></td>
<td>Creates a quite and</td>
<td>The mountain soil makes interior space quiet and isolated.</td>
<td>Creates quiet, peaceful and secure living space for</td>
<td>Kejia house design centralizes noisy activities in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>security space by the</td>
<td></td>
<td>residents.</td>
<td>the courtyard.</td>
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<tr>
<td></td>
<td></td>
<td>boundary of the exterior wall.</td>
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</tr>
<tr>
<td>Shapes</td>
<td>Natural Environment</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Si He Yane</td>
<td>The square plan with round windows or doors creates a feeling of safety, comfort and ease. The open courtyard emphasizes natural elements, creatures and sunlight.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yao-dong</td>
<td>The square plan with arch design creates the feeling of safety and softness. The armchair shape of Yao-dong provides the security.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tunnel house</td>
<td>The underground design makes residents feel protected. The whole tunnel house is a natural environment, which makes people closed to natural elements.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kejia house</td>
<td>The round form with arch design creates the sense of security and strong. Kejia house separates itself from the outside world for self-defense in old times, so there is little connection between inside and outside world.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stilted house</td>
<td>In the subtropical zone, the residents will feel safer by raising the buildings higher than the ground level for keeping snakes, ants and wild animals away. Surrounded by the tropics plants, stilted house has great open balcony for having interaction with the natural environment.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2.2 Continued
The Form School Approach to Designing Healing Environments

Following the natural rule, wind and sun direction, topography and vegetation analysis, the main notion of Feng Shui building form is to create good Chi, utilize natural power and make people feel secure. These goals are aligned with modern healing design objectives of providing, social support, patient control, positive distractions and the influence of nature (Thrall, 2004). Figure 2.36 illustrates this relationship.

This study will apply the research to the design of a healing environment, which will reflect the philosophy of the Form School.

Figure 2.36
The Relationship between Form School Principles and Healing Design
Summary

This research explored the origin and concept of the Form School to better understand the Feng Shui principles regarding selection of a location and building site. It is evident that there is a strong connection between the character of Feng Shui influenced buildings and the influence of nature. There are several design methods and psychological studies that also illustrate how natural elements influence human comfort and lifestyle, including climatic design, bio-logical design and environmental psychology. I will use modern design methods along with Feng Shui philosophy to illustrate how Feng Shui may benefit today’s society.

The comparison of the Form School theory of Feng Shui and modern scientific building methods revealed the similarity between the ancient philosophy and modern science. This research will now be applied using the Form School concepts and the Feng Shui building elements to design a healing environment that will facilitate a higher level of human comfort and recovery.

According to the interaction among the Feng Shui building forms and the natural elements, the author has arranged five design elements which come from five typical Feng Shui houses: Shi He Yane, Yau-dong, Tunnel house, Kejia house and Stilted house. They are illustrated as Figures 2.37. Furthermore, the following chapter will apply these design elements to the healing center, which will make theory become tangible.
Figure 2.37
The Summary of Feng Shui Building Types
CHAPTER 3: DESIGN PROGRAM

Program Description for a Cancer Treatment Center

The Intent and the Significance

The main purpose of a healing environment is to make patients feel relaxed and safe while providing advanced medical care. By drawing on Feng Shui design principles, this healing design project emphasizes healing effects that spring from the natural forces on the site. Furthermore, the project intends to create an environment to aid in the healing of the human body, mind and spirit.

This design project aims to apply the Form School theory to a healing environment for cancer care. The program begins by analyzing the natural conditions of the potential site. By using different Feng Shui building models reflecting the results of this investigation of the site, the design project attempts to integrate the research into an ideal healing environment. Furthermore, it makes the Feng Shui interpretation become a measurable factor.

The Description of the Capital Regional Medical Area

The Capital Regional Medical area is an important medical center in Tallahassee. There are over 40 affiliated organizations around this medical center. Other than several large scale polyclinics, there are many related services and industries in the area, such
as healthcare facilities, small clinics and hospital equipment and supply sale companies (see Figure 3.1).

The project site is located on Capital Medical Boulevard. Patients can find complete medical services here. Moreover, the greatest benefit of the Capital Regional Medical area is not only the convenient medical service but also the sufficient natural environment which is the most essential element for patients to heal. Therefore, this is a sensible location to set a healing environment for people after surgery or sickness.

Figure 3.1
The Description of the Project Site

The potential project site for the healing environment is an existing clinic which houses eye specialists, pain management specialist and outpatient surgery (see Figure 3.2). After observing the site, the author found that although the clinic possesses great natural surroundings, the building doesn’t take advantage of them. For example, there are no accessing outdoor views or spaces. Moreover, the railings behind the building and the careless grasslands and trees make the landscape feel disconnected and abandoned (see Figure 3.3 to 3.5).

The primary reasons for choosing this particular site are not only the beautiful natural environment but also the great climatic condition, adequate sunlight and the summer breeze. All these assets help to benefit the requirements of the healing environment and those of Feng Shui spot exploration. Furthermore, although the site is adjacent to the Capital Circle NE, a main traffic line in Tallahassee, the surrounding environment is peaceful with access to nature and abundant trees.

![Figure 3.2](http://www.google.maps)

Figure 3.2
The Location of the Site. Retrieved March 21, 2006 from http://www.google.maps
Figure 3.3
The Front View of the Existing Building

Figure 3.4
The Back View of the Existing Building

Figure 3.5
The Landscape & the Lake in Back of the Building
Climatic Analysis of the Project Site

General Climatic State of the Site

According to the following map and table, Tallahassee is a temperate region. Abundant sunshine, large bodies of water and great rainfall are the primary factors for this condition (see Figure 3.6 & Table 3.1). Located in North Florida, the project site has a significant number of days between November and March when outside temperatures are below those of the human comfort range. In addition, normally, while the monthly average temperatures become higher, the average rainfall would also increase. Here, on the contrary, while the temperatures are cooler; the amount of precipitation reduces.

Figure 3.6
Table 3.1
Period of Record Monthly Climate Summary in Tallahassee

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Max. Temperature (F)</td>
<td>63.9</td>
<td>67.0</td>
<td>73.2</td>
<td>79.9</td>
<td>86.5</td>
<td>90.4</td>
<td>91.3</td>
<td>91.0</td>
<td>88.1</td>
<td>80.9</td>
<td>72.3</td>
<td>65.4</td>
<td>79.2</td>
</tr>
<tr>
<td>Average Min. Temperature (F)</td>
<td>39.8</td>
<td>42.2</td>
<td>47.6</td>
<td>53.2</td>
<td>61.8</td>
<td>69.1</td>
<td>71.7</td>
<td>71.6</td>
<td>68.4</td>
<td>57.0</td>
<td>46.9</td>
<td>41.1</td>
<td>55.9</td>
</tr>
<tr>
<td>Average Total Precipitation (in.)</td>
<td>4.42</td>
<td>4.81</td>
<td>5.98</td>
<td>3.72</td>
<td>4.35</td>
<td>7.14</td>
<td>8.50</td>
<td>7.21</td>
<td>5.69</td>
<td>3.21</td>
<td>3.35</td>
<td>4.09</td>
<td>62.48</td>
</tr>
</tbody>
</table>

Period of record: 1/ 1/1948 to 9/30/2005

: Max. Temperatures are above 90F

Period of Record Monthly Climate Summary in Tallahassee, Retrieved March 30, 2006 from
http://cirrus.dnr.state.sc.us/cgi-bin/sercc/cliMAIN.pl?fl8758

The Analysis of Air Temperature (Orientation) & Solar Radiation (Sun Direction)

The sunlight intensity elevates the air temperature of Tallahassee from May to September. Therefore, how to avoid excess sun and utilize applicable solar energy is one of the greatest concerns. Grounded on the bioclimatic design study, the relationship between site orientation and air temperature is illustrated in Figure 3.7. Furthermore, the sun direction analysis gives a better idea of the alteration of the daily temperatures.
The Analysis of Air Movement (Local Wind):

As a peninsula, Florida receives breezes from both the Gulf of Mexico and the Atlantic Ocean. During the winter season, the prevailing winds from the north force cold air into Florida. The Florida Climate Center report of the relative frequency of wind directions of Tallahassee from 1984 to 2002 is shown in Figure 3.8. Based on the information, this study uses four different months to represent the four different seasons. March represents spring, July represents summer, December represents winter and September represents autumn. Furthermore, in terms of these 12 point compass reports, the primary wind direction in Tallahassee during spring and summer is from the south and during autumn and winter is from the north. By combining the wind direction with the building orientation, Figure 3.9 helps to explain the relationship between the local wind direction and the site orientation.
Figure 3.8
The Relative Frequency of Wind Directions in Tallahassee. Retrieved March 30, 2006 from
http://www.coaps.fsu.edu/climate_center/nav.php?a=go&s=data&p=wind#TLH

Figure 3.9
The Orientation & Seasonal Wind Direction of the Site. Retrieved March 30, 2006 from
http://maps.google.com
Relative Humidity

The relative humidity specifies the percentage of the amount of moisture in the air compared to the maximum amount of moisture the air can hold in the same condition. Average humidity values are observed in selected morning and afternoon hours. Maximum relative humidity values would occur during the morning time.

Tallahassee is a high humidity region not only because of its multiple surrounding water bodies but also the hot and drippy weather. According to the Table 3.2 below, the highest humidity in Tallahassee occurs during the summer. Furthermore, even the lowest average humidity within a year still sits at 47% (30%- 60% is the ideal humidity for human comfort).

Table 3.2
Relative Humidity (%) for Selected Cities in the Southeast

<table>
<thead>
<tr>
<th>Florida</th>
<th>JAN</th>
<th>FEB</th>
<th>MAR</th>
<th>APR</th>
<th>MAY</th>
<th>JUN</th>
<th>JUL</th>
<th>AUG</th>
<th>SEP</th>
<th>OCT</th>
<th>NOV</th>
<th>DEC</th>
<th>Annual</th>
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<tr>
<td></td>
<td>M</td>
<td>A</td>
<td>M</td>
<td>A</td>
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<td>M</td>
<td>A</td>
<td>M</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>GAINESVILLE</td>
<td>90</td>
<td>59</td>
<td>90</td>
<td>56</td>
<td>91</td>
<td>54</td>
<td>91</td>
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<td>A</td>
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</tr>
<tr>
<td>JACkSONVILLE</td>
<td>88</td>
<td>58</td>
<td>87</td>
<td>54</td>
<td>87</td>
<td>51</td>
<td>87</td>
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<td>M</td>
<td>A</td>
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<td></td>
</tr>
<tr>
<td>KEY WEST</td>
<td>82</td>
<td>69</td>
<td>81</td>
<td>67</td>
<td>80</td>
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<td>77</td>
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<td>MIAMI</td>
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<tr>
<td>TALLAHASSEE</td>
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<td>TAMPA</td>
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<td>M</td>
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<td>M</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>VERO BEACH</td>
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<td>60</td>
<td>88</td>
<td>56</td>
<td>87</td>
<td>56</td>
<td>84</td>
<td>55</td>
<td>84</td>
<td>55</td>
<td>84</td>
<td>58</td>
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</tr>
<tr>
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<td>A</td>
<td>M</td>
<td>A</td>
<td>M</td>
<td>A</td>
<td></td>
</tr>
</tbody>
</table>

M: Maximum relative humidity values
A: Average relative humidity values

Topography & Geology Analysis:

The terrain of the project site is sloped. The land is oblique from the Capital Medical Boulevard toward a pond. In addition, the lakefront to the south is the lowest area of the site and grassland is the main vegetation. The northern boulevard is the highest area of the site and the trees block the noise from the busy traffic. The height differs from the upland to lowland by 10 feet (see Figure 3.10 to 3.12).

Figure 3.10
The lake behind the existing building provides quiet as well as superior surroundings for the dwellings (see Figure 3.13). Moreover, it also helps to moderate the scorching hot summer season because of the vapor coming from the lake surface. The environmental psychology study in chapter two by Shafer & Richards (1974) also shows that scenes containing woods, mountains, and water bodies are the preferred scenes.
Vegetation Analysis

Figure 3.14 shows the existing vegetation around the project site. On the whole, trees are planted or naturally grown in front of the building and an area of wasteland behind the building. Furthermore, an extensive area of grassland surrounds the lake. The design project will follow the vegetation status of the site in order to help determine the building location.

Figure 3.14
The Vegetation Condition of the Site
Feng Shui Analysis of the Project Site

Approach to Ying & Yang Concept and Form School Theory

There are several ways to distinguish and balance Ying and Yang energy in a space. The simplest way to look into the Chi is to compare the temperature, the position and even the feeling of the site. I applied Form School theory, the properties of Chi and the direction of the four animals to this project site. Compared with the low, downward, soft and restful area around the lake, the high, upward, hard and active area near the boulevard contains more Yang Chi. Analyzing the site inversely, the south would absorb more Yang energy than the north because of the average temperature and the sun direction during the day. Applying the Four Animal Theory to the site plan helps to set the best Feng Shui location for the different functions of a healing environment. For example, the Tortoise on the back provides the feeling of security which is the essential sensation desired in patient rooms (see Figure 3.15).
Figure 3.15
Illustration of Ying-Yang and Form School Theory of the Site

Approach to “Box within Box” Theory and Five Feng Shui Geographical Factors

The site selection utilized the theories of Box within Box and the Feng Shui geographical factors (see Figure 3.16). Trees on the back of the site represent the sand and dragon, the lake in front of the site represents the water, and the cave is between the trees and lake. In order to complement the natural landforms, the project utilizes the Feng Shui design principles of the Form School.
Figure 3.16
“Box within Box” Theory and the Feng Shui Geographical Factors of the Site
Table 3.3  
Design Program

<table>
<thead>
<tr>
<th>BUILDING</th>
<th>DESIGNATION</th>
<th>AREA IN SFT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recept./ AD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1F</td>
<td>Reception</td>
<td>2400</td>
</tr>
<tr>
<td></td>
<td>Lobby</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Register counter</td>
<td>900</td>
</tr>
<tr>
<td></td>
<td>Waiting/ Inform. area</td>
<td>1400</td>
</tr>
<tr>
<td></td>
<td>Guardroom</td>
<td>170</td>
</tr>
<tr>
<td></td>
<td>Filing / Mail room</td>
<td>320</td>
</tr>
<tr>
<td></td>
<td>Closet</td>
<td>140</td>
</tr>
<tr>
<td></td>
<td>Public restroom</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td>Storage</td>
<td>100</td>
</tr>
<tr>
<td>2F</td>
<td>Administrative</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CEO/ Secretary</td>
<td>370</td>
</tr>
<tr>
<td></td>
<td>Conference room</td>
<td>520</td>
</tr>
<tr>
<td></td>
<td>Dr./ Nurses Offices</td>
<td>860</td>
</tr>
<tr>
<td></td>
<td>IT. Dep./ Room</td>
<td>140</td>
</tr>
<tr>
<td></td>
<td>Human resource dept.</td>
<td>125</td>
</tr>
<tr>
<td></td>
<td>Marketing dept.</td>
<td>140</td>
</tr>
<tr>
<td></td>
<td>Accounting dept./ Filing</td>
<td>370</td>
</tr>
<tr>
<td></td>
<td>Pantry</td>
<td>320</td>
</tr>
<tr>
<td></td>
<td>Copy area</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>Restroom /Shower room</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td>Indoor /Outdoor rest area</td>
<td>700</td>
</tr>
<tr>
<td>Life</td>
<td></td>
<td></td>
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<tr>
<td>--------------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td><strong>1F</strong></td>
<td><strong>Therapy pool</strong></td>
<td>Pool /Activity area</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sonar / Steam room</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Control/ Staff room</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Restroom/ Shower room</td>
</tr>
<tr>
<td><strong>Healing garden</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Parking space</strong></td>
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<td></td>
</tr>
<tr>
<td><strong>2F</strong></td>
<td><strong>Living space</strong></td>
<td>Reception</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Patient rooms</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stair</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lounge/ Dining</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kitchen</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nursing station</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Internet room</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Social area</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public restroom</td>
</tr>
<tr>
<td><strong>3F</strong></td>
<td><strong>Patient rooms</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kitchen</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Laundry room</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stair</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Storage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public restroom</td>
</tr>
<tr>
<td><strong>Medical</strong></td>
<td><strong>3F</strong></td>
<td>Reception</td>
</tr>
<tr>
<td></td>
<td><strong>Medical Area</strong></td>
<td>Exam rooms</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chemotherapy rooms</td>
</tr>
<tr>
<td>Service</td>
<td>Area (sq ft)</td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------</td>
<td></td>
</tr>
<tr>
<td>Waiting / Rest area</td>
<td>1190</td>
<td></td>
</tr>
<tr>
<td>Nursing station</td>
<td>950</td>
<td></td>
</tr>
<tr>
<td>Closet</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>Dr. offices (temporary)</td>
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<td></td>
</tr>
<tr>
<td><strong>Consulting area</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Report rooms</td>
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<td></td>
</tr>
<tr>
<td>Treatment Planning rooms</td>
<td>450</td>
<td></td>
</tr>
<tr>
<td>Mental health services rooms</td>
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<td></td>
</tr>
<tr>
<td><strong>Service</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pantry/ Waiting area</td>
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<td></td>
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<tr>
<td>Pharmacy</td>
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<td></td>
</tr>
<tr>
<td>Class rooms (Yoga, Chi-gong)</td>
<td>1400</td>
<td></td>
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<td>Outdoor rest area</td>
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<td>Public restroom</td>
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<td><strong>Staff rest room</strong></td>
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<tr>
<td>Total area</td>
<td>71455</td>
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</table>

Total site area: 163,000 sft.
CHAPTER 4: THE PROPOSAL

Design Process

Approach Ying and Yang Concept to Design

Analyzed using the Ying and Yang concept, the site primarily has two opposite Chi generation locations. One is defined by the wind and sun direction, which shows Ying with the winter wind coming from the north and Yang through the summer sun coming from the south. Another force is defined by the elements, which where compared with the soft lake; the solid land has more Yang energy. The design project intends to block the excess Ying energy and gain more Yang energy (see Figure 4.1).

Figure 4.1
Approach Ying and Yang Concept to the Site
Approach Four Emblems Theory to Design

A Feng Shui-designed building should face toward the south and follow the directions and attributes of the Four Emblem theory to indicate better Feng Shui locations of the diverse functions. The Tortoise at the back provides a feeling of security and should always be higher than other sides. The Dragon on the left is the best location for the main activities in a Feng Shui site while the Tiger on the right should have minor and peaceful functions. Phoenix means great vision in the front (see Figure 4.2).

Figure 4.2
Approach Four Emblems Theory to the Site
Approach Four Emblems Theory to a Healing Environment

Following the Four Emblems principles, the living space and patient rooms are arranged on the back of the site to accommodate the need for the feeling of security. The Medical and consultation areas are on the left where the primary activities should occur in a Feng Shui spot. Moreover, in bioclimatic design, the left side contains less burning sunlight in the evening, which also supports the idea that left side is better for people to stay longer. The Administrative office is on the right where the minor activities should be located in Feng Shui theory. The entrance will be in front of the site and face the lake to make use of this beautiful setting (see Figure 4.3).

Figure 4.3
Approach Four Emblems Theory to the Building Function
Approach Box within Box Theory to Design

In addition to applying the Four Emblems theory for finding the best location of the functional areas, I used the “Box within Box” theory to draw up the floor plans. According to the “Box within Box” theory, the Feng Shui spot exists at different levels, which means it occurs not only in the whole building but also in the individual buildings or rooms. Therefore, the security (Tortoise), main space (Dragon), minor space (Tiger) and open space for great vision (Phoenix) should also be found by each functional space. Figure 4.4 illustrates the basic requirements of the cancer treatment and how to arrange them to approach the Box within Box theory.

Figure 4.4
Approach Box within Box Theory to the Building Function
Approach Feng Shui Building Forms to Design

This design project intends to use the traditional Feng Shui building forms to create harmony between the surroundings and the building. First, according to the analysis of the site, I designed the whole building as a Si He Yane whose enclosed form helps to block the winter wind from the back and creates a Feng Shui spot. Second, the form of a Kejia house is applied to the right to minimize the noise and air pollution generated from the adjacent main avenue. Third, the form of a Yao-dong house is designed for fitting in with the slope in the front of the site. Fourth, the design calls for using concepts derived from the Tunnel house to help the courtyard have better temperature conditioning and gain appropriate sunlight. Last, the form of the Stilted house helps to approach to the lake more easily and to keep humidity low (see Figure 4.5).
Approach Five Elements to Design

In Feng Shui theory, the best conditions are invoked by achieving a balance among the five elements of metal, wood, water, fire and earth. According to the literature review, each element possesses its own symbolic form. In other words, certain forms are able to generate particular Chi. This project uses the different construction forms and the natural environment to complete the balance of Five Elements, which are illustrated in figures 4.6, 4.7. Furthermore, the triangle building, the fire energy form, which has more dynamic activities within, points to the tranquil lake. This relationship helps to achieve the balance between the fire and water energy, which also creates the Ying and Yang harmony (see Figure 2.2). Figure 4.8 illustrates a sketch of the design project, which applies the Feng Shui theory to the healing environment for the cancer treatment center.

Figure 4.6
The Forms of Five Elements

Figure 4.7
Approach Five Elements Forms to the Design
Figure 4.8
Applying the Five Elements and Feng Shui Building Forms to the Design

Images of the Proposed Development

Figure 4.9
Project Model
Figure 4.10
Project Model

Figure 4.11
Project Model
Figure 4.12
First Floor Plan

Figure 4.13
Elevation A-A’
Figure 4.14
Second Floor Plan

Figure 4.15
Section B-B'
Figure 4.16
Third Floor Plan

Figure 4.17
Section C-C'
Figure 4.20
First Floor Lobby

Figure 4.21
First Floor Lobby
Figure 4.22
Second Floor Social Space

Figure 4.23
Second Floor Cafe'
Figure 4.24
Patient’s Room

Figure 4.25
Reception of Medical Building
Figure 4.26
Back Courtyard of Medical Building

Figure 4.27
Back Courtyard of Medical Building
Figure 4.28
Open Area of Medical Building
CHAPTER 5: FINAL DISCUSSION OF THE PROJECT

The design project of Optimal Healing Environment for Cancer Care illustrates the connection between Chinese Feng Shui and Western design methods. Furthermore, by using the Feng Shui tools derived from the literature review, the design project has the potential to serve as an example for the application of Feng Shui theory.

In this project, the building forms, directions and opening are designed to compliment the natural surrounding. Furthermore, nature is also the most critical link between these two culturally different culture design methods. The project also provides multiple options in the use of Feng Shui design method by applying different Form School concepts, including the Feng Shui building theory, the Five Elements theory and the Box within Box theory. The design solution derived form the concepts of Feng Shui not only provides a new option for healthcare design but also adds more spiritual meaning to the built environment.
BIBLIOGRAPHY


BIOGRAPHICAL SKETCH

Shou-Jung Wei completed her Bachelor in Interior Design from Chung Yuan Christian University, Taiwan. After graduation, she worked as an interior designer for two and half years in Mandartech Inc., and worked mainly on office projects. She was awarded Master of Science in Interior Design from Florida State University, Tallahassee.