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INTRODUCTION

Popular *Feng Shui*

Feng Shui, the ancient Chinese principles and practices which for thousands of years have been the cornerstone of the Chinese built environment, has actually become one of the most popular subjects in the modern world. There are more than ten thousand websites related to this discipline, and many *Feng Shui* topics have been covered in books, magazines and different media. For instance, Sarah Rossbach (1987) published her book *Interior Design with Feng Shui* in 1987 which brought *Feng Shui* immediately into interior design circles, and its popularity has grown ever since in America. In 1996, Lillian Too's *Complete Illustrated Guide to Feng Shui* was the first international best seller on the subject of *Feng Shui*. Other than popularizing Eight Mansions *Feng Shui*, she has also incorporated a lot of Chinese beliefs in her book, which were not strictly originated from *Feng Shui* (Skinner, 2005). The magazine *Feng Shui for Modern Living* edited by Skinner, first published in 1998, tried to bridge the gap between popular and serious Chinese *Feng Shui* by including a mixture of “soft interior decorating *Feng Shui*” together with traditional technical articles.

Although *Feng Shui* is built on ancient Chinese philosophy, it has always been treated as a branch of metaphysics, being viewed by most people as something superstitious. This is because there are so many different schools and techniques in the principles and practices of *Feng Shui*. In the past, different *Feng Shui* Masters were specialized in one or more techniques while they normally ignored those not in their own school or not taught by their teachers. Nowadays, *Feng Shui* Masters usually practise different schools and techniques, but they normally apply one single technique on one specific situation instead of cross-comparing the effectiveness of different techniques on the same case. It is then difficult to judge or verify which technique is correct and which is wrong. Very often, masters are tended to criticize other masters for using techniques which they consider to be not applicable or even fake.

Scientific *Feng Shui*

Feng Shui is a body of ancient Chinese wisdom encompassing knowledge and experience related to the built environment that has been accumulated for more than three thousand years. It is founded on the earliest and greatest Chinese philosophical document, *Yi Jing (The Book of Changes)* that was compiled ca. 800 BC. According to Professor Stephan Feuchtwang's early publication “An anthropological analysis of Chinese geomancy” (1974), the primitive knowledge of *Feng Shui* was based on the observation from three sources: astronomical phenomena, natural phenomena and human behavior.

In Professor Sang Hae Lee's PhD thesis “Feng Shui: Its context and meaning” (1986), he recognized that the principles and practices of *Feng Shui* aimed at creating a harmonized built environment for people to live in, and it represents a traditional Chinese architectural theory for selecting favorable sites as well as a theory for designing cities and buildings.

Since the late 1960s the impact of Western civilization and technology has grown to global proportions. More Western scholars became aware of the limitations of the modern scientific paradigms which failed to explain the whole realm of natural phenomena, and began to recognize that there were similarities between modern science and Eastern philosophy (Capra, 1975). They have sought deeper understandings of the relationships between people and their surrounding environment.

Lee (1986) recognized that traditional interpretations based on the formal, spatial and technical data of architecture cannot adequately explain the context and meaning of *Feng Shui* architecture. He suggested that interpreting *Feng Shui* would enable the development of architecture theories from this Chinese architectural discipline.

Hwangbo (1999) suggested that the aim of *Feng Shui* is to provide a harmonious and auspicious existence in the built environment. He explained

that the practice of *Feng Shui* is an intuitive matter involving site selection and spatial organization, and it has strong parallels with the Western concept of geometry in architecture.

Since 1970s, research on *Feng Shui* has been initiated (Wheatley, 1971; Yeh, 1978; Knapp, 1986; Lee, 1986) and momentum has increased starting from 1990s (Xu, 1990; Han, 1995; Tam et al., 1999). The term “Scientific *Feng Shui*” was first introduced in the International Symposium on Scientific *Feng Shui* and Built Environment in 2005 by the authors. Scientific research in *Feng Shui* can be classified into two different directions: (a) the verification of *Feng Shui* principles scientifically and (b) the study of *Feng Shui* logically in a scientific way (Mak and So, 2009). Hwangbo (2002, p. 126) also suggested that “*Feng Shui would be invaluable in the way it nourishes and enriches the later modernity, critically assesses modern science, shapes the image of the universe and our place, and contributes to modern architecture.*”

Recently, a number of investigation have been conducted into the scientific applications of *Feng Shui* knowledge for the built environment. Mak and Ng (2008) established a *Feng Shui* framework for the complexity in design, and Mak (2009) applied *Feng Shui* knowledge to preliminary building design evaluation using a knowledge-based expert systems approach. Chen and Wu (2009) established a conceptual framework for a sustainable Chinese landscape architecture based on a key *Feng Shui* philosophy of “*Unity of Man with Nature.*” Chang et al. (2009), using a fuzzy algorithm, provided an empirical study to evaluate an office-layout design incorporating consideration of *Feng Shui* criteria. Juan, Chien and Li (2010) created a customer focused system for dwelling customization design using case-based reasoning which incorporated *Feng Shui* theory. Wu, Yau and Lu (2012) provided empirical studies using an analytic hierarchy process to verify consumers’ decision-making processes in residential housing selection based on *Feng Shui* principles and practices. Low, Deng and Quek (2012) found that there are common

denominators between Chinese *Feng Shui* principles and Total Building Performance mandates in terms of the psychological, physiological, sociological and economic aspects. These diverse examples provided clear evidence of the usefulness and applicability of *Feng Shui* principles in building design and built environments. The aims of this book are to explore theories of *Feng Shui* scientifically and study its applications to the built environment.

Structure of This Book

Feng Shui represented the most significant set of architectural theory and practice in Chinese history. *Feng Shui* knowledge reflected the traditional Chinese attitudes towards the natural and built environments. There was, however, a lack of scientific research in this area, and most of the investigations in *Feng Shui* were predominately focused on its influence on the historical development of Chinese Architecture. As *Feng Shui* knowledge represents a holistic view in creating a harmonized built environment, research into the applications of *Feng Shui* to the built environment needs to be addressed in a scientific manner. This book therefore aims to examine the scientific aspects of *Feng Shui* knowledge in relation to different disciplines of building and construction. Firstly, the relationships between science and *Feng Shui* will be explored. Secondly, the theories of the Form and Compass Schools are explained, and finally the applications of these two schools of thought to the built environment will be discussed with illustrated case studies.

This book is organized into three main parts: (A) scientific *Feng Shui*, (B) Form School Approach, and (C) Compass School Approach. There are 21 chapters in total and one appendix. The outline structure of this book is briefly explained hereunder.

Part A — Scientific *Feng Shui*

What are the similarities between the philosophical background of East and West? Since the emergence of the new scientific paradigm and the beginning of westerners accepting the view of Eastern philosophy, scientists have found that all known theories of natural science could never fully explain the whole realm of natural phenomena, and have begun to recognize the interdependency and holistic nature of the world. Since the 1970s, Western scientists' perceptions have shifted to accept the development of a new complexity paradigm, and acknowledge that there are similarities between modern science and Eastern philosophy. Westerners sought a deeper understanding of the relationships between the human and natural environments. As a consequence, westerners have also changed their attitude towards this ancient Chinese's view of nature and the environment, and have realized that the principles and practices of *Feng Shui* could contribute to the effectiveness of the built environment. The interaction between science and *Feng Shui* will be discussed in Chapter 2.

Scientific methods are the objective ways and systems of gaining, organizing, analyzing, summarizing and keeping data or information in the form of knowledge that can be passed down through history. There are stringent requirements for such methods and for different schools to practise them. What do we need to understand science, more precisely empirical science in order to study *Feng Shui*? Without any approach in terms of scientific methods, the study would easily fall prey to superstition. The basic philosophy of science, the definition of scientific theories, different types of scientific methods as well as the main concerns of science are highlighted in Chapter 3. When studying *Feng Shui*, one should always bear in mind the essence of science, and ever keep an open mind to analyze any rules or theories pertaining in different schools of *Feng Shui*. The relationships between scientific methods and *Feng Shui* will also be addressed in Chapter 3.

Since the development of a new paradigm in complexity science, Western scientists recognized

that *Feng Shui* knowledge provides a holistic approach to the built environment. Their interests in *Feng Shui* lie mainly in its historical development and its employment in traditional Chinese architecture, and researches in *Feng Shui* are mainly focused on three major areas: anthropological, ecological and architectural approaches. In fact, there are many difficulties ahead when studying *Feng Shui*. Three general issues, namely terminology, translation and transliteration, will be discussed in Chapter 4.

The development of social and cultural tradition in Chinese history has had a close relation with the origin concepts of *Feng Shui* since the Zhou Dynasty (1110 BC–770 BC). Basic *Feng Shui* principles, including theories of *Qi*, *Yin* and *Yang*, and the five elements, were firmly established in China more than three thousand years ago. During the formation stage of *Feng Shui* knowledge in the Han Dynasty (202 BC–AD 221), four major scientific developments had great impact on the development of *Feng Shui* principles. In the Tang Dynasty (618–907), the most important stage was the separation of two schools of thought—Form and Compass School. Since the Ming Dynasty (1368–1644), the nature, characteristics and eventually amalgamation of these two schools have had a great impact on the current status of *Feng Shui* practice. Chapter 5 will outline the historical development of *Feng Shui*.

Part B — Form School Approach

Eastern and Western cultures have fundamental differences that may reflect in their language structure. Eastern culture is characterized by its simplicity, while the Western culture is marked by its complexity. Architecture first evolved from society's basic needs for shelter, security, and worship. Nowadays, architectural monuments are perceived as cultural symbols, and historical architectures provide crucial links in understanding Eastern and Western cultures. The Western concept of architecture tends towards the “top of heaven” approach. In contrast, the Chinese architectural

concept tends towards the harmonization of the built and natural environment, and these traditional Chinese approaches to architecture were originated from the *Feng Shui* knowledge. In Chapter 6, the relationship between Eastern and Western culture and architecture will be discussed.

Since ancient times in China, *Feng Shui* principles and practice have been applied to select the location of sites and to design the built environments. The fundamental principle of the Form School concerned the physical form of the site under consideration and its surrounding environment to detect the subtle flow of *Qi*. The practice of the Form School first observed the land formation and terrain, based on which the location and orientation of buildings were determined. In Chapter 7, four fundamental concepts of Form School approach are derived, namely, the concept of the *Feng Shui* model, the concept of parallelism, the concept of design module, and the concept of design criteria.

When considering architectural design and the built environment in present day, practitioners tend to adhere to the established principles of Form School techniques, which as expected, are expressed through various forms. *Feng Shui* scholars and researchers tried to use different analytical models to interpret the Form School principles and practice, such as proposing basic criteria for architectural design, establishing site selection procedures, identifying major criteria for the selection of the best location, creating design rules-of-thumb, providing criteria checklists for property selection, illustrating diagrams for interior design, building site design tool to assess conditions of human comforts, conceptualizing site analysis framework for environmental design principles. These contemporary Form School practices for the built environment are discussed in Chapter 8.

The Form School approach is the most important part of *Feng Shui* knowledge and four fundamental concepts are discussed in Chapter 9. The *Feng Shui* model was constructed primarily from the physical configurations of the five geographical secrets and the four emblems, and the concept of parallelism established that the *Feng*

Shui model applies to both the outer form and inner form of dwellings. The four design modules help categorizing the design of dwellings into four modules: the surrounding environment, the external layout, the internal layout and the interior arrangement. Finally, 24 key *Feng Shui* criteria for design evaluation have been identified based on the recommendations of contemporary *Feng Shui* scholars. The hierarchical structure of *Feng Shui* knowledge is established to provide a detailed understanding of the Form School approach and to create a structured framework for architectural design and the built environment.

In Chapter 10, *Feng Shui* villages in Hong Kong will be examined according to the applications of the Form School *Feng Shui*. Two case studies in the Northern part of New Territories, the Tai Fu Tai Mansion in San Tin, and the Tang Chung Ling Ancestral Hall in Lung Yeuk Tau, are examined in detail using the *Feng Shui* model. Both case studies demonstrated how the Form School principles and practice are applied in village layouts and designs. From the site analysis, it is suggested that the *Feng Shui* model of the five geographical secrets and four emblems theory are applicable in both case studies but not always facing the south. This indicated that the physical configurations of the surrounding environment are considered more important than the factor of Facing direction in isolation.

The interaction between humans and the environment is an everyday process. In Western contemporary architecture, these interactions with the natural and man-made environment are called Sustainable or Green Design. In the East, the ancient Chinese knowledge of *Feng Shui* aims at creating a harmony between environment, buildings and people. Chapter 11 analyzes and compares the concepts of sustainable design and *Feng Shui*. A case study of a well recognized sustainable design office building, *Workplace6* in Sydney is used to illustrate the similarities and differences between concepts of sustainable design and *Feng Shui* in terms of environmental design. More recent examples also demonstrated that modern sustainable buildings follow a similar pattern.

In the traditional Western approach to the built environment analysis, the prime considerations for dwellings are climatic factors and human comfort. Contemporarily, greater emphasis is placed on ecologically sustainable development. The concepts of *Feng Shui* has been gradually adopted and accepted in the Western world. It has been found that, in many perspectives, there are similarities between the concept of traditional Chinese *Feng Shui*, where harmony between the environment, buildings and people are created, and the contemporary Western style of bioclimatic and sustainable design models. Chapter 12 reviews the *Feng Shui* elements considered by Chinese families and explores the main features considered by the Western families when purchasing a residential apartment. Through three case studies in Sydney, the integrated applications of Western contemporary bioclimatic, sustainable design and Chinese *Feng Shui* models for the built environment are illustrated.

Part C— Compass School Approach

The Compass School focuses on the study on directions and time. Several ancient texts, including the *He Tu*, *Luo Shu*, *Yi Jing* as well as other Daoist scriptures, together shed useful light on the formation and development of the Compass School. Coincidentally, the veneration of numbers was not a unique characteristic of ancient Chinese philosophy and metaphysics; similar practices and beliefs were held in the West during the same historical period, called the philosophy and mathematics of Pythagoras. The Pythagoreans reduced all higher numbers to the original ten numerals by successively adding the digits together until a single digit was reached. It is a surprising coincidence between the two cultural schools of thought at almost the same period of time at around 500 BC. Recently, “Vortex based Mathematics” also claims that all higher mathematics can be reduced to discrete-number mathematics. In Chapter 13, similarities of the numerology and the Compass School will be discussed.

The *Luo Shu* is the foundation of several major schools of Compass *Feng Shui*, in particular, the Flying Stars method and *Qi Men Dun Jia*. It is a predominant calculation employed by *Feng Shui* masters in a wide variety of applications. Some newly discovered secrets of the *Luo Shu* are revealed from a modern linear algebraic point of view. In Chapter 14, the *Luo Shu* is treated not just as a magic square anymore but a matrix in algebra, where observations of similarity between different Charts in terms of determinants, eigenvalues and eigenvectors are found. The roots of such similarities may be found in the ancient literature of the Compass School.

The major concept of influence to the daily life of mankind claimed by *Feng Shui* theories is *Qi* which originated from the “Way” of Daoism. *Qi* is believed to be part of every living thing that exists, as a kind of “life force” or “spiritual energy.” The study of *Feng Shui* is to bring harmony between the built environment and the natural environment so as to manipulate *Qi* appropriately for the betterment of the mankind. The existence of *Qi* is disputed by most scientists, but what if *Qi* really exists? Could it be somehow revealed in some way by modern physics, cosmology or astronomical observation? Chapter 15 investigates recent developments in relevant areas of modern physics, to see whether it is possible to relate *Qi* to some phenomena despite the fact that there is still not enough evidence to prove its existence.

The fundamental theories or basic principles underlying the Compass School are explained in Chapter 16. In ancient China, the Compass School was termed the art of mathematics. In essence, the trigrams can be viewed as an octal system of binary numbers while *Yin* and *Yang* are the basic units of one bit, either zero or one. Then, the five elements, heavenly stems and earthly branches were developed, which integrated with the trigrams to form the most important symbols manipulated in the Compass School. The *Feng Shui* compass, *Luopan* is the most important instrument in the Compass School, and its key components and basic applications are discussed.

Eight Mansions *Feng Shui*, is one of the simpler and more popular methods learnt by laymen to determine the good and bad locations of a dwelling, to analyze whether the occupant, or mainly the homeowner, is compatible with the house and ultimately discover the favorable and unfavorable personal directions that promote productivity at work, foster good relationships, ensure good health and assure academic success. However, when one wants to delve deeper into this method, it is not so simple. In Chapter 17, the method of Eight Mansions is explained step by step, and deeper considerations of this method are discussed.

A more precise and popular method of the Compass School, dealing with both space and time of a house or property is called the method of Flying Stars. Some people confused it with astrology, while others think of it as numerology, but it is actually neither of these. According to classic *Feng Shui* textbooks, the method of Flying Stars was based on mathematics and logic, utilizing specific formulae to unlock the secrets of the patterns of *Qi*. In Chapter 18, the method of Flying Stars is illustrated step by step, and followed by the discussions of deeper considerations of this method, including magnetic declination and Shared *Guas*.

The theories of Compass School are focused on directions and time. In Chapter 19, case studies are used to illustrate the applications of the Compass School. These include three buildings in old Shanghai, the Elements shopping mall in West Kowloon Hong Kong, and the planning of the capital city in Canberra Australia. Furthermore, issues on dealing with the differences between northern and southern hemispheres using “Mirror Postulate” method are discussed.

The *Luopan*'s full circle of 360° is divided into 24 “*shan*” (meaning “mountains”) and thus each Mountain occupies a sector of 15° . Each of the 24 Mountains bears the name of a particular “*Gua*.” According to the Flying Stars method, the Facing and Sitting directions are indicated by two *Guas* or Mountains, 180° apart. It is believed that the “*Qi*” of a particular *Gua* only applies within the central 7° of that *Gua*, spanning -3.5° anticlockwise and

$+3.5^\circ$ clockwise of the center-line. If the Facing or Sitting direction falls within this narrow sub-sector of a Mountain, it is called Regular *Gua* or Pure *Gua*. The two “shoulders” sub-sectors, 4.0° on each side, though belonging to the same *Gua*, apparently share the “*Qi*” with the two neighboring Mountains, and that’s called Shared *Guas*. When Shared *Guas* are involved, the results from the Flying Stars calculation are complicated. An example is provided in Chapter 20 to demonstrate how it applies to certain situation. Case studies of the Cheung Kong Center office building in Central Hong Kong and the Tian Tan Buddha in Ngong Ping Lantau Island of Hong Kong are used to illustrate the applications of Shared *Guas*.

In Chapter 21, an overview is provided on science, scientific methods and research in relation to *Feng Shui*. Theories and applications of the Form and Compass Schools to a number of case studies are summarized. The appropriate attitude towards *Feng Shui* and possible scientific research methods in studying *Feng Shui* are also proposed. And finally, what is the future of scientific *Feng Shui*? This is the question which the authors hope to address in the conclusion.

Feng Shui, the ancient Chinese wisdom, nowadays is well-received around the world. However, there is much misunderstanding and confusion regarding *Feng Shui*. The aim of this book is to explore the nature of a scientific approach to the study of *Feng Shui*. The concept of scientific study of *Feng Shui* has been initialized since 1997 at a *Feng Shui* workshop in the annual conference of the Australia and New Zealand Architectural Science Association in Brisbane. It was evolved to a series of international symposia and conferences bearing the name “Scientific *Feng Shui* and the built environment” held at the City University of Hong Kong from 2005 to 2009, followed by a couple of books in scientific *Feng Shui* for the built environment publishing in 2009 and 2011 by the authors. Subsequently, two international symposium and conferences in *Feng Shui* and architecture were held at the Humboldt University of Berlin in Germany in 2010 and 2012. More recently, a website an online open-access

journal, *The Academic Journal of Feng Shui* was established in 2013 to promote research in scientific *Feng Shui* globally. A list of research activities and publications for this discipline of scientific *Feng Shui* for the built environment is outlined in the Appendix of this book.