

Feng Shui Project
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Feng Shui: Educational, Philosophical and Cultural Perspectives
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Provisional Contents, Abstracts & Contributors

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OVERVIEW

The background to the project is decades of research on the contributions of history and philosophy of science (HPS) to theoretical, curricula and pedagogical issues in science teaching. Some project [material and resources](#) are on the web. The project will come to fruition in late 2021 as thematic issue of the Springer journal [Science & Education](#).

Much of this research tradition has been published in the Springer journal [Science & Education: Contributions of History, Philosophy and Sociology of Science](#) that commenced publication in 1992.

An extensive account of the research can be found in the 3-volume, 76-chapter [International Handbook of Research in History, Philosophy and Science Teaching](#) (Springer 2014) that has contributions by 130 scholars from 30 countries.

An overview of the research can be found in the 440-page monograph [Science Teaching: The Contribution of History and Philosophy of Science](#) (Routledge 2015). A Chinese translation is published by [Foreign Language, Technical and Research Press](#) in Beijing.

One extension of this research can be read in the 340-page, 1,700-references monograph – [Feng Shui: Teaching About Science and Pseudoscience](#) (Springer 2019). The summary of the book's argument is [available on the web](#). The Feng Shui Project, which began in late 2019, takes this book as 'background information' though contributors are not committed to the book's arguments.

Currently there are 14 papers being written, by 20 authors from nine countries. Their disciplines are science education, history of science, anthropology, economics, psychology and philosophy. Provisional [Contents & Abstracts](#) are available. The first draft of papers (5-10,000 words) are due for completion by end of 2020.

Feng shui theory, with its dependence on the millennia-old, Asian core notions of 'life force', chi or *qi*, is intimately connected to the now world-wide practice of Traditional Chinese Medicine (TCM), the spectrum of traditional martial arts and qigong exercises, and increasingly found university medical, nursing, architecture and town-planning programmes. Feng shui is promoted on millions of websites. A Google FENG SHUI search returns one-hundred million such sites in half-a-second. The sites support a multi-billion-dollar economy. Amazon has 7,000 feng shui books listed in English alone.

Feng shui is a significant subject with obvious economic, cultural and educational ramifications, yet surprisingly it has generated minimal critical, systematic scholarship; with little attention to the educational responsibilities and opportunities feng shui occasions.

In 2016 the Chinese government legislated its [*Benchmarks for Scientific Literacy of Chinese Citizens*](#). The theory of feng shui is included as a literacy goal. This document at its 9th reference point stipulates that all students by end of schooling should:

know the traditional Chinese philosophical concepts such as Yin-Yang and Five Elements, and the unity of nature and man, which are the simple materialism and methodology of the whole system in ancient China and have practical significance.

The Feng Shui Project has a good deal of current relevance, not just for China, but also beyond. The project connects with long-standing and consequential topics in philosophy of science, philosophy of education and cultural studies:

- Should scientific thinking extend beyond the classroom and laboratory?
- Does being scientifically literate entail having a scientific habit of mind?
- Can a distinction be drawn between science and pseudoscience?
- Can the examination of pseudoscience advance the better understanding of science?
- Can chi, *qi* or 'life force' be known by science or is it 'beyond' science?
- Are theoretical postulates in science to be interpreted realistically or instrumentally?
- Are scientific truth claims universal or are they to be adjusted to local cultural, religious and political circumstances?
- What should be taught in science programmes when there is a clash between deep-seated, historical cultural commitments and the worldview of science?
- Is methodological and/or ontological naturalism a presupposition of scientific research?
- Is science committed to a particular worldview with specific ontological, epistemological, ethical and political components?
- Is the appraisal of scientific practice and theory worldview neutral?
- What educational and cultural lessons can be learnt from the chequered history of the Chinese Communist Party's positions on feng shui?

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Teaching traditional Chinese science as a part of an NOS curriculum in Hong Kong

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Traditional Chinese science (TCS) has been extensively studied using the lens of modern science at least since Joseph Needham in the early 20th century. The validity of it being an alternative way of understanding nature has since been debated. On one hand, TCS seemingly lacks the characteristics such as quantification and controlled experimental evidence that modern science requires; on the other hand, it could be argued that it is a result of the use of different pre-assumptions on nature and epistemology entails from cultural differences.

For one to provide a knowledgeable judgment on this debate is not an easy one without some understanding of the nature of science (NOS) and TCS itself. Indeed, from our classroom teaching experience, we find that Hong Kong university students, a group that was well-educated and brought up under Chinese culture, are much more willing to accept traditional Chinese medicine and acupuncture as being scientific or trustworthy than *feng shui* or *qigong*. With follow-up discussions, it is often that their choices of acceptance were based only on their subjective personal experience, hearsay of these practices, and their misunderstanding of what science really is. They usually have insufficient understanding of the theories of TCS and hence judge their acceptance on the individual practice based on their perception of its effectiveness but not its explanation's rigorously.

We believe this situation in Hong Kong classroom provides an opportunity to use the discussion on whether TCS is trust-worthy and/or scientific as an entry point for introducing some of the more difficult concepts in NOS. It is more engaging for the students to learn NOS from more practical and well-known examples found in their culture and daily life, instead of just teaching them about the more abstract theories and models typically found in a NOS course. This may be true even if the teacher believes that TCS is after all, a pseudoscience. Indeed, it is hard to deny that both the internal (the interest and concerns of the people) and external conditions (geographical constraints, politics, warfare, etc...) of different civilizations can cause them to pursue different epistemological approaches on nature.

Reflecting on this cultural diversity, one could develop a more mature understanding of NOS, the complex relationship between science, culture and other kinds of knowledge and beliefs. It is a 'vaccine' for the students to avoid them to blindly embracing the anti-science or relativism stance believing in no absolute truths.

Our paper will explain (i) how we teach *yinyang*, *wuxing* and *qi*, *the foundations of TCS*, (ii) how we use traditional Chinese medicine, acupuncture, *feng shui* and *qigong* as examples for discussions in the classroom, and (iii) an analysis on how this can facilitate students to reflect on NOS. These contents are implemented as part of a classics-reading science general education course in the Chinese University of Hong Kong. Through the class discussion, it is observed that the experience of cognitive conflicts of the students is induced when their beliefs in TCS are challenged. In such a way, students are engaged in examining the grounds of TCS and applying the concepts in NOS that they have learned in this course to evaluate TCS. Furthermore, students write their term paper to consolidate their reflections on TCS and NOS, including the nature of scientific explanations, the scientific method and the demarcation of science and pseudoscience. Supported by class observations and students' works, we would argue that teaching and discussing about TCS is an effective way of teaching NOS, in particular at undergraduate levels for both science and non-science major students. We believe our experience would be an invaluable case study for exploring ways to improve the pedagogy of NOS.

Feng Shui and China's *Benchmark for Scientific Literacy of Chinese Citizens*

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The Chinese mainland's emphasis on science education started in the mid-1980s. On the one hand, it is reflected in the curriculum reform of universities and primary school. Most of them incorporate STS education or comprehensive science education concepts into the curriculum system, emphasizing the cultivation of general and creative talents; and on the other hand, it is reflected in the national scientific literacy action plan (abbreviation the "Project 2049"), which makes the improvement of citizens' scientific literacy becomes the core of science education in China's informal education. This paper focuses on the second aspect. Under the background of the initiation and implementation of the Project 2049, and taking the related debates on the "*Benchmark for Scientific Literacy of Chinese Citizens*" as the case, it analyzes the attitude of academia and the public towards the traditional concepts of nature as the theoretical basis of *Feng Shui*, those are, the harmony between man and nature, and the theory of yin-yang and five elements, and the underlying problem of the public's understanding of science in contemporary science education in the Chinese mainland.

Chinese geomancy has a long history. Although there are many sects and factions, they all involve the basic understanding of nature and environment of ancient Chinese. The thought of Yin-Yang originated from *the Book of Changes* is the theoretical basis of *Feng Shui* thought, and all *Feng Shui* works mostly run through the thought of Yin-Yang. The theory of "having vitality", which is extended from the ancient "Qi Theory", is the essence of *Feng Shui*. In *Feng Shui*, "having vitality" represents the yin and yang Qi that can give life to all things, and the lively place is called the auspicious place, while the lifeless place is called the fierce place. The core idea of *Feng Shui* is the harmony between man and nature, and the view of heaven, earth and man as an organic whole. In practice, based on the original ideas of Yin-Yang, Qi theory, Five Elements and Eight Trigrams, *Feng Shui* is further extended and developed according to its own characteristics. However, no matter how much attention is paid to the mountain topography or the direction of regulating Qi, different *Feng Shui* schools can't be separated from the basic thinking framework of the integration of heaven and man, and the theory of yin-yang and five elements in ancient China. Interestingly, it is this basic theoretical thinking framework that has been heatedly debated over the current science education in the Chinese mainland.

The source of the controversy is the "Project 2049" mentioned above. The goal of the plan is to promote scientific literacy of Chinese citizens in an all-round way. Through the development of science education, dissemination and popularization, the scientific literacy of the whole people will be greatly improved as soon as possible, so as to achieve the long-term goal that Chinese adult citizens have basic scientific literacy by the middle of this century. Since the beginning of the 21st century, the Chinese government has issued a series of policy documents closely related to science education, including the "*Law of the People's Republic of China on Popularization of Science and Technology*", the "*Outline of the National Medium-and Long-Term Science and Technology Development Plan (2006-2020)*", and the "*Outline of National Scheme for Scientific Literacy (2006-2010-2020)*", etc.

In order to further implement the tasks of science popularization determined in these policy documents, in April 2016, the Chinese government formulated the "*Benchmark for Scientific Literacy of Chinese Citizens*", aiming to establish a monitoring index system for the implementation of the "*Outline of National Scheme for Scientific Literacy (2006-2010-2020)*", carry out surveys on the scientific literacy of Chinese citizens and statistics on

science popularization throughout the country, so as to provide a measure and guidance for citizens to improve their scientific literacy.

The formulation process of the “*Benchmark*” has gone through expert research and pilot evaluation in some provinces (cities) in China. The opinions of local governments and all sectors of society have been widely solicited, which is believed to form a broad consensus. Literally, the “*Benchmark*” refers to the standard of basic scientific and technological knowledge and ability that Chinese citizens should possess. In terms of specific content, the “*Benchmark*” has 26 benchmarks and 132 datum points, which are considered to basically cover the scientific spirit, knowledge and ability that citizens need to have, master or understand. Among them, the corresponding datum points are listed under each benchmark, and the benchmark is explained. The scope of application of the “*Benchmark*” is citizens of the People's Republic of China who are over 18 years old and have the ability to act.

During the evaluation, 50 datum points are randomly selected from 132 datum points for inspection, and 50 datum points need to cover all 26 benchmarks. The actual operation is to design questions according to each datum point to form a survey question bank. During the evaluation, 50 questions (26 benchmarks must be covered) are randomly selected from 500 question banks for testing, in the form of judgment questions or multiple choice questions, with 2 points for each question. The accuracy rate of 60% is regarded as having basic scientific literacy. It can be seen that the “*Benchmark*” is the index system and practical basis of the scientific literacy survey of Chinese citizens. The publication of this document is of great significance to science education in the Chinese mainland.

In the specific structure table listed in “*Benchmark*”, it can be found that 4 benchmark points with a sequence number of 6-9 are set up in the content of "Knowing to analyze and solve problems with systematic methods" of the benchmark number 2. Among them, the 9th reference point is "to know the traditional Chinese philosophical concepts such as Yin-Yang and Five Elements, and the unity of nature and man, which are the simple materialism and methodology of the whole system in ancient China and have practical significance."

It is this benchmark point that concerns the *Feng Shui* and its traditional Chinese implicit theory of nature in this paper. Since the publication of the “*Benchmark*”, it has aroused extensive interest in Chinese society, especially in humanities and social sciences. What is particularly interesting is that it is precisely the 9th reference point that has triggered a fierce debate in the fields of science and history of science and technology in China. Various media and ordinary Internet users in mainland China have quickly divided into two sides with distinct positions and launched a protracted dispute.

This debate culminated in the first episode of Tencent video SELF talk forum "on Dao while Cooking Wine" on the evening of February 25, 2017. In this open arena, the two sides of the debate have produced fierce exchanges. Among them, the pros is represented by professor Xiaochun Sun, from University of Chinese Academy of Sciences, he thought science education is not only to spread scientific knowledge, but also to let people learn to think, criticize, and compare. The theory of yin-yang and five elements is an integrated part of the Chinese history of science, should be treated fairly like geocentric theory and heliocentric theory in the west, therefore, the theory of yin-yang and five elements should be included in the “*Benchmark*”.

The cons is represented by Shuangnan Zhang, a researcher from the Institute of High Energy Physics of the Chinese Academy of Sciences, he thought the Four Great Inventions of ancient China were great technology but not science. The theory of yin-yang and five elements are not science, they did not produce science, and they would not produce science, because there were no elements of science in traditional Chinese culture and thought. Therefore, it should not be included in the “*Benchmark*”.

From public debate of the academic elite and their reasons, it is known that China's academia and the public hold four different attitudes towards the traditional theories of nature, like a unity of nature and man, and the theory of yin-yang and five elements behind *Feng Shui*. The first group think they are Chinese traditional culture, but not science, even saying that there are no scientific elements in Chinese traditional culture and thought, so the understanding of them should not be included in the scope of the science literacy. The second group think that they are related to Chinese people's fundamental understanding of nature and are the foundation of scientific discovery and development. For example, traditional Chinese medicine based on them, like the geocentric theory in the West, should belong to the scope of Chinese scientific history research and scientific literacy. The third group, from the perspective of today's human settlements or architectural design, think that they contain a part of the scientific elements, which are the essence and the dross should be discarded in reality, such idea is mainly recognized in professional fields as architecture. The fourth group attribute them to superstition and pseudoscience, should be abandoned altogether.

These views can also be seen in the discussions on "Is *Feng Shui* a science or a superstition?" on Sina weibo, Zhihu, Sohu, Netease and other famous Chinese social networking platforms and portals.

The problems of what science is and if there was science in ancient China, derived by the question of if *Feng Shui* could be regarded as a science concept, especially the debate on some traditional Chinese theory, for instance, the theory of yin-yang and five elements as well as the harmony between man and nature, are not solved yet, neither in academic circles nor at the public level. However, from another point of view, it could be easily found that the debates, especially on the above theories should be listed in "*Benchmark*" or not, show an obvious promotion on the scientific literacy of Chinese academic circles and public, and the significant progress on science education in the mainland.

The essence of science education is not only to popularize scientific knowledge and scientific methods, but more importantly to understand the nature of science, the history of science and technology and how they interact with different societies, and clarify the uncertainty and locality of science. The debates above just show that the Chinese public have begun to think seriously about these issues, which is a sign of the awakening and improvement of the scientific consciousness of the Chinese public.

Knowing nothing about energy in physics and in Feng Shui

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Physics is taken to be science par excellence by the greats of early twentieth-century philosophy of science, and to an extent they distorted the philosophy of science as a result, so that, for example, forms of confirmation and explanation in biology and other sciences were insufficiently appreciated. These days the distinctive features of many different sciences are recognised, but nobody doubts that physics is a science and a good one at that. Furthermore, the ontology of physical science, with its various particles, atoms, molecules, forces and fields, as well as its basic units of length, mass and so on are also part of the rest of natural science from archaeology to zoology.

By contrast, Feng Shui is liable to be immediately taken to be a pseudoscience largely because its central ontological commitment, namely Chi, is taken not to exist. Indeed, it is complained that the concept is obscure in both its definition and its import. Matthews cites a text as follows:

Too easily feng shui exponents resort to this ‘mysterium’ defence as is well illustrated by the following authors: “Life is defined by *Qi* even though it is impossible to grasp, measure, quantify, see, or isolate. Immaterial yet essential, the material world is formed by it.” (Beinfeld & Korngold 1991, p.30)

Such complaints are often made about the concept of phlogiston which was abandoned in the Chemical Revolution. While other concepts like Caloric and the Ether also withered on the vine, as science matured the concept of energy came to occupy a central place throughout natural science. It took from before Galileo until the nineteenth century for energy to become central to the laws of thermodynamics (which survived the revolutions of relativity and quantum physics), the first of which states that energy cannot be created or destroyed but can be transformed. In particular, heat and work play very different roles in our understanding of physical processes, but they are both forms of energy.

Yet Richard Feynman declared that “it is important to realize that in physics today, we have no knowledge of what energy *is*”. This raises the question of what makes the concept of energy in physics more scientific than the concept of Chi in Feng Shui.

The story of energy is one of dematerialisation and the increasing inapplicability of folk, homely and manifest image analogies, and the increasing applicability of mathematical representations to understand the workings of the world. While phlogiston proved to be both conceptually and experimentally unknowable, energy is both mathematically and experimentally accessible even if it lacks a nature that is graspable other than very imperfectly.

This case is instructively compared with Carnap’s criticism of vital forces in which he argues that it is not the idea that is the problem, but the failure to attach it to laws and models that enable precise empirical predictions and the prospect of scientific success comparable to that achieved within physics. In most domains, the kind of prediction that Newton made possible for planetary orbits is impossible, and it is certainly not possible to describe the world in fundamental terms. Entities other than those of basic physics and chemistry may play a role in such successful theorising as is possible. For example, in meteorology there are clouds, winds and rain, and in geology there are glaciers, mountain ranges and tectonic plates. However, such entities are nonetheless understandable in physical terms, and are regarded as composed of more basic physical components. In this sense it is appropriate to say that Chi does not exist because it lacks any connection to the ontology of physical science.

However, for interacting highly complex systems such as human beings, finding a healthy and harmonious way of living with the environment and each other may well be facilitated in some contexts by activities and practices that appeal to the concept of Chi. For example, mindful exercise under trees around dawn is likely to be highly beneficial to human beings for many reasons. Furthermore, controlling bodily functions and subtle motor skills may also be helped by the use of visualisations involving Chi.

An analogy with music is helpful. There is nothing to music that requires us to posit additional physical ontology, but the complexity of the interaction between physical vibrations in the air, and the bones in the ear, and the brain cannot be understood without talking about music and its distinctive properties of melody, rhythm and so on. The concept of Chi may therefore have some value, in so far as it genuinely contributes to success in practical applications, and beliefs about Chi may entail true beliefs.

Does pseudoscience have value for science education?

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Assuming that pseudoscience is understood to mean a pursuit that purports to be science but fails on some principled grounds, it is fairly uncontroversial that the ability to tell science from pseudoscience is an important one that we can reasonably expect to gain from a good science education. To this end, I argue that rather than shielding students from pseudoscience, having them explicitly engage in it would lead them to become better ‘demarcators’. The question that then arises is that of *how* to do this. Here I defend a practice-oriented and virtue epistemological demarcation between science and pseudoscience in the classroom.

While traditional epistemology primarily evaluates epistemic products such as knowledge and beliefs, in virtue epistemology the epistemic agent takes centerstage and becomes the primary object of evaluation. (This doesn’t mean that only individual agents are evaluable, or that virtues are necessarily individualistic. Virtues can and often are, imbibed from/ conditioned by social/institutional practices.) I contend that pseudoscience can then be characterized by its practitioners either failing in epistemic responsibility, exhibiting epistemic vices such as dogmatism, or both. The point then is that in the pedagogical context, actively engaging in and contrasting scientific and pseudoscientific characters and practices will help students sharpen the distinction and become better prepared to combat pseudoscience. Lessons and activities such as role-playing can be designed for the classroom where the teacher and students explore exhibiting such vices and discuss why they lead to bad science or pseudoscience.

While a preoccupation with demarcating science based on its products such as theories or research programs is certainly a worthwhile exercise in many contexts (including philosophical, social etc.), in an educational setting it might be worth focusing rather on pseudoscience being a result of the (collective) failing of epistemic character of its practitioners. This is because a) at the stage of school science understanding of the nature of scientific knowledge is typically not well-formed, and b) keeping in line with the increasingly popular ‘practice turn’ in science education, it would be a lot more productive to understand the *practices* of sciences and pseudosciences rather than evaluate the cognitive products after the fact.

For instance, a teacher might deliberately cherry-pick data during an investigation or come up with a (truth-aiming) explanation that doesn’t fit the facts, and have students figure out what was wrong and why – seeing someone get ‘caught in the act’ would effectively convey the point.

Also, focusing on epistemic virtues leads to a call for epistemic character building which I think is uncontroversially good. If – as has been argued often – we want science education to be beneficial to students’ lives overall and make them better citizens, then their intellectual wellbeing should be of utmost importance and virtues such as epistemic integrity, open-mindedness, and epistemic humility hence would be very important to cultivate in formative years. This would also serve to highlight the humanness of science and the place of values and virtues in it. It would underline that a science is only as good as its producers.

A gentle interventionist approach for teaching about traditional knowledge-systems

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Traditional knowledge systems provide both opportunities and obstacles to successful science education. In spite of the general development of science teaching, increase in the ratio of college-degrees in most countries many of these knowledge systems have become 'fashionable' commodities, and are increasingly popular in cultures, where similar (endemic) pre-scientific notions have by and large been replaced with scientific concepts. One may ask whether the general attitude of educators, or the repeated 'debunking' has been successful or not (e.g. Singh & Ernst).

The paper investigates certain aspects of the relatively well preserved and widespread traditional Chinese cosmological and medical worldview, a gradually changing conceptual system informing various practices & many aspects of life: some medical, some addressing the well-being of the individual and some informing the external environment. Western science does not fare too well when it comes to 'translating' conceptual structures of the knowledge-system (five element theory, the concepts of yin-yang, or the notorious qi), and, although as a system it is clearly non-scientific, many aspects of it are investigated by science: acupuncture research, herbal remedies, etc.

The paper outlines a 'gentle interventionist' method for thematizing and problematizing knowledge-claims in the traditional knowledge systems

- ➔ Highlighting difficulties of 'easy' justification/rejection of these knowledge systems. Examples include the conceptual difficulties (comparing how Western medicine and TCM views on 'organs'), some of the differences between measurement based knowledge-production and introspection, and some of the phenomena (there are many 'obvious' experiences that many of us feel: when we eat hot food, often our heads start to sweat, or a heat-wave is experienced from the top of the head travelling down on the back. Is this *some* confirmation of the idea that the bladder meridian is responsible for distributing heat? Do we have a better explanation in Western medicine?).
- ➔ Highlighting the differences of social transmission (where traditional knowledge systems lack specific repair mechanisms typical of scientific knowledge production) and the role of enculturation ('energetic pathways' may be significantly different e.g. between Indian and Chinese systems, but practices help connect the individual's *experiences* with the abstract conceptual structure of the system)
- ➔ Highlighting similarities between scientific conceptual developments of Western science and currently fashionable alternatives: (Romantic science's use of polarity & similarities with relational yin-yang concepts; the problem of occult qualities/invisible forces)
- ➔ Problematising accountability of practitioners, and responsibility of individuals to make decisions when adopting knowledge systems that are non-endemic to their cultures (with recourse to individual's tendencies to justify unwarranted beliefs / confirmation bias, fraud, etc.)

An attempt will be made to utilize elements of 'integrationist', 'imperialist', and 'non-interventionist' approaches (see Matthews 2019: 244) to help students recognize both the need for clear regulation of practices in our societies (where lack of demarcation of trustworthy knowledge systems poses threats), and the plurality of approaches that an individual can chose from to organize his/her bodily experiences & lifestyle choices.

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Why People Trust Something Other than Science: The Case of Traditional Korean Medicine and Four Pillars of Destiny in Korea

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Many issues of the 21st-century society are scientific in nature, given that scientific data, knowledge and reasoning are essential to understanding and solving them. When people make scientific decisions and actions, however, they often appear to trust something other than science. Why do they not trust science but instead appeal to something else? ‘To-be-scientific’ is at the core of scientific literacy which has long been the goal of science education. However, there has been little in-depth empirical studies that investigated why and how many people trust something other than science in their everyday life.

In the traditional Korean culture, there have been various forms of unorthodox sciences which are still commonly practiced as popular social activities. Unfortunately, they tend not to be easily identified based on the dichotomous demarcation in the traditional philosophy of science (i.e., science vs. non-science), because they are different to a varying degree in terms of their underlying worldviews, explanatory systems, and methods of accumulating and verifying knowledge. Considering this sociocultural backgrounds of Korea, the traditional demarcation as well as the postmodern approaches denying the demarcation are both de-contextualized approaches.

In this study, we use the term ‘unorthodox sciences’ to refer to something that do not belong to well-established mainstream sciences. We also differentiate two different types of unorthodox science—*pseudoscience* and *fringe science*, both of which are heavily based on the ideology of Feng Shui (風水). While pseudoscience means something that is not science but is incorrectly characterized or perceived by people as science, fringe science refers to something that is an established field of study but departs significantly from mainstream sciences. We selected acupuncture (침술 in Korean, 鍼術 in traditional Chinese) and the Four Pillars of Destiny (사주, 四柱, hereafter FPD) as representative examples of fringe science and pseudoscience respectively. In this chapter, we use literature review and empirical data to investigate the cultural backgrounds to and psychological processes of Korean people’s trustworthiness judgment of unorthodox sciences such as acupuncture and FPD.

The literature review was carried out with research papers and academic writings published in Korean local journals and books, which focused on the history, philosophy and cultural backgrounds of Korean people’s attitudes and activities related to FPD, as well as the arguments concerning the scientific aspects of acupuncture and FPD. Acupuncture is an essential component of Traditional Korean Medicine (한의학, 韓醫學, hereafter TKM). Originated from ancient period in Korean peninsula, TKM had gradually developed in line with active interchanges with China throughout the Three Kingdoms and Goryeo dynasty periods (三國時代 & 高麗時代: BC 1C - AD 14C). During Joseon dynasty (朝鮮時代: 1392-1910), TKM was established as a system for medical practice distinct from the traditional Chinese medicine, especially with two important developments: the publication of *Principles and Practice of Eastern Medicine* (東醫寶鑑) in 1610 and the development of the theory of Sasang Constitutional Medicine (四象醫學) in 1894.

The basic framework of TKM can be summarized with its three methods: herbal therapy (生藥療法), mind-body training (心身訓練), and body surface stimulation therapy (體表刺戟療法). In the system of TKM, acupuncture is considered to be an important treatment with faster effect than herbal treatments. The current healthcare legislation in Korea dictates that acupuncture can be now practiced only by qualified TKM doctors,

who are trained to the same level of education with medical schools (i.e., at least six years in university). Nowadays, acupuncture and TKM are practiced in substantial collaboration with Western medicine in TKM hospitals and clinics.

Among Korean people, although there is a substantial skepticism over its scientific basis, there is also a widespread positive attitude towards its effectiveness for treating pains and diseases. According to studies, most of Korean adults experienced acupuncture treatment and around 90% of them expressed positive opinions on its effectiveness. Despite some positive evidence from scientific investigations (in medicine and physics) as well as philosophical, phenomenological, and cultural arguments in favor of acupuncture and TKM, there still remains great criticism over its scientific nature and trustworthiness particularly from Western medical doctors.

Being one of fortune-telling methods in East Asia, FPD is often used interchangeably with the Four Pillars Eight Characters (四柱八字) and the Four Pillars of Life (四柱命理) to refer to a traditional way of predicting individuals' fate and future, based on the two sexagenary cycle characters assigned to their birth years, month, day, and hour. The idea of FPD is known to be first developed during the Han (漢) dynasty and evolved throughout the Tang (唐) and Song (宋) dynasties in China. Around the early tenth century, this idea was imported into Korea (then Goryeo dynasty). From the mid-tenth century, when the national examination for civil service (科擧) was first introduced, the field of fortune-telling (then known as 卜業) was included so that professionals could be selected and trained. The idea of FPD soon became quite popular among the scholar-gentry (士大夫) class. From 15C, during Joseon Dynasty, the knowledge of FPD was tested and trained in a more systemic way for the civil service exam (科擧) under the name of 陰陽科 (literally meaning *yin-yang department*) which was mostly taken by the middle class (中人).

In the history of Korea, FPD has been one of the 'basic but marginal' cultures. Yet, since a popular tabloid *Daily Sports* began to include FPD as its regular corner in the mid-1980s, FPD as well as fortune-telling activities in general became part of Korean popular culture, and this trend was accelerated with a vast expansion of internet technologies. Despite its long history as a popular cultural practice, scholarly studies of FPD in Korea was scarce until the 1990s. According to the few existing studies based on survey results, more than half of Korean adults have experiences of FPD more than once, and they consider that FPD is trustworthy and is more scientific compared to other fortune-telling activities. However, there have been no studies on why and how they develop such a perception.

[The qualitative research on the psychological processes of Korean people's trustworthiness judgment towards acupuncture and FPD will be carried out in the following manner. We will invite three to five participants per each of the two areas, who have considerable science-related educational and professional experiences (e.g., as secondary science teachers, professional scientists and engineers). Then we will have interviews with them to check their personal backgrounds, experiences of and trust towards unorthodox sciences, perceptions of the relationship between science and unorthodox sciences, and opinions on teaching about science and pseudoscience in science classrooms. After obtaining the university IRB permission, the interviews will be carried out by the end of September 2020. Then data analysis and chapter draft writing will be completed by the end of December 2020.]

The ‘finished’ and ‘unfinishing’ notions of fate in Hong Kong

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The word ‘fengshui’ is used in two different contexts in Hong Kong. First, it refers to a divination technique which examines the auspiciousness of environment, which I shall call ‘Fengshui divination’ in this essay. Second, it is used to express a concept of luck, especially pinpointing to the (in)auspiciousness of a physical space.

Divination, both as a practice and a concept, is very widespread in Hong Kong. While it is hard to give a precise figure of the penetration rate of divination in the city, people here could not help, but fall into the web of divination, voluntarily, involuntarily or unknowingly. Every November, people in Hong Kong are bombarded with divination books, as listed and featured in convenience stores, bookstores and newspaper stalls, which outline how one’s fortune, according to their animal’s year, will be like in the coming new year. Local people take for granted, and even quest for, this kind of heavily promoted new year ‘fortune’ to comprehend ahead of time their auspiciousness, and likewise inauspiciousness. They normalise the advertisements or signs of divination service outside the numerous composite buildings on both sides of the Nathan Road and other public spaces, in magazines and on internet such as in YouTube and Facebook. The use of divination secretly by local celebrities to seek fortune is often exposed by media who then make it their cover story. Locals are also interested in the advices of stock market experts who analyse the trend of Hang Seng Index according to divination.

Maurice Freedman was the last anthropologist who studied Fengshui divination in Hong Kong. He conducted his fieldwork in Hong Kong in 1963 and the related chapter was published in the 1970s. This essay examines how Fengshui and non-Fengshui divination are used in contemporary Hong Kong in order to delineate understandings of, the *‘finished’* and *‘unfinishing’* notions of fate in the city.

There are a wide range of divination techniques available in Hong Kong. While divination participants seldom employ only one type of technique but use different ones sequentially, and there is hardly any one technique which gains more supremacy than the other, it is found that participants often use Fengshui divination and non-Fengshui divination one after another. I suggest that Fengshui divination is the culturally legitimized ‘malleable’ element which enables participant to negotiate, nurture, manipulate and resist fate. Elliot & Menin (2018) suggested that fate or destiny, in any cultural context, shares the compelling distinctiveness of ‘malleable fixity’ that, ‘destiny is negotiated and nurtured, manipulated and resisted in complex ways, and unavoidably inflected by other powers’ (293). The idea of malleable fixity reflects that people all act within their limit and destiny hardly leads way to fatalism: suggesting the peculiar tension between human action and divine power. This unique element of fate has been well captured in anthropological works, for example Weber’s (2001), Harrell (1987), Hatfield (2002), Homola (2018), Fortes (1959), Jackson (1988), Lawal (1985) and Elliot (2016).

Fengshui divination involves the examination, design and decoration of an environment or physical space. It ascribes agency to physical space or object to explain auspiciousness and inauspiciousness. Divination participants in Hong Kong often use Fengshui divination and non-Fengshui divination hand in hand, not just to explain fortune or misfortune, but also to act and pursue good fortune. Sometimes, it is found that one’s destiny, as determined by his or her birth date, could not explain what happen to him or her, but the fengshui¹ of his or

her apartment. In this sense, one's fate is not only governed or determined by Heaven since birth but is also subject to and is affected by one's environment. Fengshui is about the flow of cosmological force called *qi* (Bruun 2008; Feuchtwang 2002[1974]). The idea that fengshui influences one's fate, as analogously interpreted in terms of *qi*, has been well documented by other studies. For example, Rolnick (2004) remarked how arranging the flow of *qi* between people inner nature and their outer environment will bring benefit to them.

Homola (2018) explained how *mingyun*, the Chinese word of fate, has two components: *ming* as the fixed and given component of fate and *yun* as the motile component. She went on to describe that, *yun* is the events, circumstances, and contingency one encounters across time, space, and social interactions as life unfolds: this is the personal *yun*. She argued that, it is through the everyday language of fate that the malleable fixity feature of *mingyun* is captured and materialised, as it reveals how one works within the limit of (fixed) life. She also mentioned that there is a universal *yun* which is the yearly lunar force of the hexagram cycle. It will also affect individual fate when it conjoins a person's *ming*. Fengshui, in this sense, also serves as the malleable component of fate, as a living environment with good fengshui would definitely hit one's *ming* differently than those with bad fengshui.

Applying and engaging with Fengshui divination therefore, allows participants to constantly act to pursue good fortune and avoid calamity as otherwise may be constrained by one's *ming*. Divination participants in Hong Kong use Fengshui divination and non-Fengshui divination hand in hand. The constant use of Fengshui divination represents *more* than a means which incorporates malleable component to fate: by ascribing agency to physical environment or object, it also externalises the concept of fate to environment.

It is quite common to find that people seek external agency to explain misfortune, some examples of these external agents are bush spirits of the Kuranko (Jackson 2013) and witchcraft of the Azande (Evans-Pritchard 1937) and the Bocage (Favret-Saada 1980). Nevertheless, they seldom relate their destiny to these external agents. Course (2014) portrayed the Mapuche model of personhood in the narratives of destiny which consists of the 'finished' and 'unfinished' notions, with each presupposing one another. Just like elsewhere in Lowland South America, the Mapuche see a 'true person' to be someone who continuously engages in reciprocal exchange to form different social relations with the other: this constitutes their notion of the 'unfinished' person. On the other hand, the 'finished' notion of a person is pictured as singular and self-contained, which is commonly emerged as personal song to serve as the container metonymically of a person's autobiography, or fixed destiny at birth. Although maintaining and expanding social relationships remains as the core of the Mapuche everyday activities, the narratives of destiny are absent from the 'unfinished' notion of the Mapuche personhood.

There is much similarity between the Mapuche notion of personhood and the Hong Kong notion of destiny. Divination participants understand their fixed component of fate, *ming*, via non-Fengshui divination, especially from those techniques which predict one's fate throughout his or her entire life course: this resembles the Mapuche notion of a 'finished' person. The Mapuche 'unfinished' person is 'clearly open ended and externally oriented toward others' (Course 2014:101). The frequent use of Fengshui divination to bring good fortune or fengshui to the physical space does more than incorporating a regular malleable element to fate but opens as an external agent which allows participants to externalise outward and extend their fate from self to surrounding environment. Hence, the malleable component of fate in Hong Kong could be evolved from an ongoing process of repeat use of Fengshui divination. In this sense, to borrow from the Mapuche notion of personhood, the local concept of fate has a 'finished' (fixed) notion and a 'unfinishing' (continual malleable) notion.

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Geography, Geology, Geomancy: Defining Earthly Principles across Chinese History

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Fengshui possessed numerous names over the centuries, including kanyu (lit. “heaven and earth”), dili (“earthly principles”), and fengshui (“wind and water”). It also drew on numerous concepts, including longmai (“dragon vein”) and dimai (“earth vein”). How consistent was geomantic terminology across time and space, and when did new concepts emerge in the historical record? While the aforementioned terms generally overlapped in meaning, they were often invoked in different historical periods, by different actors, for different purposes, with fengshui often coming to serve as a neutral or pejorative term for the “popular” practice of geomancy, with kanyu and dili serving as its more elite versions. This paper unearths the historical range of geomantic terminology in China and seeks to provide a general sketch of the terminological framing behind fengshui’s long history in China.

A Scientific Understanding of Feng Shui

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Feng shui is an indigenous Chinese practice for creating a salutary environment conducive to optimum human flourishing that has been used for over 3000 years. Although the name is Chinese, similar systems of environmental investigations have been in operation in most cultures. In recent history (e.g. the last 30 years or so), feng shui has gained international popularity as a tool for personal and professional development. Some extraordinary claims for the efficacy of feng shui have been touted, but most of them lack substantiating evidence, leading to some appraising this practice as a form of pseudoscience, similar to how astrology is negatively judged in the scientific community. Although how feng shui is understood in its indigenous context may not be in accord with modern Western understandings, that does not invalidate its potential to achieve its purported end, namely to design healthy environments.

It is our position that many of the traditional understandings about feng shui can be transposed into modern Western understandings and that these can withstand rigorous scrutiny. Unlike astrology, in which there are not plausible connections between astral and planetary observation with mundane life, feng shui's emphasis on balancing elements in an environment harmoniously does potentially conform to reason from a modern Western vantage, even if the rationale may require updating the traditional views. Just as some traditional meditation practices, such as mindfulness (e.g. a variant of Hinayana Vipassana Buddhist meditation, although also found in many cultures) have been studied extensively and found to offer many benefits, so too could feng shui. Consequently, we think it premature and unfortunate for feng shui to be dismissed as merely pseudoscience (Matthews, 2019).

Instead, we think it more useful to examine this traditional practice in terms of what it might offer. We propose to present evidence for some of its claims by drawing from relevant scientific disciplines such as environmental psychology and other areas, such as neuroscience and complexity theory. We also intend to re-examine some of the major traditional Chinese concepts used to understand feng shui in its indigenous context to see how some of these might accord with modern Western understandings. We believe that there is much to be learned from the insights of indigenous cultures, as well as many contemporary approaches can add to these insights.

Our approach can be seen as transcultural (Glover & Friedman, 2015), as well as transpersonal (Friedman & Hartelius, 2015) vantage. We will examine how people are affected by the environment in which they live, and consciously acknowledge the connection between our external surroundings and our inner being and wellness from a vantage point enriched by these insights, yet made useful to modern sensibilities. For example, we will pay particular attention to environmental psychology as an interdisciplinary field of study, which is focused on the interplay between individuals and their surroundings. It has a broad definition of "environment," encompassing natural environments, social settings, built environments, learning environments, and informational environments. The complexity of such inter-relatedness is, in many ways, more congruent with the language of traditional Chinese understandings than it is with linear renditions that are more mechanical than organic. In this regard, advances in areas like fractality can bring neuroscience and complexity theory into scientific play for understanding what the ancient Chinese intuited and described in protoscientific terms.

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Feng Shui and the Demarcation Project

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The vast majority of well-informed philosophers of science and scientists who are clearly (uncontroversially) so are able to extensionally differentiate between almost all scientific and non-scientific practices, disciplines, theories, attitudes, modes of procedure, etc., and do so or would do so in much the same way. This, in turn, legitimately leads to the conclusion that the main problem of scientific demarcation has already, in a sense, been solved, although an explicative integrated account of that solution has not been given yet.

Doing so is the goal of the project proposed in Fernandez-Beanato (2020). To advance toward the solution of the scientific demarcation problem, this article executes part of that project: a first step for scientific demarcation is the composition of a broad “list” (set) of accepted characteristics, conditions, or properties of science, or indicators of scientificity (most of them, by themselves, unnecessary and insufficient) which might be collectively used to establish a demarcation between those theories, cognitive fields, practices, etc. which are scientific and those which are not. In the rich existing academic bibliography on the problems of scientific demarcation, dozens of authors have published their proposed scientific demarcation criteria. Then, it should be ascertained a boundary or “cut”: the minimum score (measured in total aggregated amount of properties featured) that a theory, cognitive field, practice, etc. would have to feature in order for it to be legitimately deemed scientific. The “cut” value for each type of unit would be established to be the scientificity value of the lowest-valued clear case of a scientific unit of that type, provided that there were no clear case of a non-scientific unit of that type that had an equal or greater value. For example, the “cut” value for cognitive fields would be established to be the scientificity value of the lowest-valued clear case of a scientific cognitive field, provided that there were no clear case of a non-scientific field that had an equal or greater value.

All this would be done by performing comparative analyses of a wide range of several clear cases of particular sciences and of non-sciences of different subtypes (natural sciences, social sciences, pseudosciences, non-pseudoscientific non-sciences, etc.). The identification of these clear cases of particular sciences and of non-sciences will be done according to the assessments made by the current international philosophical and scientific consensus (admittedly, philosophical consensus are never unanimous, but the consensus about the extension of science is sufficiently extended and territorially-covering to serve as an acceptably firm base for intensional scientific demarcation).

This article deals with feng shui as a clear case of a non-science. I will show that my proposed demarcatory list demarcates feng shui as non-scientific, in agreement with the current philosophical and scientific consensus. Section 2 contains a demarcatory list of 38 properties of scientificity, which is an extract of the full, 113-property list developed by me from the works of 44 authors. The properties in the extract are those from the full list that were found to be clearly possessed by, or lacking in, feng shui. The properties will be classified into 4 types of properties, having to do, respectively, with: i) content, ii) practices, methods, and techniques, iii) epistemic attitudes and values, and iv) epistemic properties of propositions, hypotheses, and theories. Subsection 3.1 defines feng shui. Subsection 3.2 lists properties of scientificity that feng shui has, while subsection 3.3 indicates properties of scientificity that feng shui lacks. Section 4 indicates that feng shui does not feature enough properties of the demarcatory list, and therefore should be deemed non-scientific.

Feng shui: science, protoscience or superstition?

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Fengshui (also called geomancy) is a pre-modern tradition rooted in Chinese civilization. It has an immanent and constant core although its theory and practice are liable to be changed and developed all the time. This article deals with what this core is. Fengshui is a concoction of proto-science and superstition by nature. It is neither modern science nor real religion. For science aims at knowing the world and getting truth, and religion aims at transcending the secular world and attaining good; whereas Fengshui aims at being both practically useful and gaining benefit.

In general, Fengshui is regarded as non-science or pseudoscience. However, science means modern Western science which originated in modern Europe. Science has the most important characteristics: experimentation, quantification, and reduction. By contrast, Fengshui originated in ancient China, and lacks those characteristics. Fengshui and science are incommensurable because they belong to different traditions or paradigms. Fengshui as proto-science contains empirical elements; but it is highly ambiguous and rarely quantified. For this reason, it is impossible to falsify or confirm it. Therefore, it is better and more precise to call Fengshui proto-science than non-science or pseudoscience.

For instance, Qi is the ontological core of Fengshui. However, we do not know what Qi is precisely. It might be matter or spirit; it might be organic or inorganic; it might be subjective or objective. Take another example. Railways and telegraph, which are among Western science and technology, were resisted and destroyed by some Chinese people in the late 19th century because they claimed that railways and telegraph would ruin Fengshui of the Qing court. Nowadays, most people think that the claim of those Chinese people is wrong and has been falsified. However, those Chinese people might say that their claim is right and has been confirmed. For the Qing court was overthrown in 1911 after railways and telegraph had ruined Fengshui of the Qing court.

Of course, science and technology are very powerful at present. Therefore, few people oppose science with the help of Fengshui. On the contrary, the practitioners of Fengshui try their best to pretend that it is or belongs to science. In particular, they claim that Fengshui is ecology, architecture, environmental science and so on. In this situation, Fengshui as a science has been taught and researched in universities. From the perspective of science, Fengshui should disappear since it has transformed from a proto-science into a science. However, it does not actually disappear. Furthermore, some people like and use it in China. Why? The reason is that it contains superstition.

Generally, Chinese, especially Han Chinese, do not distinguish superstition from religion. Most Chinese do not have religious faith. However, they utilize religions (e.g. Christianity, Daoism and Buddhism) and superstition for the sake of usefulness. They often “see Fengshui” (according to theory of Fengshui, to determine when and where houses or graves are to be built) before they build houses or dig graves in order to acquire wealth, health, a position and happiness. A woman might either see Fengshui, or pray to God, Buddha, Guanyin or Laozi if it is difficult for her to get pregnant. So might a man do if he fails in his business. In fact, Buddhist monks always run shops to make money near their temples and even force travelers to purchase goods in China. It is not rare that practitioners of Fengshui and religion make money by deceitful methods in China. Therefore, most Chinese attach even more importance to usefulness than to religion and superstition. It seems to me that they use Fengshui as a mere instrument for getting benefit and preventing damage. In particular, confronted with a superhuman controlling power, they would depend on religion and superstition, and utilize Fengshui. As a consequence, Fengshui is still popular in China.

Modern Western civilization, in which science is rooted, is more powerful than pre-modern Chinese civilization, in which Fengshui is rooted. Chinese civilization originated and grew in ancient China, which was almost isolated from other civilizations. However, Chinese civilization has been decaying since Western civilization entered modern China. Therefore, it has to learn from Western civilization while opposing it. The Westernization Movement (1861-1895) and Deng's China learnt science and technology from the West; the Boxer Rebellion (1899-1901), Mao's China and contemporary China opposed the West. In particular, the Boxer Rebellion opposed Western civilization, especially Christianity, with the help of Chinese religion and superstition, Fengshui included. Historically, pre-modern Chinese civilization has been declining and declining. In the future, it will be replaced by modern Western civilization. If so, Fengshui will disappear and be substituted by science and religion.

On the universality of science and the concept of Chinese Traditional Medicine: A philosophical survey

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This chapter represents a philosophical appraisal of Traditional Chinese Medicine (TCM) from the point of view of philosophy of science in general and from the perspective of philosophy of medicine more in particular. As it is generally the case with other versions of so-called Traditional Medicine, rather than a coherent research program Traditional Chinese Medicine constitutes a promiscuous array of various techniques and practices coupled with a diversity of very different speculative doctrines regarding the physiological structure of certain body parts as well as the purported etiology of disease and malfunction.

This chapter starts off by describing some of the theoretical assumptions on which TCM relies with the aim of casting light on whether they, alongside the clinical techniques TCM encompasses, can significantly be considered as a scientific theory comparable with that of conventional medicine. In so doing the chapter examines a plurality of demarcation criteria between science and non-science coming from various existing philosophical frameworks old and new (from the Vienna Circle to K Popper, from L. Laudam or P. K Feyerabend to M. Bunge or M. Pigliucci among a diversity of others) to survey the extent to which these proposals offer any valuable standard on the case in point.

While, as will be shown, a wealth of research based on randomized control trials points out that TCM's degree of effectiveness is dismayingly low, that is not the point this paper intends to make. Instead of such an empirical criticism, the author sustains a comparably stronger epistemic contention, namely: even if the clinical results of TCM fared better than they actually do, that observation alone would not be a good reason to consider this branch of traditional medicine as a scientifically respectable endeavor.

To see why this is so, there are two things to cast light on in relation to the familiar epistemic notion of explanation.

First, the clinical successes (if any) of TCM are wholly explainable by the principles of scientific physiology, biochemistry, and psychosomatic medicine and not by the (largely unjustifiable) theoretical apparatus presupposed by the kind of pseudo-physiology and fictional nosology which TCM implies. In that respect there is an asymmetry worth-noticing here: whereas western science can (and to a large extent does) explain the physiological, biochemical and psycho-social reasons why TCM sometimes *works*, TCM itself proves heuristically incompetent to make its own clinical efficacy explainable.

Second, when it comes to accounting for the reasons why TCM is not scientific most of existing empiricist philosophies of science do rather poorly in comparison to various versions of scientific realism. By drawing on ideas about causation and scientific laws from philosophers such as Mario Bunge, Nancy Cartwright and Gustavo Bueno among others, the claim will be argued that although empirical evidence of effectiveness is important in clinical decision making, evidence by itself is not enough to settle the question of whether a given practice and a corresponding theoretical framework is scientifically sound.

To tackle that further problem, one needs to open up the black box and examine the validity of the mechanisms involved by the theory in question. With that in mind, I will finally show that the label of western medicine is a deceitful misnomer: it may well be the case that TCM is distinctively Chinese in character given its substantial theoretical connections to the doctrines of Taoism and Feng Shui, but in contrast what is known as western

medicine, as any other set of practices firmly based on the universality of modern science, *is not western* in any epistemically interesting sense.

Science and *Fengshui*: The concept *shi* 勢, correlation, and feeling

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Consideration of traditional *fengshui* from the perspective of history and philosophy of science has a substantial history.

In 1925, the geologist, Weng Wenhao, published a scientific paper tracing the history of the development of the Chinese conception of mountain ranges, literally 'mountain veins', a concept basic to *fengshui*. He even quoted a Tang dynasty *fengshui* scholar, Yang Yunsong, noting that the 'dragon' veins of *fengshui* came from perceptive observation of nature. However, these 'dragon veins' were not based on geology but on the line that was taken by the watercourses, thus creating an unavoidable false analogy. But Wang did consider them a valid addition to the development of what he dubbed 'orography'.

Weng Wenhao was a renowned member of the Chinese Geological Survey. He introduced the concept of space and time ore formation to Chinese geology, emphasising the magmatic source of ore deposits and regional zoning. Geology was one of the first natural sciences in China to become institutionally and scientifically sound because, as Ding Wenjiang argued at the time, historical sciences like geology have many parallels with the concerns and methods of traditional Chinese scholarship.

In the 1930s, Qian Renzi discussed the traditional concepts of the principles of the earth (*dili* 地理) another term for *fengshui*, from such perspectives as chemistry, acoustics, electrical energy, stratigraphy and mathematics. He saw an analytical side to the traditional principles of the earth and discussed the possible scientific meaning within the classical writings.

Later, however, Joseph Needham wrote that the conception of *fengshui* had been one of a "grossly superstitious system" with no great impact on the history of science, but still it "embodied a markedly aesthetic component, which accounts for the great beauty of the siting of so many of the forms, houses and villages throughout China".

Nevertheless, by the 1990s, Gao Youqian considered the relationship between *fengshui* and the history of science in relation to its influence on hydrology, meteorology, the discovery of oxygen, the invention of the compass, and cartography. Taiwanese scholar, Zhou Jiannan, moreover, explained the general principles of *fengshui* in terms of architectural theory, wind and sun direction, ergonomics and meteorology from a global environmental perspective, with such topics as soil chemistry, magnetic declination and the hole in the ozone layer, and the rise in the global levels of carbon dioxide and methane.

The most recent research on *fengshui* and science has various threads. For example, the studies that constitute Hong-key Yoon's edited book on *p'ungsu* in Korea include environmental management, water acquisition, aesthetics, and psychology. Environmental management is also the theme of Chen Bixi's study on traditional East Asian village landscapes. In contrast, Wu Tinghai researches the relationship between the layout of traditional cities and the heavenly aspect of *fengshui*.

The *Book of Burial* defines *fengshui*:

The Classic says, 'If *qi* rides the wind it is scattered; if it is bounded by water it is held'. The ancients gathered it, causing it not to be scattered and curtailed its area of circulation. Hence this is referred to as *fengshui*. The method of *fengshui* is, first, to obtain water and secondly to store the wind.

Thus, *fengshui* is originally a methodology for nurture of spirit based on the relationship between water, wind and *qi*. According to the *Huainanzi* (circa 120BCE), *qi* is the origin of the universe, a spontaneous formation that gave rise to physical shape. The heavy and stable *qi* coagulated to become the earth. The light and unstable *qi* rose to create the sky. The *qi* of the earth and sky met and became yin and yang. Joseph Needham defines *qi* as pneuma, subtle matter, matter-energy, or energy present in an organised form.

Moreover, this methodology for nurture of spirit had a precedent in its use in the selection of sites of habitation on the loess plateau of northern China. The geographer, Hong-key Yoon, shows that the *fengshui* term *xue* 穴 (hole, cave, node, acupuncture point) was originally applicable to the man-made cave dwellers of the loess plateau.

An analysis of this methodology for nurture of the physical is the purpose of this paper. Its prism is the history and philosophy of science specifically in relation to the concept *shi* or the configurational force of the topography, correlation, the interface between rationality and emotion, and the problems that are manifest with the ritualization of knowledge.

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Scientific Testing of Chi in China

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The development of Chi theory in China had never been standardized and scientific. However, there was a boom in Chi theorising in China in the 1980s, and the standardization and scientificization of Chi thinking and theorizing were immediately put on the national agenda. These attempts reached a climax in the late 1990s.

In the process of attempting to scientificize Chi thinking in China, the theoretical basis and functions were scientifically standardized. The low-frequency magnetic field effect has become the principal ground for scientific belief in the existence of Chi.

Purportedly, Chi serves an individual function in keeping people fit, improving mental well-being, and developing human intelligence. And it is suggested that Chi can promote local economic development. Chi is divided into medical Chi and exercise Chi such as utilized in kung fu and similar martial arts; and efforts are made to use a scientific understanding of Chi to develop medicine, treatments for illness, and personal fitness.

China has officially embraced the reality of Chi and ensured that the organizational activities and management of Chi are further standardized, legalized and made scientific. The state and provinces have issued regulations and laws on the development of Chi practice, which enables Chi to develop reasonably and legally whilst under national control. China has also made strenuous efforts in publicising and marketing Chi theory and practice.

Chi science has been widely publicized by the Chinese government - through the establishment of websites, university lectures, courses and programmes, newspaper stories, periodical articles, and international dissemination through the many hundreds of worldwide Confucius Institutes. The claim is that all of these efforts bring benefit for society. They have a positive influence on health; introduce Chi science, oriental culture, and life science concepts into marketing; eliminates deceptive and exaggerated advertisements; and promote the sustainable and healthy development of Chi-based industry and practice.

Since the 1980s, in the process of attempting to scientifically practice Chi in China, Chi has also been scientifically tested, which has established a fixed standard for the identification of Chi and its scientific development.

However, the understanding and theorizing of Chi still has some shortcomings: such as difficulty in distinguishing true from the false claims about chi, the weak theoretical basis of chi science, the 'mysterious' tinge of many pronouncements, and the continuing pseudoscientific elements of some purported functions. This requires more reflection on the process of Chinese scientific testing of Chi.

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