

Feng shui and the scientific testing of chi claims

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Abstract

This paper documents the long history of *feng shui* belief and practice in Chinese culture, and its spread worldwide in the past half century. It shows that commitment to the peculiar *qi* or chi entity is central to *feng shui* and more generally to traditional Chinese writings on medicine, astrology, philosophy, politics, literature, natural philosophy and science. Despite their centrality and omnipresence, chi claims have rarely been scientifically appraised. This is, in part, because they are stated so vaguely and mysteriously that no definite test is possible. This paper examines, and refutes, the claims of one rare but well-credentialed, multi-university-based research programme affirming the reality of chi. The paper shows that the cost of seriously endorsing a chi-based explanation of any putative effect is a rejection of the entire ontological, epistemological and methodological edifice of modern science. Chi explanations are incompatible with both a methodological and an ontological naturalist understanding of science.

Keywords

Feng shui, chi, *qi*, energy, holism, naturalism, Qigong, Yan Xin

1. Introduction

Feng shui (wind–water) is an ancient East Asian cosmological, seemingly naturalist, world view. It is a system of beliefs and practices that grew out of Chinese Taoist culture some 3000–4000 years ago.¹ It is concerned with identifying, charting and utilising the supposed all-encompassing flow of chi or *qi*—the universal life force that binds together humans, nature and the cosmos. Kuang-Tai Hsu, a Taiwanese historian of science, surmised:

including heaven, earth, the myriad of things, human beings, and so on, is composed of *qi*, which moves everywhere in the cosmos. Thus, *qi* was seen as the most fundamental reality for the Chinese in ancient times. (Hsu, 2016: 92)

The core idea of *qi* has, with some modifications and elaborations, persisted through Chinese history across a spectrum of religious, ideological and political regimes. The idea is omnipresent in long traditions of Chinese writings on medicine, astrology,

One can say that Chinese culture is a kind of culture of *qi* with many ideas expressed in terms of *qi*, including fields of natural knowledge or so-called science. According to the natural philosophy of *qi*, everything,

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philosophy, politics, literature and natural philosophy or science, through to, and including, the contemporary Communist Party regime.² The theory and practice of *feng shui* fully embrace *qi* and are unintelligible without it.

Despite its naturalism, and its avoidance of supernatural entities and their oft-related worldly interventions,³ the scientificity of *qi*, or chi belief, has been subjected to only minimal investigation; nor have the claims of *feng shui* regarding the effects and mechanisms of chi been scientifically tested. Many ‘studies’ have been devoted to chi-based treatments and interventions in acupuncture, housing design, interior decoration, and even divination, but almost no attempt has been made to isolate how much of the identified effect is a chi effect and how much is a more routine and scientifically explicable effect.⁴

This paper, in part, examines the claims of a rare scientifically credentialled research programme on *feng shui* that is capable of being scientifically tested. The paper shows that the cost of seriously endorsing a chi-based explanation of any putative effect is a rejection of the entire ontological, epistemological and methodological edifice of modern science. The practice of science and serious belief in chi are incompatible with each other.⁵

2. The origins and spread of *feng shui*

The term *feng shui* was introduced to Chinese culture by Guo Pu (276–324 AD) in his *Book of Burial* in the early fourth century AD (Guo, 2004). It was originally a low-level and pragmatic system of eclectic advice for coping with rural and town life; it consisted of a mixture of transmitted craft knowledge, astrology and traditional medical practices. Since at least the nineteenth century, the concept and content of *feng shui* have become more sophisticated and more theoretically grounded. It now presents itself as a natural science—a system that, just like modern science, lays out the basic energy-centric ontological and causal features of the world. For adherents, *feng shui* knowledge enables the harmonisation of people’s lives and habitat with the universal life force. Human life can thus be lived more consistently with nature to become more natural and healthy, leading to physical and psychological improvements. The cosmic naturalism of *feng shui*

informs town planning as well as residential and commercial architecture; it is used to identify auspicious days and, with informed guidance, reveal the future by underwriting personal divination.

Feng shui has long spread beyond Asia to assume a global commercial and personal presence. As one writer opined, ‘feng shui is no longer just an ancient Chinese secret. While slow to take root outside of its original heartland, it is now global and transcends culture and politics’ (Knoop, 2001). *Feng shui* is a routine part of town planning and architecture programmes at universities (Mak and So, 2015). Many municipal and local authorities have in-house *feng shui* consultants who pass judgement on building applications, land subdivisions and a variety of other issues. In most of Asia and much of the US West Coast, real estate sales and prices are contingent upon *feng shui*-based evaluations of the sites or buildings. One scholar has noted the following:

In recent years, feng shui has grown surprisingly popular in Western Europe despite a lack of clear understanding about how and why it is practised. Its proliferation within the architectural profession can be observed at all levels from the selection of building sites to interior design. (Hwangbo, 1999: 191)

Articles on *feng shui* are regularly published in respectable town planning and architecture journals.⁶

The advent of the internet has dramatically expanded the influence of *feng shui*, predictably including full-blown charlatanism or the ‘dark arts’. The latter term describes how Matteo Ricci in the sixteenth century, Ernst Eitel in the 19th and Chen Duxiu in the early twentieth century, and so many others down to the present day, have denounced *feng shui* as fraudulent.⁷

It is an important philosophical and legal point whether a distinction can be made between genuine and fraudulent *feng shui*-based advice. There are hundreds of thousands of websites that are devoted to *feng shui* such that the relevant consultation is now only a click and a credit card charge away even in the most isolated places on Earth. The following are examples of *feng shui* services found in a one-minute English-language online search:⁸

(1) Jerry specialises in both residential and commercial feng shui, utilising Xuan Kong Feng Shui. In addition,

Jerry is an expert in Four Pillars of Destiny, Plum Blossom and Qi Men Dun Jia divination. Jerry is currently researching on a higher level of divination known as Da Liu Ren. Jerry has taught Chinese Metaphysics, which included topics in feng shui and destiny in London [of the UK], Hong Kong [of China], Singapore, Australia, Russia, Spain and Mexico.⁹

(2) There are many schools of feng shui, and we utilise as many as we can in order to give our clients optimum results. Some of the schools of feng shui we use are: Four Pillars of Destiny, Flying Stars, Bagua and the Form School. In laymen's terms, it is about laying out rooms, furniture, and introducing colours, elements and objects in order to create a positive change in one's life, family, home and/or business.¹⁰

(3) Feng shui is a dynamic *living energy* that shifts and changes with the months and year. That's why there is so much emphasis on the annual feng shui, that details about each year—whether it's a rooster, dog, or boar—play a role in the energies that occur during the year and that act differently upon your home, you and everyone in your home.¹¹

Are the above people practitioners of the 'dark arts' or genuine *feng shui* advisers? How can a distinction be made between them? Advice based on *feng shui* is not restricted to the domestic realm either. Major multimillion-dollar buildings, roadwork, tunnelling, bridge construction, cemetery location and railway projects have been litigated in China's mainland, Taiwan and Hong Kong, Australia, the US and elsewhere. The cases hinged on whether genuine or specious *feng shui* advice had been provided.¹²

3. Feng shui and chi

Stephen Field, a translator of Guo's classic, claims that '*Qi* is the *sine qua non* for any discussion of feng shui' (Guo, 2004). The philosophically informed anthropologist Ole Bruun writes:

The concept of *qi*, which may be translated into 'breath' or 'breath of nature', is fundamental to Chinese natural philosophy. It is strongly indicative of an organic predisposition in Chinese thinking in general, as opposed

to the mechanistic orientation that became dominant in European natural philosophy after the Middle Ages. (Bruun, 2008: 108)

Despite the centrality of chi claims throughout the theory and practice of *feng shui*, including in all variants of traditional Chinese medicine (TCM),¹³ precious little effort has been expended to scientifically test these claims. The scientific appraisal of the core chi claims of *feng shui* is of the utmost importance because it can shed light on both *feng shui* and science. Such appraisals go well beyond mere *feng shui* and touch upon what might be called an 'organistic' world view or a holistic Asian world view (Vogel and Dux, 2010).

The naturalistic and 'scientific' core of *feng shui* is a commitment to the existence of a putative all-pervasive special energy, or life-force chi (or *qi*), that has existed since the beginning of time and occupies the entire cosmos—the universe, solar system, Earth and everything on it, including the bodies of animals and humans. In all bodies, chi moves in defined meridians that can be manipulated by acupuncture and other treatments. Chi lies at the intersection of physics, metaphysics, pseudoscience and theology. Its proper location is the subject of lively philosophical and scientific discussions. Predictably, its preferred home changes with the philosophical commitments of the discussants.

Simon Brown, the author of *The Feng Shui Bible*, gives an account of chi that can be found in thousands of popular books on the subject:

Chi is the subtle charge of electromagnetic energy that runs through everything, carrying information from one thing to another. The chi flowing through your body predominantly carries your thoughts, beliefs and emotions. At the same time, some of your chi is floating off, while you are also drawing in new energy ... Your energy field connects you to everything else, whether you like it or not. The secret to making this energy work is understanding the process and finding out how you can make it help you in life. (Brown, 2005: 24)

Edmund Ryden, the translator of Zhang Danian's authoritative book on Chinese philosophy, revealingly says:

Perhaps the best translation of the Chinese word *qi* is provided by Einstein's equation, $e=mc^2$. According to this equation, matter and energy are convertible. In [some] places, the material element may be to the fore, in others, what we term energy, *qi* embraces both ... *Qi* is both what really exists and what has the ability to become ... *Qi* is the life principle but it is also the stuff of inanimate objects ... As a philosophical category ... [this] meaning is then expanded to encompass all phenomena. (Zhang, 2002: 45)

Ryden well captures the explicit identification of chi with energy, the basic construct of modern science. Chi beliefs are not meant to be removed from, outside of, or alien to science. Chi theorists warmly embrace the most sophisticated foundational energy statement of modern science. However, it is the word that is co-opted, and not the institutional and intellectual edifice of science from which it originates, and which gives it meaning. Remarkable, provocative chi claims are advanced on hundreds of thousands of *feng shui* websites, in countless books and articles, and, increasingly, in university lecture halls. However, this acceptance should be accompanied by the recognition that *feng shui* needs to be subjected to rigorous scientific testing. This has rarely happened.

The US Department of Energy (DoE) has published an educational guide that specifies a person's 'energy literacy' as:

an understanding of the nature and role of energy in the universe and in our lives. Energy literacy is also the ability to apply this understanding to answer questions and solve problems. (DoE, 2012: 4)

The DoE further elaborates that such a person 'can assess the credibility of information about energy'. This is an open invitation to *feng shui* theorists to come forward and lay out, for a receptive audience, the scientificity and veracity of their core chi claims, and perhaps even have *feng shui* incorporated into school and university science programmes. It might be expected that *feng shui* advocates would be lining up at the door for acceptance into science programmes at schools and universities. This paper details why they should not be admitted.

Richard Taylor, the author of a contemporary manual that provides advice on using *feng shui* in

the modern city, relates the following: 'By interpreting the hidden and mysterious forces of the universe, feng shui provides a practical approach to environmental planning' (Taylor, 2002: 9). He goes on and states its foundational principle as follows:

The theory of feng shui, just like Chinese medicine, is based on the five elements. The five elements control and oversee everything in the universe, and channel and balance the chi of the individual and of his surroundings. Each of the elements—fire, earth, metal, water, and wood—represents a specific energy. These energies are found in a perpetual interrelationship, and their composition, or 'arrangement', creates harmony or disharmony. (Taylor, 2002: 20)

As with most, if not all, *feng shui* advocacy, the above gives the initial appearance of being science as scientific language has been used. The manual talks of positive chi lines (curvy) and negative chi lines (straight and angular), and over many pages advises on how, in building construction and fit-out, to maximise the former and minimise the latter. For instance, do not build in the shadow of a tall building that blocks sunlight, do not build at the crown of a T-intersection, build near water, and so on. If negative chi cannot be avoided, the manual lists the eight traditional *feng shui* remedies for alleviating the situation: mirrors, light, plants, water, crystals, wind chimes, flutes and colour (Taylor, 2002). It offers homely, so to speak, advice on the location of toilets (do not have them opening into a living room) and bedrooms (they should be located away from the front door). It recommends building a good entrance to a house because:

The entrance to the house is of primary importance. It must be well lit, welcoming, inviting, and pleasant to the eye, and it must be sufficiently broad to permit the easy entrance of beneficial chi to the house ... A sufficient amount of space in the entrance area is an important characteristic in good feng shui. It enables a greater amount of chi to enter the house, broadly and freely. (Taylor, 2002: 89)

Needless to say, there is no specification of how wide the entrance should be, or how the entrance area should relate to the area of house. There is also no mention of chi-measuring instruments in order to determine the

arrangement that will maximise chi. The entire domain of chi is a 'measurement-free' zone and has been so for over three millennia. There is the appearance of science, maybe even the pretence of it, but no actual science is involved because measurements, and concern with exactitude, are requirements of established scientific practice. They are not sufficient, but they are necessary. Many pseudosciences are awash with measurements and numbers that are revealed to be simply smokescreens upon closer examination.

4. 'Scientific' testing: Dr Yan Xin

An explicit, well-documented and rare attempt to bring *feng shui* to the bar of scientific appraisal is constituted by the *feng shui*-related operations of Dr Yan Xin, a former TCM practitioner who has worked in, and lectured at, different Chinese and US universities. His research group, the International Yan Xin Qigong Association, affirms the fundamental universalist *feng shui* principle:

The basic principle of Qigong is to coordinate the human body with the universe. It was assumed that all things in the world had spirit and intelligence. People were to keep in harmony with nature and absorb vital energy from outside the body to supplement their needs. The whole philosophy regarding the relationship of the human body with the universe gradually formulated the theory of Chinese Traditional Medicine. (Wozniak et al., 2001: 8)

Yan has been a celebrity super-Qigongist, with a national reputation for healing thousands of patients at a distance by generating and casting his own *qi* over them. He made and sold personalised *qi*-infused drinking water and was reportedly able to increase the alcohol content of wine by using *qi* power (Lin et al., 2000). Some of his lectures in China and the US were attended by tens of thousands of people. Yan's claims were not modest:

The mind power or *qi* emitted by a trained Qigong master can influence or change the molecular structure of many test samples, including those of DNA and RNA, even if these test samples are 6 to 2000 kilometers away from the master. *Qi* can also affect the half-life of radioactive isotopes and the polarization plane of a beam of light as emitted from a helium-neon laser.¹⁴

In 1986, Yan was attached to the Qigong Cooperative Research Group at the prestigious Tsinghua University in Beijing. He published papers with colleagues that purportedly showed how the external *qi* (chi) that he had generated could travel over several, and even thousands of, kilometres to bring about phase changes in liquids and alter infrared absorption spectra in biological media. Ten of his 'scientific' papers have been reproduced in the Yan Xin Qigong Association's handbook (Wozniak et al., 2001), while a number have been reproduced and discussed by Lu (1997). One paper, for example, was 'The study of Qigong effect on bacteria strain improvement', which claimed to show that the 'high-yield strain produced by this method showed promising potential for industry' (Wozniak et al., 2001: 123).

Another paper by Yan's research group was titled 'Experimental research on the external Qigong effect on substances over a distance of 2000 kilometers'. It made the front page of Chinese newspapers and was showcased on TV news bulletins. Unsurprisingly, Yan became a media sensation and lectured to packed auditoriums throughout China and, in 1990, in the US, where his Qigong lectures were, for their enthusiasm and credulity, matched only by those of auditorium-filling evangelical preachers and populist politicians.

Yan's followers founded the International Yan Xin Qigong Association. In 2022, the association affirmed on its website¹⁵ that the external *qi* generated by Yan Xin Qigong

- physically exists.
- can interact with and affect matter from molecular to atomic levels.
- can affect the fundamental components of living organisms (water, sugar, cell membrane, proteins, DNA and RNA).
- can recognise and optimize genetic properties without adverse effects.
- can be applied in biotechnology, materials processing and chemical reactions.

On 7 March 1990, the *Xinmin Evening Paper* reported that at the 18,000-seat Shanghai auditorium:

The great super-Qigongist, Yan Xin, was delivering a six-hour Qigong lecture in one session. By means of

the microphone and 48 loudspeakers, his voice resounded through the whole conference hall ... He talked slowly, telling the meaning of Qigong, and mentioned some diseases that can be cured ... Less than five minutes into the lecture, some in the audience began to shout, laugh, cry, and swing to and fro as if they were drunk. (Lin et al., 2000: 56–57)

This is precisely the behaviour routinely witnessed at Christian Pentecostal religious services. The similarity is not accidental (Hardy, 2021).

Dr Yan's research career continued. In a 30-page paper in 2002 in the *Journal of Scientific Exploration* that was co-authored with 10 Chinese and American scientists,¹⁶ he made the following claim:

According to the different circumstances, external *qi* of Dr Yan Xin can display different attributes such as being distance transcending, bi-directional, reversible or targeting. Although external *qi* of Yan Xin Life Science Technology has not been identified with any of the four known and accepted fundamental physical forces, its influence on physical reality is robustly confirmed. (Yan et al., 2002: 381)

Following several pages that are devoted to molecular formulae, atomic weights, spectrometer specifications and Raman laser spectra readings, we are told:

The *qi*-effects on the structure and properties of liquid water were also observed using a different technique later in 1991. Changes were repeatedly observed in the ultraviolet (UV) absorption of de-ionized water treated by external *qi* emitted by Dr Yan from the US to Beijing, China. (Yan et al., 2002: 392)

All of this attracts attention, and, if true, is very impressive. Full marks for making explicit falsifiable claims. The study reported a three-hour *qi*-emitting lecture by Dr Yan to a packed auditorium of the Chinese Academy of Sciences in Beijing. Sophisticated monitors were set up in the hall to record positive changes in the audience after people were radiated by Yan's *qi*, and to measure the increase in 'high-energy' *qi* in the auditorium. A five- to 10-fold increase in the latter was recorded at different locations. It was claimed that this was comparable 'to the impact of gamma rays and neutrons' on the measurement equipment. Similar

results were reported from an 11-hour *qi*-emitting lecture by Dr Yan at another auditorium in Beijing.

Yan's self-generated *qi* can supposedly influence molecular structure and behaviour at a distance of 10,000 kilometres, across a continent and the Pacific Ocean. Remarkably, scientists from half a dozen reputable universities signed off on this, and it was published in a supposedly scientific journal.¹⁷ This has been passed off as an example of quantum entanglement, and thus another vindication of the advanced scientificity of *feng shui*. But this is not the case. Entanglement is a completely orthodox notion in quantum theory that has been well known since Schrödinger's relevant publication in the mid-1930s. However, such entanglement is a property of non-local paired electrons and quantons (Cramer, 2015) and has precisely nothing to do with changes in molecular structures at a distance.

Entangled entities in quantum mechanics were once together as a microsystem; they were localised, with their own range of system-dependent properties. When separated, they still have their 'at-birth' system properties. Quantum mechanics has revealed that effects do not have to be the outcomes of 'local' (adjacent or contiguous) causes, and that some non-local, at-a-distance and instantaneous causes are operative. Further, each member of paired entities (electrons, quantons) has properties that are consequential to the pairing. If one member is separated from the other, it retains its properties; once it is part of a system, the properties obtained by an entity in the system are maintained even if it is no longer in the system. Separated 'twins' are thus entangled even at a distance (Hobson, 2019).

The above idea of entanglement is something that the deterministic Einstein, who famously claimed that 'God does not play at dice', could never accept. He labelled non-local action at a distance as 'spooky'. He, and others, thought that there must have been 'hidden variables' that accounted for the seemingly non-local action.¹⁸ Eventually, the search for such hidden variables was abandoned, as they were not needed once quantum theory had been finalised. The final theory was physics but was not classical Newtonian physics. Surely, chi cannot be smuggled into physics as a hidden variable to explain non-local action. As is common in *feng shui* advocacy, some imitation of science

(entanglement, in this case) has been used to claim that *feng shui* is scientific—indeed, at the cutting edge of science, as it purportedly accounts for non-local action at a distance. But, once again, there is the mere appearance of scientificity without any actual science.

Yan claimed that his *qi* powers interfered not only at the difficult-to-see microscopic levels, but also at the easy-to-observe macroscopic levels. He speaks of moving cups of tea by using his *qi* and, ‘when friends come, transporting a pot of tea for them’; if a large number of people visit, Qigong masters can ‘convert earth into cups’. But he cautions that the latter ‘demands a lot of *qi*’, and that ‘the energy of the human body is limited and should be used ingeniously’ (Wozniak et al., 2001: 74–75). He especially does not like to use his precious *qi* when video equipment is present, and relates how, during a 1986 visit to Japan, someone tried to videotape his use of transportational powers against his instructions but ‘their video camera stopped working’ (Wozniak et al., 2001: 73). Perhaps a cosmic spirit was on Dr Yan’s side.

Dr Hui Lin of the Chinese Chi Research Centre, and the co-author with Yan of the above study, offers the following striking example of chi power:

Consider a simple experiment on Qigong potential. In this experiment, people used their *qi* to shake pills out of a sealed bottle. However, the intermediate process was undetectable by any available means. The pills passed through the bottle (analogous to experiments in which a person passes through a solid wall), even though the bottle was completely sealed and intact, without any possibility of tampering.¹⁴

Accepting the results at face value, he concludes:

This demonstrates the probable existence of a form of energy associated with *qi* which transcends the three or four [gravitational, electromagnetic, strong and weak interactions] fundamental forces.¹⁴

This sounds very scientific and would certainly cause a revision of our understanding of science and the world view that it offers. But in Hui Lin’s ‘experiment’, no independent witness to such ‘transportation’ is noted; and no replication study has been reported. Independent observation and replication should be

the starting point of any effort to bring these ‘truly remarkable results’ into the scientific fold.¹⁹ They should be among the first pieces of evidence of the soundness of the above experiment required by any scientifically literate person, and their absence is a powerful indicator that *feng shui* is pseudoscientific.

Remarkably, Dr Qian Xuesen (1911–2009),²⁰ a famed mathematician, the ‘father of Chinese rocketry’ and chairman of the Chinese Association of Science and Technology, promoted Dr Yan’s research as good science and encouraged Qigong research. This was a huge, though temporary, boost for *feng shui*.²¹

5. *Feng shui* appraisal and naturalism in science

Assertions about the kinds, distribution and powers of chi can be appraised by science. Appraisal simply follows from the necessity of adopting ‘methodological naturalism’ (MN) in science, and such adoption is required for any investigation to be considered properly scientific.²² In Robert Pennock’s words:

science does not have a special rule just to keep out divine interventions, but rather a general rule that it does not handle any supernatural agents or powers since these are taken by definition to be above natural laws. (Pennock, 1999: 284)

The US National Academy of Sciences affirms the same position: ‘Because science is limited to explaining the natural world by means of natural processes, it cannot use supernatural causation in its explanations’ (NAS, 1998).

While MN has been widely supported,²³ some have argued for the stronger claim that ontological naturalism (ON) is a requirement of science. For Martin Mahner:

metaphysical naturalism is a constitutive ontological principle of science in that the general empirical methods of science, such as observation, measurement and experiment, and thus the very production of empirical evidence, presuppose a no-supernature principle. (Mahner, 2012: 1437)

The simple reading of an instrument assumes that no supernatural entity or process is interfering with the causal chains linking the instrument to the

natural process or event to which it is responding. The conduct of science does not simply rule out non-natural entities (angels, jinn, devils, etc.) on an entity-by-entity basis, but rejects the entire class of non-natural entities. Thus, not only does science require MN; it also requires ON. But it needs to be recognised that ON is not committed to physicalism. Real, existing natural ‘things’ need not be physical, but they do need to have energy, be energetic, and enter into energy relations.

Mario Bunge has defended a detailed *emergent* materialist ontology that has the scientific benefits of physicalism without its defects (Bunge, 2003, 2006, 2009, 2012). On the limitations of historical naturalism, he writes:

The great merit of naturalism is that it rejects magical thinking, in particular, supernaturalism. But naturalism is limited, for it denies the emergence of qualitative novelty and consequently the qualitative distinctions among levels of organization—physical, biological, and social, among others. In particular, naturalism does not account for the specificities of the social and the technological ... This alone suggests that naturalism should be expanded to encompass the artificial and the social. (Bunge, 2009: 60–61)

In Bunge’s amended naturalist ontology, *all* scientific entities have ‘emergent properties’; when entities join, the aggregate has properties that the components do not have. Therefore, no viable natural or social scientific ontology can be reductionist. At every level, there are more complicated, but still natural, entities, and at each level—atoms, molecules, cells, organisms, people, populations and societies—the behaviour of the whole cannot be resolved into those of its parts. Reductionism is simply an unscientific programme (Bunge, 2001).

6. Humanistic naturalism

Liu JeeLoo, a US philosopher and *feng shui* advocate, argues for a distinctive chi-naturalism:

By emphasizing its *naturalistic* dimension, this chapter aims to show that even though this whole tradition of *qi*-cosmology falls outside the scope of contemporary natural sciences, it is nonetheless a rational, coherent and respectable view of nature. (Liu, 2015: 33)

She elaborates:

However, between physicalism and supernaturalism, there stands a spectrum of diverse views, many of which have been identified as naturalism. Therefore, ‘naturalism’ in today’s usage is a fuzzy term that covers a variety of views. (Liu, 2015: 35).²⁴

Liu advocates a more relaxed ‘liberal naturalism’, and specifically a ‘humanistic naturalism’ that gives legitimacy to chi talk. Such a naturalism legitimizes chi-ontological claims, such as:

the flow of *qi* runs freely within and without a person’s body; hence, one’s bodily conditions are constantly affected by changes in the external environment. (Liu, 2015: 37)

However, the argument of *feng shui* opponents has never been about legitimacy. All manner and means of views, including the outright silly or fanciful, might be legitimate in the sense that they might be genuinely held. The issue here is whether the chi-based view of nature is ‘rational, coherent and respectable’, to use Liu’s words. Bodily conditions are obviously affected by ‘changes in the external environment’. This is a truism—just think of sunburn or hay fever. *Feng shui* realists claim that chi is a component of the external causative changes and has distinctive effects. There is simply no scientific evidence for this: the causal connection has never been shown. As with Dr Yan above, this is being asserted but not shown.

Humanistic naturalism does not rescue *feng shui* from scientific appraisal. Liu sensibly and uncontroversially says:

The world consists of nothing but entities of the natural world and humans are part of this natural world. Furthermore, there can be no supernatural interactions with entities in the natural world. Natural entities are accessible to humans’ cognitive capacities, and statements about the existence and nature of natural entities are truth-apt. (Liu, 2015: 36)²⁵

Scientific naturalism concurs with all of the above, and there is nothing specifically ‘humanistic’ about this characterisation of naturalism. For instance, Mario Bunge, a defender of scientific naturalism, is explicit in claiming, against all reductionist

programmes, that ‘naturalism should be expanded to encompass the artificial and the social’ (Bunge, 2009: 61). The issue with Liu’s argument above pertains to whether the veracity of ‘truth-apt’ claims about natural entities can be determined beyond science. Are there non-scientific ways of determining the truth of truth-apt claims about nature?

The expansion, or refinement, of scientific ontology and epistemology as proposed by humanistic naturalism needs be consistent with the core of science. Humanistic naturalism was meant to be an *expansion*, and not an abandonment, of science; not the substitution of non-science for science. Any ontological expansion that is inconsistent with the established science of energy is a departure from, and not an expansion of, science.

7. Chi as an intervening variable

For chi theorists who wish to maintain the scientificity of their system and the chi construct, while acknowledging that chi has never yet been identified or measured in a scientific laboratory, one recourse is to abandon the referential dimension of chi, to give up realism about chi, and to transition to considering it as an intervening variable having no referent rather than a hypothetical construct with a referent. This is a legitimate empiricist interpretation of theoretical terms in science. For empiricists, theoretical terms do not make existence claims at all, but are just shorthand for linking together the measured variables of interest; they are ‘intervening variables’, and not hypothetical constructs.²⁶

Thus, according to empiricists, it is a mistake to look for intelligence in a person; it will never be found because it is not there. To say of someone that they possess intelligence is merely to say that their performance on test X is regularly correlated with their performance on test Y and maybe with that on test Z. We consider high scores on tests X, Y and Z to mean that the relevant person has intelligence. Analogous but more complicated reasoning applies to magnetic fields, gravitational attraction, and so on. A ‘field’ is shorthand for the alignment of the needle of a compass and current appearing in a moving wire; it is a mathematical construct representing ordered observations; ‘attraction’ is shorthand for bodies falling and planets remaining in orbit, and so on.

The distinction between theoretical terms that are hypothetical constructs and those that are intervening variables can be traced to the positivist Ernst Mach. It was developed by the logical empiricists and was given prominence by the psychologists Kenneth MacCorquodale and Paul Meehl in their much-cited paper, ‘On a distinction between hypothetical constructs and intervening variables’ (MacCorquodale and Meehl, 1948). This paper was the focus of methodological discussion in psychology for decades.

For MacCorquodale and Meehl, to consider theoretical terms (atom, field, electron, intelligence, libido, class consciousness, conscience, drive, instinct, magnetism, habit, will power, mind, and chi) as having referents—as referring to entities that, though unseen, nevertheless exist and exert influence—is to see them as ‘hypothetical constructs’. This is the standard realist interpretation of theoretical terms. The referents may or may not exist, but they are supposed to exist if the term referring to them is a hypothetical construct.

The option of considering chi as an intervening variable or a disposition might appear attractive to chi theorists. We do not have to believe in chi and can admit that there is no chi; there are simply certain things that uniformly go together, and ‘chi’ names this uniformity. For instance, contentment goes hand in hand with living by a lake where the view is pretty, and it is not too windy. To say that there is good chi by the lake and, hence, the opportunity for comfortable living adds nothing to what is already known. Performing certain Qigong exercises is conducive to feelings of mental and physical ease. To say that these exercises have manipulated one’s internal chi contributes nothing to what is already known. This is the position of the numerous chi theorists, who ultimately claim that chi talk is simply common sense. Here, chi occupies conceptual space but pays no theoretical or scientific rent.

Consider the claim of two chi-theorists:

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. An invisible force known only by its effects, *qi* is recognized indirectly by what it fosters, generates, and protects. (Beinfeld and Korngold, 1991: 30)

Or the claim of Elliot Tanzer, a *feng shui* master and consultant:

Qi is the Chinese word for ‘energy’. Everything animate and inanimate, real or conceptual, has *qi*. Different people have different *qi*. Each kind of animal has its own kind of *qi*. A nation has its *qi* and a religion has its *qi*. There is roadway *qi*, rock *qi*, locational *qi*, and vocational *qi*. There is soft-yin *qi* and hard-yang *qi*. There is children *qi*, male and female *qi*. Each item of food has its unique *qi*. To identify the *qi* of anything animate or inanimate, real or conceptual, is to understand its essential nature. *Qi* is the Isness of whatever is—the essence of the thing or situation. If your goal is good health and success in all areas of your life, there is no other concept more important than the study and understanding of *qi*, and how *qi* flows.²⁷

For these theorists and the thousands of others like them, there is nothing that can be found or isolated that is separate from what we already know about nature. This interpretation of chi parallels Aristotle’s doctrine of hylomorphism,²⁸ whereby everything in nature, living and non-living, is constituted by matter and form. But Aristotelian forms do not have independent existence; they have to be a form *in something*. Thus, chi cannot be passed off as an Aristotelian form. *Feng shui*’s empiricist retreat, or interpretation, therefore, has its own problems.

1. Intervening variables link measured variables to the corresponding phenomena. However, theorising about chi is never accompanied by stable and reliable measurements in the way that this has been achieved over decades by using, for instance, electrical meters, pressure meters, thermometers, radiation counters and hundreds of other routine measuring instruments. There are no stable, measured chi-related variables; everything is chaotic, subjective and unmeasured. The presence or absence of chi varies with every observer and theorist, and, for many, changes vary with the time of day and the day of the year. This represents chaos from which stable, scientifically useful, intervening variables can never be rescued. After three millennia of chi talk, writing, acupuncture needling, house design and Qigong exercises,

there is still no ‘chi meter’. This is, to put it mildly, embarrassing. It is a powerful argument that the concept of chi is neither scientific nor useful. Even if the relevant measurements were somehow made available, the effects could not be said to have been *generated* by chi, as it is an intervening variable. Such a claim would be viable only if chi were considered to be a hypothetical construct. Thus, there is no reason to use the term ‘chi’ as the name of any particular correlation.

2. To abandon realism about chi (that is, to deny that it is a hypothetical construct) is to abandon the entire three-to-four-millennia-long cosmological tradition that underpins so much Chinese and Asian culture. Chi is supposedly the ultimate explanation of everything; if it explains nothing but merely names associations, then it is on course to lose its cultural value and purpose.

In the nineteenth century, Ernest Eitel observed:

Well, if Feng-shui were no more than what our common sense and natural instincts teach us, Chinese Feng-shui would be no such puzzle to us. But the fact is, the Chinese have made Feng-shui a black art, and those that are proficient in this art and derive their livelihood from it, find it to their advantage to make the same mystery of it, with which European alchemists and astrologers used to surround their vagaries. (Eitel, 1873/1987: 1)

8. Chi as metaphor

The final option for chi theorists who wish to retain the concept, while acknowledging that there is no scientific evidence for its existence, is to say that chi talk is metaphorical, and not literal. On this interpretation of the concept, when it is claimed that chi is a special form of energy, what is meant is that chi is not *literally* a special form of energy, but rather is *like* energy. The chi construct is thus a metaphor. This is not exceptional: mainstream science is replete with metaphorical constructs, as was shown 60 years ago by Max Black (1962) and Mary Hesse (1966). The very ideas of natural selection, current flow, electron layers, light waves and particles, covalent bonds, the ‘invisible hand’ and so on are deeply

metaphorical. Likewise, the chi theorist inclined to its metaphorical interpretation will say that chi exists and does all the things traditionally attributed to it, but that it is ineffable, and the best we can do is to say that ‘it is like energy’.

The above provides to the chi theorist some immediate relief from investigative discomfort that, however, is temporary. Concepts in science can begin as metaphors, but if they last—if they do work and get incorporated into an established theory or become the basis for a new one—then they have to be cashed out; they have to be connected to observations or measurements. In chemistry, for instance, the strength of a bond, what a given substance can and cannot bond with, and the mechanisms of the bonding need to be specified. In addition, quantification, prediction and experimentation are needed to provide theoretical insights into how the given chemical bonds develop. Without this, the concept of the chemical ‘bond’ is not scientific. It would not even be protoscience, as it goes nowhere and stagnates. The same applies to such theoretical concepts as natural selection and electron layers. *Feng shui* theorists are lazy to continue to insist that the core concept of the practice, chi, is metaphorical. This is the mark of a pseudoscience.

9. Conclusion

Chi (*qi*) is not supernatural; yet it is peculiar and unknown to science. It is not supernatural because it is supposed to be a part of nature and putatively has an all-encompassing range of impacts. Once this is acknowledged, chi claims are within the realm of legitimate scientific inquiry. The amount of scientific testing of chi theory is inversely related to the vastness of the extraordinary empirical claims made for it. But the testing that has been done confirms the obvious: no chi-effect mechanism has been found or isolated, and the bulk of the purported scientific confirmations have simply repeated the fallacy of affirming the consequent. Other scientifically verifiable explanations are available for the phenomena explained as the effects of chi. Importantly, *feng shui* has no tradition of sustained engagement with orthodox science, the scientific community, and respected research publications in the area. The rare cases of engagement, such as those related to Dr Yan Xin and the International

Yan Xin Qigong Association, highlight only the scientific failings of *feng shui*. This paper has been focused on *feng shui* and the philosophy of science. An altogether separate and deserving investigation is of *feng shui* and social psychology: why have so many people believed so much, for so long, on so little verified evidence?

Feng shui ideology and Qigong chi theory is a barrier to the modernisation of thought. Everyone benefits from appropriately arranging their lives, environment and social circumstances. This is a difficult and complex enough task just considering naturalistic, economic and graspable factors; to add completely unmeasurable, ungraspable, imaginary factors such as chi flow and its accumulation into the equation of balanced life is a thoroughly unhelpful distraction. Moreover, it is not merely unhelpful, but it can be positively dangerous and damaging; it sends people down a false path and allows charlatanry to flourish.

Feng shui belief in society and in classrooms presents not so much a problem for teachers as an opportunity. Its considered and informed examination is a way for students to learn about the nature of science and other important social processes—the impact of marketing, the cultural determiners of gullibility, and much more.²⁹

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Notes

1. The origins, history, philosophy, and applications of *feng shui* have been the subject of extensive research. See, among others, Bruun (2008), Bruun and Kalland (1995), Henderson (2010), Matthews (2019, 2021), Parkes (2003) and Smith (1991).

2. Many works have discussed the notion of chi and its place in Chinese philosophy and protoscience. See Chan (1969), Fung (1947) and Zhang (2002).
3. There are no gods, devils, spirits, or other such non-natural, non-scientific-law-defying entities in *feng shui* cosmology.
4. Thus, for instance, can the positive psychological effects of living in a sunny place, by water and out of strong winds, be accounted for without recourse to the presence of good chi in the neighborhood? Conversely, can the prevalence of illness in a settlement be accounted for by viral or bacterial factors rather than bad chi?
5. This claim is about *objective* incompatibility, and not *subjective* incompatibility; it is about *serious* belief, and not *notional* belief. It is well known that people can hold any combination of objectively contradictory beliefs. The claim in this paper pertains specifically to chi belief, and not to more general religious or other ideological beliefs. Details of this argument are provided in Matthews (2019).
6. See, among many others, *The Journal of Architecture*, *Journal of Architectural and Planning Research*, *The Journal of Design Research*, *Journal of Geographical Sciences*, *Building and Environment*, *Land Issues Research Quarterly*, *Journal of Housing Studies*, *Architecture and Culture* and *Journal of Asian Architecture and Building Engineering*.
7. For elaboration and references, see Matthews (2019, chapters 6, 7, 8 and 9).
8. Searches in other languages reveal hundreds of thousands, if not millions, of websites on *feng shui*.
9. See: <http://www.whitedragonhome.com/about/masters/jerry-king>.
10. See: <http://www.globalpalaceoffengshui.com.au/>.
11. See: <https://redlotusletter.com/classical-feng-shui-and-western-black-feng-shui-the-6-critical-differences-confessions-of-a-former-black-hat-practitioner/>.
12. Literature and numerous examples are provided in Matthews (2019, chapter 4).
13. On chi and TCM, see Matthews (2019, chapter 5).
14. See: www.item-bioenergy.com/infocenter/chinesechi-research.doc.
15. See: <https://www.yanxinqiqong.net/>.
16. The authors' institutional affiliations included Harvard University, Massachusetts General Hospital, University of Oklahoma, Massachusetts Institute of Technology, and the Institute of High Energy Physics of the Chinese Academy of Sciences, Beijing.
17. A major contemporary problem is the explosive growth of imitation academic journals. No longer can a journal title give credence to what is published. Scientific-sounding titles are everywhere and provide ready homes for *feng shui* and similarly dubious programmes.
18. See literature at: https://en.wikipedia.org/wiki/Hidden-variable_theory.
19. The magician (illusionist) James Randi has rendered a great public service by replicating, exposing and debunking these sorts of claims (Randi, 1995).
20. See https://en.wikipedia.org/wiki/Qian_Xuesen.
21. Qian's ill-informed and ideologically motivated interventions have been recorded by Fang (2016: 100–101).
22. On naturalism, see the literature in Papineau (2009).
23. The rich philosophical literature on the methodological and ontological presuppositions of science is reviewed in Fishman and Boudry (2013).
24. See Papineau (2009) for a comprehensive survey of various views categorized under the umbrella of 'naturalism'. He claims that it would be 'fruitless to try to adjudicate some official way of understanding the term.' (See details at: <http://plato.stanford.edu/entries/naturalism/>.)
25. The label 'truth-apt' refers to claims about nature that are propositional/truth-functional: they are statements about the properties of nature that can, in theory, be ascertained to be true or false. They are distinct from emotional, artistic or aesthetic responses to nature that are not truth-functional and describe or express certain expressions conveying subjective mindsets. 'The sunset is dramatic' is a claim about nature, but it is not a truth-apt claim; it is entirely subjective. In contrast, 'The sun set at 17:35' is truth apt.
26. Bas van Fraassen is a well-known defender of this position (Van Fraassen, 2002).
27. See full text at: <https://abodetao.com/feng-shui-guidelines-to-energy-%20flow-analysis-what-is-qi-and-how-qi-flows/>.
28. See literature at: <https://en.wikipedia.org/wiki/Hylomorphism>.
29. See contributions to Matthews (2021).

References

- Beinfeld H and Korngold E (1991) *Between Heaven and Earth: A Guide to Chinese Medicine*. New York: Random House.
- Black M (1962) *Models and Metaphors*. Ithaca, New York: Cornell University Press.
- Brown S (2005) *The Feng Shui Bible: The Definitive Guide to Practising Feng Shui*. London: Octopus Publishing Group.
- Bruun O (2008) *An Introduction to Feng Shui*. Cambridge: Cambridge University Press.

- Bruun O and Kalland A (1995) *Asian Perceptions of Nature: A Critical Approach*. London: Curzon Press.
- Bunge M (2001) *Philosophy in Crisis: The Need for Reconstruction*. Amherst, New York: Prometheus Books.
- Bunge M (2003) *Emergence and Convergence*. Toronto: University of Toronto Press.
- Bunge M (2006) *Chasing Reality: Strife over Realism*. Toronto: University of Toronto Press.
- Bunge M (2009) Advantages and limits of naturalism. In: Shook R and Kurtz P (eds) *The Future of Naturalism*. Amherst, New York: Humanity Books, 43–63.
- Bunge M (2012) *Evaluating Philosophies. Boston Studies in the Philosophy of Science*, vol. 295. Dordrecht: Springer.
- Chan W-T (1969) *A Source Book in Chinese Philosophy*. Princeton: Princeton University Press.
- Cramer JG (2015) *The Quantum Handshake: Entanglement, Nonlocality and Transactions*. Dordrecht: Springer Verlag.
- DoE (US Department of Energy) (2012) *Energy Literacy: Essential Principles and Fundamental Concepts for Energy Education*. Washington DC: US Department of Energy.
- Eitel EJ (1873/1987) *Feng Shui: The Rudiments of Natural Science in China*. Hong Kong: Lane, Crawford & Co. (Singapore: Graham Brash).
- Fang L (2016) *The Most Wanted Man in China: My Journey from Scientist to Enemy of the State*, translated by Perry Link. New York: Henry Holt & Co.
- Fishman YI and Boudry M (2013) Does science presuppose naturalism (or anything at all)? *Science & Education* 22(5): 921–949.
- Fung Y-L (1947) *The Spirit of Chinese Philosophy*, translated by ER Hughes. London: Kegan Paul.
- Guo P (2004) *The Book of Burial (Zang Shu)*, translated by Zhang JW. Lewiston, New York: Edwin Mellen Press [original \approx 300 BCE].
- Hardy E (2021) *Beyond Belief: How Pentecostal Christianity Is Taking Over the World*. London: C Hurst & Co.
- Henderson JR (2010) Cosmology and concepts of nature in ancient China. In: Vogel HU and Dux G (eds) *Concepts of Nature: A Chinese–European Cross-Cultural Perspective*. Leiden: Brill, 198–218.
- Hesse MB (1966) *Models and Analogies in Science*. South Bend, Indiana: University of Notre Dame Press.
- Hobson A (2019) A realist analysis of six controversial quantum issues. In: Matthews MR (eds) *Mario Bunge: A Centenary Festschrift*. Dordrecht: Springer, 329–348.
- Hsu K-T (2016) Science and confucianism in retrospect and prospect. *Zygon* 51(1): 86–99.
- Hwangbo AB (1999) A new millennium and feng shui. *The Journal of Architecture* 4(2): 191–198.
- Knoop A (2001) Feng shui for architects. American Institute of Architects, *AIArchitect* newsletter, available at: <http://www.lezley.info/feng-shui.htm> (accessed 24 August 2023).
- Lin ZX, Yu L, Guo YZ, et al. (2000) *Qigong: Chinese Medicine or Pseudoscience?* Amherst, New York: Prometheus Books.
- Liu JL (2015) In defense of Chinese qi-naturalism. In: Li C, Perkins F and Chan AKL (eds) *Chinese Metaphysics and Its Problems*. Cambridge: Cambridge University Press, 33–53.
- Lu Z (1997) *Scientific Qigong Exploration: The Wonders and Mysteries of Qi*. Malvern, Pennsylvania: Amber Leaf Press.
- MacCorquodale K and Meehl P (1948) On a distinction between hypothetical constructs and intervening variables. *Psychological Review* 55: 95–107.
- Mahner M (2012) The role of metaphysical naturalism in science. *Science & Education* 21(10): 1437–1459.
- Mak MY and So AT (2015) *Scientific Feng Shui for the Built Environment: Theories and Applications*. Hong Kong: City University of Hong Kong Press.
- Matthews MR (2019) *Feng Shui: Teaching About Science and Pseudoscience*. Dordrecht: Springer.
- Matthews MR (ed) (2021) Feng Shui: Philosophical, Cultural and Educational Perspectives, special issue. *Science & Education* 30(6).
- NAS (US National Academy of Sciences) (1998) *Teaching About Evolution and the Nature of Science*. Washington DC: National Academy Press.
- Papineau D (2009) Naturalism. *Stanford Encyclopedia of Philosophy*. Available at: <http://plato.stanford.edu/entries/naturalism/> (accessed 24 August 2023).
- Parkes G (2003) Winds, waters, and earth energies: *Fengshui* and awareness of place. In: Selin H (eds) *Nature Across Cultures: Views of Nature and the Environment in Non-Western Cultures*. Dordrecht: Springer, 185–209.
- Pennock RT (1999) *Tower of Babel: The Evidence against the New Creationism*. Cambridge Massachusetts: MIT Press.
- Randi J (1995) *An Encyclopedia of Claims, Frauds, and Hoaxes of the Occult and Supernatural*. New York: St Martin's Press.
- Smith RJ (1991) *Fortune-tellers and Philosophers: Divination in Chinese Society*. Boulder, Colorado: Westview Press.

- Taylor R (2002) *Feng Shui for the Modern City: A Practical Guide*. Hod Hasharon, Israel: Astrolog Publishing House.
- Van Fraassen BC (2002) *The Empirical Stance*. New Haven, Connecticut: Yale University Press.
- Vogel HU and Dux G (2010) *Concepts of Nature: A Chinese–European Cross-Cultural Perspective*. Leiden: Brill.
- Wozniak JA, Wu S and Wang H (2001) *Yan Xin Qigong and Contemporary Sciences*. Champaign, Illinois: International Yan Xin Qigong Association.
- Yan X, Lu F, Jiang H, et al. (2002) Certain physical manifestation and effects of external *qi* of Yan Xin life science technology. *Journal of Scientific Exploration* 16(3): 381–411.
- Zhang DN (2002) *Key Concepts in Chinese Philosophy*, translated and edited by Edmund Ryden. Beijing: Foreign Languages Press.

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