

Mental Well-Being, Neuroscience, and Religion

with Gillian K. Straine and Mark Harris, "Mental Well-Being, Neuroscience, and Religion: Contributions from the Science and Religion Forum"; Fraser Watts, "Theology and Science of Mental Health and Well-Being"; Lindsay Bruce and Sarah Lane Ritchie, "The Physicalized Mind and the Gut-Brain Axis: Taking Mental Health Out of Our Heads"; Jaime Wright, "In the Beginning: The Role of Myth in Relating Religion, Brain Science, and Mental Well-Being"; William L. Atkins, "Empirical Mindfulness: Traditional Chinese Medicine and Mental Health in the Science and Religion Dialogue"; and Ben Ryan, "The Church and Mental Health: Theological and Practical Responses."

EMPIRICAL MINDFULNESS: TRADITIONAL CHINESE MEDICINE AND MENTAL HEALTH IN THE SCIENCE AND RELIGION DIALOGUE

by *William L. Atkins*

Abstract. As science and religion researchers begin to engage questions of mental health, mindfulness may prove to be a fruitful area of investigation. However, quantifying the physical effects of mindfulness on the brain is difficult because mindfulness deals with the problem of mental and physical interaction or, the mind/body problem. One system of understanding which may aid science and religion scholars in the pursuit of mindfulness is traditional Chinese medicine (TCM). Within TCM, heart *Qi* manages the body's present connection to time and space. If the "being in the moment" is disrupted, then the heart *Qi* is blocked and mental illness or various neurological disorders occur. Succinctly, within TCM, mindfulness is understood as a nonphysical phenomenon (*Qi*) which directly affects physical systems, resulting in empirical data. This is tracked and treated through the TCM understanding of *Qi*. The TCM view of *Qi* in mental health may therefore provide a helpful new paradigm to investigations concerning mindfulness and the human brain.

Keywords: Chinese medicine; mindfulness; neuroscience; science and religion; traditional Chinese medicine

The contemporary Western understanding of mindfulness is, to put it simply, being more present in the present; being aware of our bodies and the sensations they experience while fully recognizing our thoughts and feelings

William L. Atkins is a PhD candidate, Department of Science and Religion, University of Edinburgh, Edinburgh, UK; e-mail: s1444462@sms.ed.ac.uk.

as they happen moment to moment (Kabat-Zinn 2015). The current argument for mindfulness claims that this “here and now” connection can improve one’s mental well-being. Mindfulness has been associated with higher levels of life satisfaction, vitality, self-esteem, competence, optimism, and sense of autonomy (Brown and Ryan 2003). Further positive effects include agreeableness and conscientiousness (Thompson and Waltz 2007). Conversely, the lack of mindfulness has been linked to depression, dissociation, social difficulties in the regulation of emotion, experiential avoidance, alexithymia, and general psychological symptoms (Baer et al. 2005; Brown and Ryan 2003). In countless clinical trials, mindfulness has been shown to be directly related to both psychological health, and changes in brain activity as observed through neuroimaging (Keng et al. 2011).

The contemporary interest in mindfulness, and especially its potential for enhancing mental and bodily well-being, presents a promising field of inquiry for science and religion researchers interested in the link between mind and body. This raises again the rather hackneyed topic of science-and-religion conversations concerning the connection between the nonphysical mind and the physical brain and body. Consequently, as this relates directly to well established science and religion questions concerning the mind/body problem, it would seem there exists a ready-made field from which science and religion may investigate mindfulness and its effects. However, a key difficulty in many of the science and religion projects concerning the mind/body relationship is that, when comprehensive investigations of physical and nonphysical problems are attempted, the scientific side of the conversation takes precedence.

I label this as a difficulty because, if we are to follow the popular tendency in science and religion to demur to the scientific community, then we may limit investigations regarding some of the nonphysical aspects of mindfulness, such as the mode of connection between thought and physical reality. While the edifice of contemporary Western mainstream science offers a great deal in regard to thought and brain states, there is little in the way of *how* the mind and the brain are linked, what fills the space between them and how may it be discerned empirically. Instead, sciences such as psychology and neuroscience often focus on the environmental causes and aftereffects of thoughts and emotions in brain states. As an example, a person may be shown an image designed to elicit a specific emotional response, and at the same time the brain is monitored to determine which areas are affected. In this example, the mind would produce an emotional thought which then is seen to influence the physical brain. The relationship is studied in a cause-and-effect manner, with little attention given to the mechanism of connection. Regarding mindfulness then, we are left to wonder how the nonphysical mind’s connection to the present moment affects brain states. If we are to more fully explore the nature of mindfulness in a science and religion discussion of mental health, how

might the conversation be focused sufficiently to evaluate the impact of the nonphysical mind's present connection to space and time on the brain?

I propose that this may be accomplished through the investigation of mindfulness in traditional Chinese medicine (TCM). The purpose of this article is to propose that TCM may offer a platform from which the nonphysical aspects of mindfulness may be pursued in consonance with a modern medical understanding of the human brain, as well as with established science and religion discussions of the mind/body problem. The aim of this is to offer the science and religion community an augmented understanding of mindfulness in the discussion of human mental health and wellness.

SCIENCE AND RELIGION AND THE MIND

If one aims to expand the discussion of mental health, and ultimately mindfulness, in the science and religion field, it is helpful to see to what degree current work in the mind/body problem may already address mindfulness. One may note that the work being done by such scholars as Nancey Murphy and John Polkinghorne would seem to adequately address the problem of nonphysical influence on physical matter, without the need for further explicative systems; especially one as complex as TCM. For example, John Polkinghorne has written that "a mental pole emerges from a material pole, not by the direct analogy of an indefinite amount of matter, but by the indirect analogy of an indefinitely flexible degree of organization of the matter" (Polkinghorne 2005, 32). Through this, Polkinghorne works to understand how the mind may be said to be linked with the brain, without necessarily being considered an emergent property. The idea of aggregate "mental powers" is a notion he labels as panpsychist, when related to quantum physics and wave theory. Polkinghorne's view instead works to incorporate the physical brain, specifically as it relates to sensory input and the more empirical aspects of synaptic formations, into the conversation regarding thought, emotions, and whatever may eventually be said to be the seat of consciousness, without employing panpsychism. He does this through an understanding of mental and material as complementary poles which enable us as psychosomatic entities to participate in both worlds.

Regarding mindfulness, we may then expand upon Polkinghorne's supposition with the work of Nancey Murphy who points to the "temporal-parietal juncture which is known to play a role in the experience of being spatially situated within one's body" (Murphy 2013, 40). The temporal-parietal juncture is an area of the brain that incorporates information from the thalamus and the limbic system, as well as from the visual, auditory, and somatosensory systems. The temporal-parietal juncture also integrates information from both the external environment as well as from within the body. If we are to seek out a place where the mental pole may emerge

from a material pole, this function of the brain provides one area we may investigate. Further, it would seem as if this physical system plays a critical function in our ongoing connection to present time in the manner of sensory input, a key function of mindfulness.

If this current science and religion scholarship on the mind/body problem is applied to the investigation of mindfulness's influence on the brain, we may, as an example, employ Murphy's nonreductive physicalism in addition to Polkinghorne's work. It may then be argued that the mental arrives from the material, or rather that there may be mental and material poles which are "both true aspects of reality," and that the temporal-parietal juncture presents a possible location of connection (Polkinghorne 2005, 32). However, if we are to make use of these models, the discussion is led deeper into the realms of neuroscience and psychology, with little room for an empirical inquiry of the nonphysical influences. If we are to work within the constructs devised by Polkinghorne and Murphy, there would yet be no connection made between the mind's "being in the moment" and the physical composition of the brain. We would in effect be left with a more modern view of René Descartes's dualist understanding of the pineal gland. Therefore, if science and religion is to more fruitfully investigate the nonphysical side of mindfulness (how the mind affects the brain in mental health) it behooves us to find a more monist system that equally embraces physical *and* nonphysical realities.

MINDFULNESS IN TCM

Mindfulness is in fact not a new approach to mental health treatments, but has been effectively practiced by TCM doctors for millennia. This has been done through the understanding of *Qi*. Chinese medicine teaches that *Qi* is everywhere, immanently present in connection to the world-as-a-whole. *Qi* links humans "with every other form of life, whether of animals and birds, of trees and plants, or even the less perceptible life of material things" (Hume [1940]2012, 5). Since the late Zhou (ca. 720 BCE), *Qi* has been understood to facilitate this connection as it is present in the *Tian* (heavens) and the earth (Unschuld 2010). Inside the human body, *Qi* "surrounds the organs and tissues of the body's interior and is found in the interstitial spaces between the skin and muscles as well as the exterior of the body" (Liu 1995, 70). In the *Tian*, *Qi* is understood to be a transcendent phenomenon, something beyond physical reality which may be understood through the logic of *yin yang* (Kaptchuk 2000, 8). In TCM, *yin Qi* is the energy or vital essence, while *yang Qi* represents physical substance. *Yin Qi* is not material, and yet it is inextricably linked to its physical *yang* counterpart, both within and beyond the world-as-a-whole (Ni 1995, 15).

Per TCM theory, *Qi* in the human body flows along meridians, and is stored and diversified in *zhang* organs (liver, spleen, heart, lungs, and kidneys) each of which has a particular form of *Qi* associated with it. And while a more traditional science and religion investigation of mental health and mindfulness may focus upon the brain, in TCM the brain is not considered the seat of consciousness or awareness. Rather, TCM considers the heart to be the primary organ responsible for mental activity. In TCM,

mental activity is a general term for the life processes. In its broadest sense, it refers to the outward activities of life; in a more narrow sense, it refers to such activities as perception and thinking. In contrast to Western science, which holds that these activities are controlled by the brain and specifically by the cerebral cortex, traditional Chinese medicine says that it is the heart that governs these activities. The brain is seen primarily as an organ that receives and stores impressions. (Liu 1988, 75)

TCM in fact has no concept of a nervous or endocrine system (although it contains treatments which affect both neurological and endocrine disorders); mental illness is instead treated through the manipulation, or freeing, of heart *Qi* (Kaptchuk 2000, 2).

In TCM, the heart *Qi* ensures that whatever “consciousness, intention, volition, thought, reflection, and self-awareness” that exists within the person connects to and comes into alignment with the world-as-a-whole in present time and space (Kaptchuk 2000, 88). If the heart *Qi* is in proper alignment with current space and time, then the movement of the “phlegm” is benefited. However, if the heart *Qi* becomes inhibited then “mucus fire” or “cold mucus” causes mental disorders including depression and seizures (Ni 1995, 149). *Qi* is a special physical *and* nonphysical phenomenon; however, for the practicing TCM doctor, the “substance” of *Qi* is a definable characteristic of the human body. There are specific effects on the brain states of the patient related to *Qi* and how the mind is presently connected to space and time.

In TCM, “either cold mucus or mucus fire affecting the heart implies that the heart’s connection to time and space is occluded and seriously disrupted” (Kaptchuk 2000, 270). The “being in the moment” has been disrupted by some factor and thus the heart *Qi* does not flow properly, as indicated by a blockage of mucus. To phrase it more simply, in Western terms, when the mind is no longer focused and active in the present moment, there is a break in the connection of *Qi*, and the nonphysical link to space and time is severed. If the connection is not restored, the condition causes—what would be called in Western medicine—gram-negative sepsis and encephalitis (when the cerebral functions are affected), apoplexy, epilepsy, or any number of other emotional or neurological disorders (Kaptchuk 2000, 270). The heart *Qi* may be inhibited by, among

other things, extreme emotional distress; in the TCM understanding of mental health, there is a demonstrable link between the movement of the heart *Qi* and the person's mental/emotional disposition (Ni 1995, 153).

In TCM, the heart has a special role to play in the development of disease from the seven emotions of joy, anger, sadness, pensiveness, grief, fear, and fright. In this, "extreme emotional stimuli will first attack the heart" (Liu 1988, 156). In TCM, "when one is angry, the *Qi* rises upwards; when one is joyous the *Qi* disperses; when one is sad, the *Qi* becomes exhausted; when one is fearful and frightened, the *Qi* descends" (Ni 1995, 155). This imbalance may then cause mental distress and changes in behavior. As an example, if a person were to experience extreme sadness and pensiveness, then the resulting attack on the heart would deplete the heart *Qi*. This would break the present connection to space/time and depression or anxiety would result. In this example, the prolonged emotional state of sadness and pensiveness would diminish the heart *Qi*, impede the body's connection to the present moment, and result in mental illness. If the heart *Qi* were to be replenished, then the connection would be restored and the initial emotional response positively affected, promoting healing. There is a linked chain of events existing in a feedback loop wherein the physical and non-physical nature of *Qi* is the communicative action and presence. More simply, *Qi* links the physical body, in Western biomedicine the brain, with mental activity, or, in Western biomedicine, the mind.

The link between mental activity, specifically emotions, and the brain is currently being researched in the field of Western biomedicine. This research indicates that emotional states, such as love, have physical correlates in brain function. It has been seen that "pharmacologic influences on these traits, as well as the effects of localized stimulation or damage, demonstrate that the brain processes in question are not mere correlates but are the physical bases of these central aspects of our personhood" (Farah and Murphy 2009). This recently published research in Western biomedicine has been the normative approach to mental health treatment in TCM for more than two thousand years. The advantage of TCM is that *Qi*'s function linking emotional states to brain functions may be practically deduced. In a TCM diagnosis, when emotional stress affects the heart *Qi* (disrupting mindfulness and causing mental illness), the entire process is empirically discernable through the understanding of *Qi* as a physical and nonphysical phenomenon.

From a conceptual standpoint, this information may seem adequate to offer a simple comparative analysis. We may, for instance, equate the practice of meditative mindfulness to the notion of heart *Qi* keeping the mind and body in tune with the present moment. This would seem to offer a correlation of practices when it comes to affecting mental well-being, the only difference, arguably, being terminology. However, heart *Qi* is not a mere philosophical notion in TCM. Rather, TCM moves beyond thought

experiments by employing an empirically verifiable system of diagnosis and treatment of *Qi* in relation to mental well-being (Liu 1988, 252). This system categorizes different mental states and emotional responses in relation to the movement and different types of *Qi* (Liu 1988, 73). This is done through the examination of the meridians and *zhang* organs. Summarily, within TCM, there is a direct link between the mind's present connection to time and space and various brain states associated with mental health, practically understood through the nonphysical nature of *Qi*.

QI AND PERCEPTIBLE NONPHYSICAL ACTION

The primary aspect of TCM that may be useful in a science and religion investigation of mindfulness is that *Qi* is detectible. In TCM, mindfulness affecting the body is a real and measurable phenomenon, not a theory of meditative thoughts with no discernable connection to positive effects on mental health. Rather, TCM offers the connection as *Qi* linking emotions, thought, mindfulness, and mental health in an empirically verifiable manner. This is accomplished through an extensive series of monist logical constructs purposed to identify and discern the nonphysical aspects of *Qi* in relation to *Qi*'s physical nature. These constructs analyze time, as understood through the celestial calendar, the cosmological presence of *Qi* in and beyond the world-as-a-whole, and finally as it directly relates to the human body. The result is a comprehensive system detailing the many ways in which the mind's present connection to time and space may affect a person physically.

According to TCM, *Tian* is measured by the rule of six, and human beings by the rule of nine. In the *Tian*, there are six sixty-day cycles of energy which comprise a year. On Earth, these correspond to the nine orifices on the body. The combination of the six cycles of energy and the nine physical counterparts produces the 365-day year and the 365 energy points on the human body (Ni 1995, 36). There is a link between the energy of the *Tian* (*yin Qi*) and the physical nature of the world-as-a-whole (*yang Qi*) in relation to the movements of the stars in a calendar year. There is an intimate association with change in heavenly circulation, understood through the movement of *yin Qi* as the energy and *yang Qi* as the physical counterpart in the human being.

Heart *Qi*, naturally, has both *yin* and *yang*. This links the nine orifices (which are also referred to as the orifices of the heart as they are responsible for conciseness awareness of sensory input) to the celestial cycles of energy (Ni 1995, 40). All input into the heart which allows for moment-to-moment "knowing" comes through the orifices which are directly linked to the celestial order. Effectively, these TCM rules of six and nine present time and awareness as linked in a prescribed manner. Succinctly, heart *Qi* offers a present connection to physical reality and nonphysical energy

from the *Tian* which is ascertained through sensory perception and has measurable effects on a person's mental health. This pervasive and ongoing communication is possible because *Qi* is an ubiquitous presence. As *Qi* exists in all of the cosmos, the nonmaterial aspects of the various kinds of *Qi* interact, connecting the material world in a resonant pattern of existence. This interaction is also classified into various forms of *Qi*, from different sources.

Qi is introduced into the body from three sources; *yuan Qi* or original *Qi* which proceeds from the heavens, *kong Qi* from the air, and *gu Qi* or grain *Qi* which is ingested with food. *Qi* can be further divided in to as many as thirty-two different categories, each with a separate function (Ni 1995, 96). The function of the *zhang* organs is to take the three main types of *Qi* and separate them into an organized variety necessary for the function of the body. The heart *Qi* is responsible for connecting the body with present space and time (Ni 1995, 15). It is not a matter of an "unearthly" phenomenon connecting the mind with the brain, in the manner of a demiurge. Rather it is a specific kind of *Qi*, in this case *yuan Qi*, entering through the heart orifices in conjunction with the celestial calendar bringing the person into space/time alignment. The heart produces the heart *Qi* in a prescribed manner and then functions within a medical paradigm as understood through the *yin yang* physical and nonphysical connection.

In TCM, *Qi* is a physical and nonphysical phenomenon that may be understood through the cosmological logic of *yin yang* and the five phases, known in Chinese as *wuxing* (Kaptchuk 2000, 8). There is no dualist separation between energy and body, heaven and earth, or mind and brain. Simply, TCM is a monist system, investigating all aspects of the universe to better understand human well-being. As the cosmos contains both physical and nonphysical phenomenon, TCM looks to understand the link between them and how it may be said to affect the body. As an example, mindfulness has for centuries been seen to positively affect mental health. As such, TCM physicians looked to the nonphysical aspects of the physical mind to determine connections for the purpose of diagnosis and treatment. It is this systematic understanding of the nonphysical aspects of *Qi* in mindfulness which may afford a new perspective for science and religion on the link between present-moment living and mental health. The view may beneficially begin with an understanding of *yin* and *yang* and *wuxing* as they relate to *Qi* and mental health.

QI IN YIN YANG AND WUXING

Yin and *yang* are models that describe the presence and differentiation of *Qi* in the universe. *Yin* and *yang* are opposites in all things, yet existing in a cooperative, contingent, and unified manner (R. Wang 2012, 43).

They are light and dark, masculine and feminine, warm and cold—all dichotomous and yet dependent and integrated relationships. The model of *yin yang* is often represented as the singular “body” of the universe, with physical and nonphysical realities intertwined on the micro and macro level. This is seen in the most ancient TCM texts and in contemporary understanding (Ni 1995, 24). As an example, the energetic *yin* aspect of heart *Qi* lies in consonance with the energy of the six cycles of heaven as they are connected through the orifices. If the heart *Qi* is in tune with the present moment, then all is well. However, if the *yin* of the heart *Qi* is out of countenance, then, the physical *yang* of the heart *Qi* is affected through the systematic correspondence of the resonant pattern. This may result in detrimental effects on the physical body. This brief treatment offers a general understanding of the monist relationship between the mind and brain in TCM mindfulness. The relationship, and the perception of its nonphysical nature, is more specifically described through *wuxing*.

Wuxing presents *Qi* as both within and beyond the physical world. *Wuxing* (earth, metal, water, wood, and fire) is a mode by which to explain how the *Qi* of all environmental factors affect each other; it is a theory of systems. More specifically, “it is a way of describing the internal structure of a system [and] the process of change within a system and between the system and its environment” (Liu 1988, 48). Essentially, *wuxing* works on the idea that all things in the universe are in a constant state of interaction and they behave in predictable ways (Ni 1995, 242). The TCM science of *wuxing* looks clinically at the elements of the natural environment to define *Qi*. *Qi* is categorically organized by several conditions including movement, season, taste, and color. *Qi* is not only thought of as an ineffable cosmological construct, metaphysical concept, or philosophical idea. It is something integrally related to the physical environment defined by several factors and catalogued in a myriad of relationships (Ni 1995, 251).

The heart, as an example, is a fire organ. It is restrained by water and it feeds the earth. TCM physicians therefore look to the relationship of fire to the other cosmological elements to discern relationships which are defined by their own *Qi*. The nonphysical aspects of *Qi*—which, according to the monist system of TCM must exist—may be understood in direct connection to their physical aspects even in the most minute of cases. The nonphysical may then be seen, tasted, touched, and experienced through the heart orifice just as the *yin Qi* energy enters and affects the body’s connection from the *Tian*.

The monist understanding of *Qi* is not seen to be contradictory, or to present unknowable conundrums. Rather it is understood through praxis in *yin yang* and *wuxing*. TCM endeavors to empirically deduce the effects of *Qi* in the environment, in plants and animals, and in the human body. TCM practitioners have worked for centuries to organize and condense this knowledge into testable and repeatable treatments for patients. This

is not a matter of interpretation alone. Rather the process used by TCM doctors to systematically organize various aspects of the universe, specifically concerning how these various aspects interact and relate to each other, has a long, and meticulously recorded history (Scheid 2007, 35). This affords investigators a systematic engagement of physical and nonphysical phenomena. When speaking specifically of mindfulness then, the TCM understanding of *Qi* allows the mind and the brain to be discernably linked by tracing the nonphysical *yin* connection through the physical *yang* aspects in the corresponding system of *wuxing*. This is empirically observed through the meridians and revealed in pulse diagnosis.

The connection point between physical and nonphysical—the *yin yang* link in the *wuxing* relational model—affords an acute examination of the effects of mindfulness on the brain. This action may be traced through the meridians. In TCM, the meridians are vessels which transfer *Qi* throughout the body. Meridians are often, and incorrectly, associated with the circulatory and nervous systems as either blood vessels or nerve fibers. However, meridians are neither. Rather, they represent a lattice pattern of communicative connections (Kaptchuk 2000, 105). This system is a kind of informational network which enables the *Qi* flow in the body and serves to organize the details of the therapeutic system. The meridians also connect the body with space and time (Wu 1529 CE).

Meridians are engaged in treating *Qi* imbalance in several ways including acupuncture, cupping, moxibustion, massage, and through the use of prescription medicine. These various treatment methods “have therapeutic access to the body through the meridians” (Kaptchuk 2000, 111). Evidence concerning the release of neurochemicals by these treatments was first verified in controlled experiments with rats in 1974 and later rabbits in 1976 (Kaptchuk 2000, 176). In both experiments it was determined that acupuncture had a measurable effect on the brain states of these animals, specifically with regard to the release of neurochemicals. Further work has been done in this area as late as 2014 with similar results (Yeo et al. 2014). When the pathways of the meridians are manipulated through the physical *yang* nature of a person’s (or in this case animal’s) *Qi* the nonphysical *yin Qi* is also affected. There is no anatomical link in Western biomedicine that explains the brain’s reaction to the acupuncture points employed. However, TCM allows that the nonphysical *yin Qi* of the body is related to and flows along lines that may be traced. The flow of *Qi* in the meridians is reciprocal, with physical and nonphysical existing together. Therefore, in the same manner, when the present connection to the nonphysical *yin Qi* of the *Tian* is blocked, the physical *yang Qi* of the brain is moved.

There is a specified pattern of meridians in the human body which are examined by the TCM physician in diagnosis and treatment. Each of the prime meridians connects to a different *zhang* organ and flows in a specific direction, while the smaller meridians fan out from the primary network

(Kaptchuk 2000, 107). This interface of communication between *Qi* and the body has been mapped and tested by TCM doctors since the fifth century BCE with consistent results (Unschuld 2010). These pathways in the body are responsible for transmitting *Qi* in a very particular and traceable manner, from the outside world to the interior of the *zhang* organs. This is discerned through the practice of TCM pulse diagnosis.

The mind's ongoing connection to the present moment, as illustrated in the flow of heart *Qi*, may be detected in pulse diagnosis. The physical effect on brain states from the nonphysical mind are discovered in this method. *Yin yang* and *wuxing* provide the framework to understand physical and nonphysical relationships (where the *Qi* is situated in the universe and how it relates to the body and time). They describe the nature of *Qi* and how a monist system may be applied to understand mental health. Specifically, they offer a manner in which to view how the nonphysical energy of the *Tian* may intersect and connect with a person's physical nature. The diagnostic function of TCM pulse diagnosis allows the TCM physician to directly observe, and treat, the nonphysical effects of mindfulness on the physical brain. This is an integrated mode of diagnosis whereby science and religion researchers may find an empirical method of induction regarding the link between mind and body, between mindfulness and brain states.

MINDFULNESS, TCM, AND SCIENCE AND RELIGION

Ancient Chinese physicians, philosophers, and scholars carefully observed the heavens and their surroundings, meticulously recording data over many years. This information was then used to develop the complex systems of *wuxing* and *yin yang*, both of which include several subsystems. These logical and monist systems account for all possible variables in the forecast of macroscopic influence on the world-as-a-whole, understood through the relationships of cosmological archetypes (Ni 1995, 238). This work was then applied to medical models in order to better understand physical and mental health in the life cycle of human beings. These scholars surmised that the interaction of "heaven's *yang* and earth's *yin* through *Qi* carried out the process of birth, growth, maturation, and death" (Ni 1995, 298). This was understood and classified through *wuxing* and *yin yang*. The process was further distilled, through centuries of study, into a mode of diagnosis which tracks the flow of *Qi* in the pulse. It is through the acute study of *Qi* in this complex and interactive system that the physician is able to determine the body's connection to present space and time, through the flow of heart *Qi* as detected in pulse diagnosis.

Pulse diagnosis provides a helpful platform for science and religion scholars to engage in an empirical investigation of nonphysical influence, as it accounts for physical and nonphysical interaction in a complex system. In TCM pulse diagnosis, the physician will read and interpret the action of

Qi in the seven pulse points and determine surplus or decline, then prescribe treatments accordingly (Kaptchuk 2000, 194). While the physician may take the pulse at various points on the patient's body, there are seven points dispersed near the radial and ulnar arteries which are preferred. The pulse is then read at three levels, superficial, middle, and deep (Wang Shu-he 1997). These readings are then classified into twenty-eight categories, which may be combined and mixed to describe a particular pulse condition, indicating imbalance. This mode of examination incorporates both the nonphysical *yin Qi* in the pulse and the physical *yang Qi* counterpart found in the blood and other body fluids (Ni 1995, 15).

As with other aspects of TCM, discerning the categories of *Qi* in the pulse is the result of years of research. It is through this method that the heart *Qi* is tracked by the TCM physician. Pulse diagnosis represents the very point of physical and nonphysical interaction in diagnosis of the effects of mindfulness. Simply, if one is experiencing mental illness as a result of not being "in the moment," the attending physician will be able to tell based on a diagnosis of their *Qi*. Further, he or she will be able to discern the source of the interruption. Rather than the theoretical concept of an emergent consciousness somehow affecting the synaptic connections in the temporal-parietal juncture, in TCM there exists a method which allows science and religion scholars an empirical investigation with testable data.

It is this very particular function of *wuxing* and *yin yang* in pulse diagnosis that may be the proving grounds for a new mental health paradigm in the science and religion field. This would not be an entirely new perspective. Pulse diagnosis has, in fact, been clinically examined by experts in other fields to determine its empirical legitimacy. As an example, the feasibility of pulse diagnosis was tested by a group of bio-informatics researchers in 2013. Evolutionary biologist Yu-Feng Chung, TCM professor Cheng-Chang Yeh, professor of internal medicine Chung-Shing Hu, and electrical engineer Chung-Shing Luo conducted an experiment with the goal of tracking *Qi* in pulse diagnosis. This group of researchers began with the techniques currently employed in pulse diagnosis which have been practiced for centuries. They then moved on to quantify the methods and results. They found that, for the purposes of study, TCM pulse diagnosis can be divided into two methods: simultaneous palpation (SP) and pressing with one finger (PWOFF). Simultaneous palpation is a method of pulse taking in which the physician employs more than one finger to determine the pulse, while the PWOFF method uses a single finger on a single pulse point.

These researchers concluded that, within TCM, "the entire trend of body state is verified by SP, and unique characteristics of viscera and bowels are verified by PWOFF" (Chung et al. 2013, 342). Furthermore, the group deduced that SP may be used to analyze the dynamic characteristics of pulse signal while PWOFF may be used to "analyze the static characteristics

of pulse signal at specific pulse taking depth or pulse taking position” (Chung et al. 2013, 342). The conclusion reached by these experts was that pulse diagnosis methods may indeed “be practically implemented and also that they provide adequate results. Additionally, [they concluded] this proposal reveals the approach of quantified feasibility of pulse diagnosis” (Chung et al. 2013, 342). Those involved in this project are experts in their fields. The work they conducted was extensive, and their results have been peer-reviewed and published. However, one experiment may not afford us absolute conclusive evidence of *Qi* acting in the human body. What this study *does* demonstrate is that *Qi* in TCM may be thought of as a quantifiable reality in research projects related to the human body, including those focused on the treatment of mental health (O’Brien et al. 2013).

TCM pulse diagnosis is a complex and systematic mode of examination, specific to the patient, which addresses all symptoms of the person’s condition. Therefore, when speaking of problems associated with a lack of mindfulness such as anxiety or depression, TCM provides the framework for a dynamic analysis. In TCM, mental health-related issues (caused by emotional stress resulting in a deficiency of heart *Qi*) are indicated by an array of different pulse conditions. As an example, a patient with impeded heart *Qi* may manifest a “slippery” pulse, which indicates not only anxiety, but also may disclose a cause for such complications as delusions, blackouts, disorientation, or confusion (Kaptchuk 2000, 270). When the heart *Qi* becomes thus obstructed, there are several treatment methods. If the symptoms include melancholy, the heart *Qi* is “tonified” through the ingestion of ginseng root (Liu 1988, 253). However, if the patient suffers from melancholy and delusions, but the pulse is “thin” or “thready,” other treatments may be prescribed.

One such case history, written in 1972 by Dr. Luo Guojun, indicated that a 31-year-old female patient was suffering from depression. In addition to this, the patient was suffering from anorexia, dizziness, and blackouts. Due to the recognition of her condition through her thready pulse and other symptoms, Dr. Luo prescribed a treatment including eleven herbs to clear the blockage of heart *Qi*. After four doses were administered the patient reported complete recovery. A follow-up visit several months later showed there had been no relapse and the patient’s general health had improved markedly (Liu 1988, 341).

Beyond the apparent efficacy of TCM in a medical sense, TCM also provides fertile ground for academic discussions regarding the mind/body problem in science and religion. TCM is a monist system of understanding which presents mindfulness as an unambiguous and empirically verifiable phenomenon through case histories, medical texts, cosmological logic, and historical evidence. Further, TCM has been the subject of investigations from Western science since the 1970s. Within TCM, and in pulse

diagnosis in particular, there exists a complex system of relationships which science and religion researchers may fit into their own paradigm of scientific exploration.

Understanding actions in complex systems, such as those found in TCM, is, according to Nancey Murphy, the current framework from which researchers in mainstream Western science operate. Murphy writes that there has been a movement in recent years which demonstrates a shift from the more mechanistic systems, popular in classical physics, to “systems of thinking” (Murphy and Knight 2010, 88). This movement, which Murphy attests has occurred in a number of scientific fields, “rejects earlier bias in favor of concrete entities over processes; it recognizes that complex wholes can be more than aggregates” (Murphy and Knight 2010, 88). Murphy argues that investigators in science and religion have begun to look at complex systems as the most helpful way to explain physical and nonphysical interactions. If we are to look critically at the nonphysical side of mindfulness in a science and religion dialogue, then a complex and interactive system, allowing for physical and nonphysical entities, would seem to be the most beneficial. This is an accurate description of the monist system employed by TCM physicians to understand the function of *Qi* in, among other things, mental health.

Within TCM there exists another level of communicative interaction, unseen yet actionable and therefore practical. TCM employs the system of meridians and *zhang* organs to track this communication, and in some cases, influence its direction. TCM looks to the time associated with the movements of the *Tian* and its direct relationship to the human body. TCM doctors are aware of the need for mindfulness, not in theory, but in its very real connection to the proper flow of heart *Qi*. It is maintaining or repairing this flow, the reconnection to proper moment-to-moment living, that drives treatments of mental illness in TCM. These treatments center on a connection between the human body and a nonphysical reality linking us to the present space and time. With the use of TCM, mindfulness need not only be a neurological or psychological concern, but it may also include nonphysical influences in very real terms.

Further, the systematic framework of pulse diagnosis, employed by TCM doctors to understand heart *Qi*, lends itself well to current science and religion scholarship on human consciousness, the mind, and the physical brain. While nonphysical influence may not be a mainstay in contemporary neurology, authors such as Nancey Murphy and John Polkinghorne have worked to establish a manner of understanding the mind in relation to human brain activity and mental states. This work, while limited by the constraints of mainstream Western science, offers an opening in which TCM may be included.

This may occur through relationship and information input as, according to John Polkinghorne, “humans are mind/matter amphibians,

participating in both material and mental worlds but sharing both with other entities” (Polkinghorne 1998, 33). We are capable then, in our physical selves, of experiencing nonphysical influence. This framework is amenable with the TCM understanding of *Qi*. TCM considers humans to be both physical and nonphysical entities, sharing the physical and nonphysical nature of *Qi*. All mental activity is understood in the manner of our heart in relationship to the physical and nonphysical nature of *Qi* in the universe.

CONCLUSION

TCM may be a beneficial system to understand mindfulness in science and religion as it allows for practical data collection related to nonphysical influence on brain states. In TCM, the principles of *Qi* as understood through the empirical logic of *wuxing* and *yin yang* allow us to “understand all transformations in the universe,” whether they are physical laws or nonphysical entities (Ni 1995, 100). The nonphysical aspects of physical reality are in fact necessary for a complete investigation as, according to TCM, “the physical being of the human being cannot be discharged from the influence of *yin* and *yang* in regard to various energy conditions of the universe” (Ni 1995, 102). The nonphysical energy of *yin Qi*, implicit in the human body and the universe, may not be separated from its physical *yang Qi* counterpart.

The monist system of TCM may in fact not be too far removed from contemporary work in science and religion. As an example, Ian Barbour has written that “communication of signals in neurons requires some expenditures of energy; what is communicated is not the energy, however, but the form of the signal in relation to input and output processes occurring at higher levels than the signal itself” (Barbour 1988, 270). Something beyond the signal, at a higher level, directs the communication. It is not the formation of the synapses driven by firing neurons that we should concern ourselves with, but rather what causes the neurons to fire and how these physical processes are influenced. According to Barbour, the physical brain has an ability to attain nonphysical informational input operating at a supervenient level beyond the form of the energy used to offer communication. And further, that this communication may affect the brain’s processes. Similarly, TCM allows that the nonphysical input of heart *Qi* affects the human body and influences mental activity based in the present connection to time and space.

To speak of a configuration in the human body where “such delicate systems are never truly isolated or self-contained [indicates that] causality cannot be strictly localized within them or within their constituent parts” (Polkinghorne 1998, 36). Simply, I do not suggest that the TCM use of heart *Qi* affords us an anatomical location where we may look and say, “Yes

there is the absolute cause of all thought!” However, what TCM does offer is an interactive and complex system, which relates human mental health, nonphysical influence, and an understanding of the benefits to current moment-to-moment living that may, in a practical manner, be investigated. We might not discover the birthplace of consciousness in TCM, but the process of how thought affects the brain may be understood, and empirical data may be sought, even if it includes a nonphysical influence.

Understanding how heart *Qi* operates in the regulation of mental properties and the moment-to-moment connection humans have to their present condition may indeed provide science and religion researchers with a new avenue of investigation for mental health and wellness. This may then positively impact the relationship science and religion has to the mental health field, and provide an expanded understanding of mindfulness in particular.

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