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Review Article

The quantum universe: philosophical foundations and oriental medicine

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ABSTRACT

The existence of universal principles in both science and medicine implies that one can explore their common applicability. Here we explore what we have learned from quantum mechanics, phenomena such as entanglement and nonlocality, the role of participation of the observer, and how these may apply to oriental medicine. The universal principles of integrated polarity, recursion, and creative interactivity apply to all levels of existence and all human activities, including healing and medicine. This review examines the possibility that what we have learned from quantum mechanics may provide clues to better understand the operational principles of oriental medicine in an integrated way. Common to both is the assertion that Consciousness is at the foundation of the universe and the inner core of all human beings. This view goes beyond both science and medicine and has strong philosophical foundations in Western philosophy as well as monistic systems of the East.

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1. Introduction to mind and quantum mechanical reality

The nature of being is beyond science. However, being is the most fundamental aspect of our existence and experience. We take being as given, yet in healing and medicine, one has to address the entire being as an entity.¹ Although western medicine has in the recent past accepted the idea of integrative medicine, it still regards to a large extent the human organism as a biochemistry-driven entity at best and as a machine with parts at worst. Whereas in the East, oriental

medicine systems, whether Chinese, Korean, or Indian, go beyond the parts and the processes and also examine the human as an integrated whole, often reflecting and being part of the universe itself.

In examining the human as a whole, one comes up immediately with the issue of the mind, and in the larger sense consciousness and how it fits a “physical” existence. What consciousness is can only be directly experienced. However, “how” (rather than “what is”) consciousness operates can be put into a framework. An increasingly accepted view is that “universal Consciousness is the foundation of the universe and as such the universe itself is steeped in Consciousness”

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(where the capital C refers to universal, rather than individual, consciousness).² This holistic approach is at the heart of oriental medicine and as such, quantum physics and oriental medicine may have much more in common than one would first imagine.

To proceed, we should achieve some consensus on terminology related to consciousness. Most workers in brain science and mind/consciousness fields identify consciousness with neuro processes in the brain, i.e., they presume that consciousness is a derivative of neurophysical processes. Current brain science examines how the brain, through synaptic plasticity, is related to memory and learning. The idea that memory is stored in the brain through physical alterations goes back at least as far as Plato. In the 20th century, two guiding theories were developed: Richard Semon's theory of memory and Donald Hebb's synaptic plasticity theory. In the 1st decade of the 20th century, Richard Semon put forward a theory of memory that anticipated numerous recent developments in memory research.³

Hebbian theory proposes an explanation for the adaptation of neurons in the brain during the learning process. It describes a basic mechanism for synaptic plasticity, where an increase in synaptic efficacy arises from the presynaptic cell's repeated and persistent stimulation of the postsynaptic cell. According to Hebb, learning is not simply something that is impressed upon a passive brain, but a process where the cellular structure of the brain is permanently modified. Many studies have shown the structure and physiology of neuronal circuits, but we still only have a very limited understanding of how behavioral learning is implemented at the network level.^{4,5}

Serotonin 5-HT receptors (5-HT) are widely distributed in the central and peripheral nervous systems and essential for learning and cognition. Recent studies show that the serotonin (5-HT) system plays a modulatory role in cognitive processes, particularly in learning and memory.⁶ Kondo et al⁷ suggest that the 5-HT_{3A} receptor could be a key molecule regulating fear memory processes and a potential therapeutic target for fear disorders.

Studies in inhibition of 5-HT₃ receptors show its physiological roles in the modulation of nociception, the cause of nausea and vomiting.⁸ Yang et al⁹ have shown that 5-HT₃ receptor antagonists are effective therapeutic agents for the treatment of chemotherapy-induced nausea and vomiting.

The field of interpersonal neurobiology¹⁰ goes further, as it extends the concept of the mind beyond the physical brain.

Modern quantum mechanics (QM) has placed a central role for the mind in physics. In fact, many physicists and most founders of QM regard this theory more as a guidepost of how the mind interacts with Nature. Great physicists like Niels Bohr,^{11,12} Max Planck,¹³ Werner Heisenberg,¹³ Wolfgang Pauli,¹³ Erwin Schrödinger,¹⁴ Sir Arthur Eddington,¹³ Sir James Jeans,¹³ von Neumann,¹⁵ and others assigned the role of observations and measurement as central. The standard von Neumann¹⁵ interpretation of orthodox quantum theory is that a quantum system evolves deterministically through unitary time evolution of the quantum state. However, this evolution is interrupted upon measurement and a particular value of the system emerges, given by theoretical quantum probability. What specific value will emerge though, quantum theory

cannot predict. Observational choices in the laboratory determine the context of what is to be observed, and as Richard Feynman and John A. Wheeler held, without observation, quantum systems do not even have any properties. As Wheeler¹⁶ stated, "no phenomenon is a phenomenon until it is an observed phenomenon". Modern quantum field theory^{17,18} is the most successful theory of modern science and it extended standard von Neumann QM. The observer's choices as Henry Stapp^{19,20} emphasizes play a fundamental role in the "external" reality that one observes, in accordance with Bohr's the Copenhagen interpretation of QM. The observer is an integral part of the process of what is to be observed. Quantum theory opened the door to consciousness but did not provide a solution^{21,22} as to "what consciousness really is". Even if physicists such as Einstein¹³ and Bohr differed on the interpretation of QM, the spiritual aspect brought out by the importance of the mind, was a common ground for all great thinkers of the first part of the 20th century and continues to this day.

This review article offers the possibility that the quantum mechanical view of the universe is in agreement with the operational principles of Oriental Medicine, which would allow for a modern synthesis across health and medicine. It also offers the possibility that the great schools of the East and in fact Western philosophy itself are very relevant for the synthesis between modern physics and oriental medicine. We emphasize that the work presented here is a framework for further research and practical applications, to advance human health and well-being, the goals of Oriental Medicine. In summary, the nature of Reality, consisting of universal Consciousness, the Self of every being and at every level of existence, the individual human being, and the world of objects, all form a triad of undivided wholeness.

2. Philosophical systems

Perennial philosophies of the East and the West concern themselves with the nature of Consciousness, the relationship of the individual to the universe, and the relationship of the individual to Consciousness itself.^{23,24} Although Oriental Medicine is practical and yields specific results, its origins are tied to ancient systems of thought originating in India, China, and other countries of the East.

The nondualistic systems originating in India, specifically Advaita Vedanta and Kashmir Śaivism, give us a higher view of the individual, the universe and the nature of consciousness.²⁴ The underlying premise, is that the human being is a reflection of fundamental Consciousness and the universe is reflected in the individual and vice versa. This underlying reality of the Absolute is called *Brahman* in Vedanta and *Paramaśiva* or Supreme Śiva in Kashmir Śaivism. Both accept Consciousness as the ultimate Reality, the underlying reality of all objects, subjects, and processes tying them together. Monistic (Advaita) Vedanta emphasized that Brahman is the only reality and the universe as something separate is an illusion. Śaivism accepted the universe as real, being part of universal Consciousness, i.e., Śaivism is more natural than the modern scientific approach.

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