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RESEARCH ARTICLE

WHAT IS THE ESSENCE OF LIFE? COMPARATIVE STUDY OF QUANTUM ENTANGLEMENT & YIN-YANG EMPATHY

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ABSTRACT

By whom was life created? Is it *God*? Or *Nuwa*? Or *Tao*? What is the essence of life? This paper may have the answer. Alain Aspect, John Clauser, and Anton Zeilinger, winners of the 2022 Nobel Prize in Physics, proved the correctness of quantum mechanics by Falsification Bell's inequality with their experiments on entangled photons, turning Einstein's ghost action at a distance on its head. Now quantum entanglement will officially accept as human. Quantum entanglement explores the life sciences from a physical perspective. However, ancient Chinese philosophers during the Spring and Autumn Period (770-476BC) had already proposed a similar theory called Yin-Yang (a different name from quantum). Yin-Yang is a minor unit for Chinese people to explore the composition of living matter from a natural philosophical perspective. At the same time, quantum is the smallest and inseparable basic unit for Westerners to explore the Nature of life from a physical standpoint. Quantum entanglement & Yin-Yang empathy are the same force, and finally, in the 21st century officially meet. Why can quantum entanglement & Yin-Yang empathy pass through the ancient-modern and the East-West, transcend the boundaries of time-space-region, and appear in notable similarities? Because they may be the essence of life.

INTRODUCTION

Origin of species: In 1859, Charles Darwin (Darwinism) published his theory of evolution with convincing evidence in his book *The Origin of Species* (1859). Summarized contents as over breeding, the struggle for survival, genetic variation, and the survival of the fittest[1]. At the end of the 19th century, August Weismann (neo-Darwinism) opposed Darwin's idea of acquired inheritance but at the same time accepted Darwin's general concept of natural selection and extended this selection mechanism to germplasm and put forward the 'germplasm theory,' that is, organisms are composed of germplasm and constitution[2].In 1937, Theodosius Dobzhansky (Modern Darwinism) proposed in the book *Genetics and the Origin of Species* that 'Synthetic Theory' became the theoretical basis of the Synthetic theory; its essential contents include

- the population is the basic unit of biological evolution;
- The study of evolutionary mechanisms belongs to population genetics;
- Mutation, selection, and isolation are three basic steps in speciation and biological evolution [3].

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In 1970, Theodosius Dobzhansky revised the synthesis theory in his book The Genetics of Evolutionary Processes, arguing that natural selection is not simply sifting through most organisms; natural selection preserves many genes that are harmful or even lethal in the heterozygous state because there are various selection mechanisms or patterns in nature [4]. However, Darwinism, neo-Darwinism, and Modern Darwinism have not been able to provide a convincing explanation of some critical issues in the study of evolutionary theory, such as the formation of new structures of organisms and new organs and other relatively complex problems with mutation, gene recombination, selection and isolation alone. Therefore, the search results for the origin of species do not explain the nature of life. Next, we can explore Yin-Yang empathy and quantum entanglement. Can we conclude that the essence of life is the development of quantum entanglement and Yin-Yang empathy?

Quantum entanglement & Yin-Yang empathy: In 1900, M. Planck first put forward the blackbody radiation formula in his paper On an Improvement of Wien's Equation for the Spectrum [5]. in the same year, he also proposed the energy element ε(quantum) in his paper On the Law of Distribution of Energy in the Normal Spectrum:

Moreover, it is necessary to interpret UN not as a continuous, infinitely divisible quantity, but as a discrete quantity

composed of an integral number of finite equal parts. Let us call each such part the energy element ε ; consequently we must set

UN =P ε

Where P represents a large integer generally, while the value of ε is yet uncertain [6].

In 1935, EPR(Einstein-Podolsky-Rosen) doubted the theory of quantum entanglement through the contradiction between local realism and the completeness of quantum mechanics demonstrated by the experiment of measuring particle coordinates and momentum and the 'hidden variable' of putting forward entanglement between quantum [7]. In other words, Einstein rejected the quantum mechanical connection between two particles and believed there was no spooky interaction between quantum particles at a distance. In 1964, John Bell tried to use an experiment to prove the existence of 'hidden variables,' putting forward the Bell inequality; the experiment proved that established Bell inequality (|Pxz-Pzy|≤1+Pxy) [8], proving that the 'hidden variable' is valid and the existing quantum mechanics is incomplete, further supporting and consolidating Einstein's view. However, science is a continuous process of being verified or falsified by experiment and verified by natural practice. In 1969, John F. Clauser et al. extended Bell's Inequality to entangled photon pairs [9]. In 1972, John Clauser and Stuart Freedman boldly fired the first shot at proving Bell's Theorem; completed an experimental test of Bell's inequality using polarized entangled photon pairs [10]. The results of this experiment clearly show that the CHSH inequality is not valid, which contradicts the local hidden variable theory and is consistent with the prediction of quantum mechanics [11]. In 1982, Alain Aspect improved Clauser and Freedman's experiments on Bell's Theorem and proved the non-local essence of quantum mechanics [12]. In 1998, Anton Zeilinger eliminated the localization vulnerability, and the experimental results were significant. It turns out that John Clauser, Alain Aspect, and Anton Zeilinger all had experimental results that violated Bell's inequality [13, 14]. In 2000, Jianwei Pan et al. carried out the Bell experiment of three particles to achieve non-local entanglement among three particles [15]. This series of sophisticated experiments supported the orthodox interpretation of quantum mechanics, and quantum entanglement was finally straightforwardly presented to the world. The two entangled quanta are related no matter how far apart they are. When one particle changes, the other particle's state changes correspondingly (In the opposite direction) instantly: a positive (Yang) and a negative (Yin). It is worth wondering why this pair of quanta would do the same thing beyond space and time, even beyond the speed of light. What forces make them react accordingly? Of course, Yin-Yang in the Tai Chi chart (there is me in each other and you in each other, we form a circle of life together) gives a perfect answer to these two questions, that is, the quantum itself is one (So it can play a magical role like ghosts). Not only is this pair of quantum this is one, man and the universe are one, but we are the universe, and the universe is ours, a big ego, a small ego; All natural things are born with the same root, that is, Heaven and man are one, all things are one. Everything has derived from Yin-Yang. *Tao Te Ching · Chapter 42*(*Tao Te Ching*, also known as *Laozi*, is only five thousand words but covers everything) says Tao begets one (*Tai Chi*), life begets two (Yin and Yang), two begets three(three Yao), and three (Eight Diagrams see Fig.7A) begets all natural things [16].In all things, from Yin-Yang. How integrated Yin-Yang is because of *Qi*(gas). *Tai Chi* is the undivided vitality of chaos and then divided into Yin-Yang, and the *Qi*(gas) of Yin and Yang combine to produce all things in the universe. *Book of Changes · Pi Gua*(*Book of Changes,* also known as *the I Ching,* is not a feudal superstition; it can predict the future and is a profound science. It is also the Head of the Group in China Classic) mentioned that if Heaven and Earth are not connected, everything is not connected, and if the upper and lower are not connected, there is no state in the world [17]. Therefore, no creation will exist if Heaven and Earth (Yin-Yang) do not meet. It is also mentioned in the book Children's Readings that the solitary Yin is not born, and the solitary Yang is not growing, so the Heaven and the Earth are matched with Yin-Yang [18]. So, the sense of the intersection of Yin-Yang is the fundamental premise for the generation and existence of everything. Yin-Yang is the basis of the *Book of Changes*, the essence of Chinese culture and the most basic form of life. Coincidentally, quanta are also the minor components of matter that physics breaks down — elementary particles. Is this a coincidence that spans time and space, connecting East and West?

METHODS

This paper uses the literature research method (literature on Yin-Yang empathy and quantum entanglement); interdisciplinary research (biology, physics, philosophy, genetics); this paper makes a comparative study of quantum entanglement and Yin-Yang interaction from multiple perspectives using citation (quoting the remarks related to this paper), analogy (comparing quantum entanglement and Yin-Yang interaction and putting forward hypotheses) and graphic method (observing through the collected pictures) to explore the Nature of life. Tai Chi Yin-Yang, the solar system, and the Milky Way all running appear 'S' and form a circle (whirlpool). Our life also developed from a fertilized egg (circle); the DNA double helix is two intertwined 'S' shapes. Look at our fingerprint (spiral/circle) and the Earth's orbit around it (swirl/circle). Therefore, we will conclude that the essence of life has derived from this most basic and smallest 'circle' (quantum and Yin-Yang).

RESULTS

Are quantum entanglement and Yin-Yang empathy the essence of 'everlasting life? We compare them to images of the Milky Way and the Solar System and then argue from a biological and physical point of quantum entanglement = Yin-Yang empathy.

Compare images to find commonalities: We observed and recorded Milky Way and solar system images through NASA (National Aeronautics and Space Administration). From the comparison of the rotating image of the Milky Way, we can intuitively see that the Milky Way is a giant whirlpool, and in the same direction in order to keep running (left/right, up/down), in the shape of 'S,' together forming a vortex, like a 'circle.' (as shown in Fig.1 and Fig.2). Like the Milky Way, distant galaxies follow this pattern from young to old. Robert C. Kennicutt Jr.'s news & views in Nature, 'Young spirals get older,' describes how Genzel et al. used high-resolution optical instruments to observe a newly formed spiral galaxy; the information and evolution of distant galaxies are shown in pictures (seeFig.3).

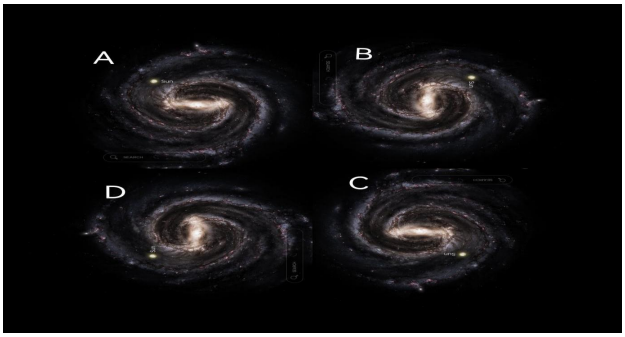

Fig. 1. Milky Way rotation image(A, B, C, &D Angleθ={0°, 90°, 180°, 270°}). From. https://www.nasa.gov

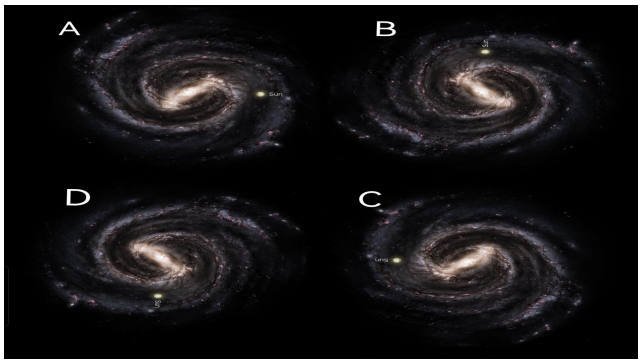

Fig. 2. Milky Way rotation image (A, B, C, &D Angleθ={ -45°, 45°, 135°, 225°}) From: https://www.nasa.gov

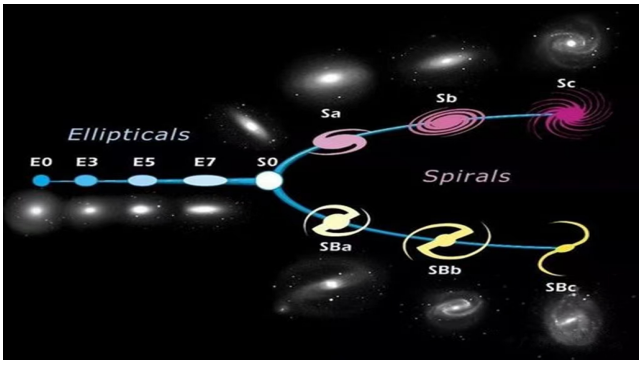

Fig. 3. The evolution of far-off galaxies From: https://doi.org/10.1038/442753a

We can also see from the picture that these galaxies are also from the 'ellipticals,' under the 'force' of 'S' constantly rotating, into a 'spiral.' Comparing images of the solar system from far away to near, we can see that the solar system has also swirled and moved in the same direction (left/right; up/down), in the shape of an 'S,' together form a vortex, like a 'circle' (see Fig.4).

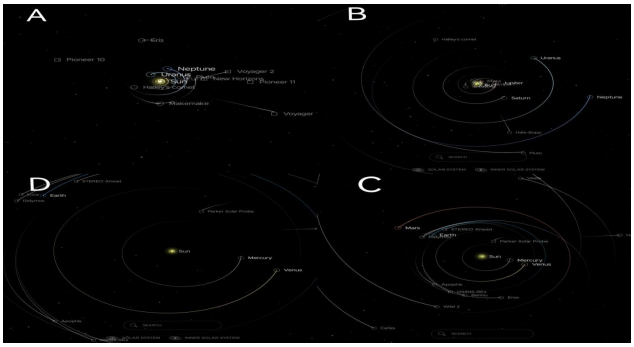

Fig.4 The solar system images From: https://www.nasa.gov

Next, we can observe the image of quantum entanglement (see Fig.5). We can see that this pair of quanta has made up of two 'C' of the same size. There is a gap between them, but they have attracted by the 'force' and are in a state of mutual attraction. Because these are the first images ever taken, we need to determine if they rotate in an 'S' shape.

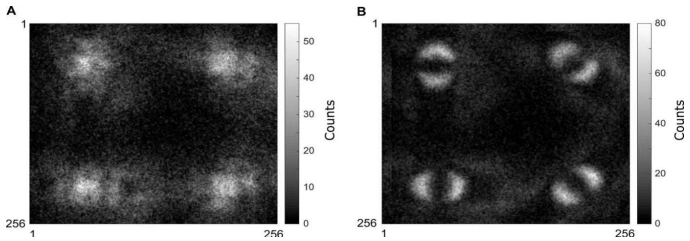

Fig.5 Four images of the solar system as observed. From: https://www.science.org/doi/10.1126/sciadv.aaw2563

Finally, we can observe the Yin-Yang empathy image in the Tai Chi chart (see Fig.6). We can see that they have an 'S' shape and that there is Yang in Yin and Yin in Yang. Yin and Yang are not alone but are controlled by two' tiny hearts' (black heart and white heart) so that the black and white two parts are closely connected, forming a 'circle.'

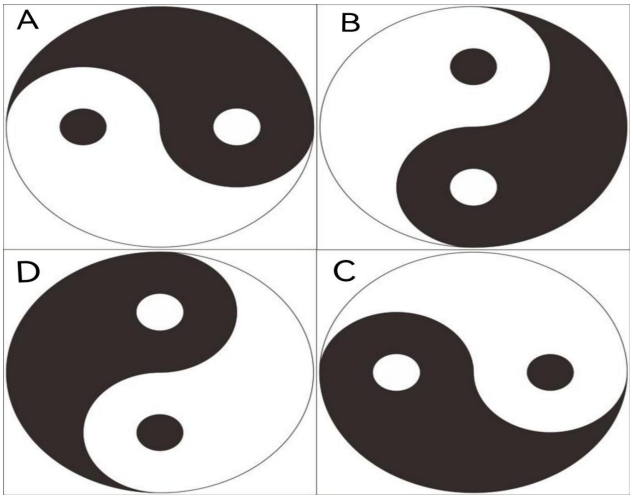

Fig. 6. The four images of Yin-Yang empathy in the Tai Chi diagram

From: What is the Essence of Life? Comparative Study of Quantum Entanglement & Yin-Yang Empathy Through the above image and analysis, from the large galaxy to the small quantum (Yin-Yang), they have a common representation feature, namely 'S' and 'circle.' We found: that the 'S' and 'circle' are the symbols of life. Galaxies are too far away for us to fully 'see' their Nature with our current technology, and the theory of quantum entanglement has yet to be perfect, and we can only see their very first images. However, can we observe the changes in Yin and Yang in the *Tai Chi* image? Isn't that a sign of the Nature of life? How clear it is! Thus, the original essence of life is from the 'circle,' 'S' is the 'force' of rotation and movement, and Yin and Yang is the 'force 'that divides the 'circle' in two, but not completely separated. The two parts are closely connected and still 'life' orderly in the circle. It is like the Earth is constantly spinning on its axis; the Earth revolves around the sun in the solar system; the sun goes around the galactic center in the Milky Way, and so on. Keep moving; life goes on. So, can we work backward: should quantum also

follow the laws of life? According to this law, the quantum is an indivisible whole controlled by a shared consciousness. However, it takes on two forms (positive/negative), which is why scientists now conclude that no matter how far apart the pairs are, the behavior of one quantum must affect the other. Then, we will compare and analyze the relationship between quantum entanglement and Yin-Yang empathy from biology, genetics, and physics perspectives. Are we going to find something new?

Quantum entanglement & Yin-Yang empathy & Consciousness: Yin-Yang is a generalization of the opposites of interrelated things or phenomena. Opposites are restricting, mutual root and mutual use, mutual rise and fall, and mutual transformation between them. Yin-yang is an ancient philosophical theory that studies the connotation of Yin-Yang and its movement and changes in rules. Explain the universe's occurrence, development, and change. It is widely used in social life, ideology, and culture and is an essential basis for the theory of traditional Chinese medicine[19]. From the perspective of molecular biology, a gene is a fragment of DNA carrying specific genetic information. From the perspective of philosophy, there are a lot of philosophical contents in the structure and function of genes, among which the theory of Yin-Yang had fully reflected in genes. The structure of a gene is essentially DNA and a molecule made up of two strands of deoxyribonucleic acid as a backbone. From the perspective of its structure, the two chains are an organic whole. However, from the perspective of the direction of the two chains, they are opposite because DNA has divided into a justice chain and an antisense chain, one of which is in the direction of 5' ※ 3', while the other must be in the direction of 3' ※5'. From the perspective of base pairing, the base of one chain is C, and the corresponding base of the other chain must be G. If A particular base is mutated, the corresponding base must also change, indicating that the Yin and Yang properties of C and G, A and T are opposite [20, 21]. For this reason, from the perspective of gene structure, the double-stranded structure is a whole, in which there is the opposite trend of nucleotide chains, the precision of base complementary pairing, reflecting the opposite restriction relationship in the yin-yang unity. First, DNA is a double helix consisting of two single strands, neither of which can exist independently. Only double-stranded DNA is the most stable. When one of the chains is damaged, the other chain can use as a template for repair. When the damage degree of one chain exceeds its repair ability, it will break and degrade, and the other chain will no longer exist. Secondly, the replication mode of DNA is semi-preserved replication, which respectively takes each strand as the template and follows the principle of base complementarity. The parent accepts one strand in the offspring's DNA, and the other strand is synthesized based on the template. As the saying goes, 'without Yang, Yin cannot be born; without Yin, Yang cannot transform.' The rise and fall of Yin-Yang mean that the power contrast of the two opposing sides is not constant but in constant growth and decline within a specific range in a dynamic equilibrium state. In the late stage of DNA replication, the end of DNA may have a single strand in a short time, that is, the state of lone Yin or Yang. Telomerase will be activated to replenish it in time to restore the balance of Yin-Yang[22]. If we look at Yin-Yang from the perspective of DNA, will we find that this is consistent with the principle of quantum entanglement?. Moreover, Schrodinger's thought experiment with a 'Superposition State' cat that is neither dead nor alive 'provides an example of how quantum theory can apply from the micro to the macro. Quantum Entanglement is both a microparticle and a macro particle. So what happens when quantum entanglement enters the realm of consciousness? How does self-awareness reflect existence? Is it because of quantum effects? According to physicists' understanding of consciousness, consciousness depends on a quantum brain with quantum effects [23]. In the meantime, some quantum physicists' experiments show that if consciousness is disturbed by fluctuations of the Dispersive State, the conscious and unconscious mind mutate in what is known as a 'Collapse' of consciousness; that is, the state of consciousness changes from the 'superposition state' of quantum entanglement before observation to a particular state of consciousness. The collapse dynamic theory thus opens the door to the elaboration of interaction theory [24].

The collapse theory in quantum mechanics states that the results of an experiment are different only in the presence of an observer. In other words, the 'world' 'exists' because of our' consciousness,' and the 'world' we call 'world' is the 'seen world' we choose with our senses and minds. Consciousness comes from quantum entanglement, and quanta pervade the universe. It means that not only are human beings conscious, but all natural things with living life are conscious. Then will all natural things produce quantum entanglement? So, could quantum entanglement be our consciousness? John S. Tuesday, from a biological perspective, argues that we misrepresent the Nature of consciousness and ignore our physiological function, namely consciousness, and proposes that consciousness embodies quantum entanglement. A novel cellular consciousness mechanism, quantum entanglement as a basis for symbiosis. He believes this symbiosis connects the local consciousness of physiology to the non-local consciousness of the universe. This cell consciousness 'coherently' merges quantum mechanics and classical physics. He thinks the influence of microgravity on phenotypic identity reveals the evolution of consciousness from cell membrane to physiology and experimentally reveals two levels of consciousness. Like the classic double-slit experiment, it reveals the dual ways in which consciousness functions both as the daily activity of the cell membrane and as the transcendence of our physiology [25].

As a result, from the above observation, comparison, and analysis, we find that the essence of life is quantum (Yin-Yang). Yin-Yang is quantum, and quantum is Yin-Yang. All life begins with the quantum (Yin-Yang), the essence of life. Yin and Yang produce empathy, and quantum produces entanglement, both from the 'power' of 'consciousness'; this 'power' keeps life going. To put it simply: quantum entanglement = Yin-Yang empathy = consciousness.

DISCUSSION

Mathematical basis: The ideological and cultural views of the image number symbol, the coexistence of Yin and Yang, and the changing in the *Book of Changes* are very similar to the mathematical thoughts in Quantum mechanics, the uncertainty principle of quantum field theory, and the consciousness of quantum entanglement. *Tao* (*Tai Chi*) produces Heaven, and after having Earth, Heaven and Earth produce people and then have everything, Yin-Yang balance, and life exists. The symbol of the image number is the basis of *Tao Te Ching*, and the image number is a kind of number, so it can say that 'number' is the basis of Yin-Yang empathy. What is the

mathematical basis of Tai Chi? The symbol of the image number is the basis of the *Book of Changes*, and the image number is a kind of number, so it can say that 'number' is the basis of the *Book of Changes* [26]. Every Yin Yao (--) exists Yang, and every Yang Yao (—) exists Yin. The Eight Diagrams symbolize the Yin Yao and Yang Yao, where the Yang Yao indicates Heaven and the Yin Yao indicates the Earth. Therefore, it symbolizes the combination of Heaven and Earth and Yin and Yang to produce everything. The Yin Yao and Yang Yao lines are combined, and the three lines form hexagrams (2^3=8), acting as eight diagrams (as shown in Fig.7A, qián(☰), kūn(☷), kǎn(☵), lí(☲), zhèn(☳), xùn(☴), gèn(☶), duì(☱)). According to the *Tao Te Ching*, all living things evolved from eight diagrams. Suppose we are going to discuss the mathematical basis of quantum mechanics and going to start with quarks. Back in 1964, Murray Gell-Mann proposed quarks (up quark U 2/3e, down quark D-1/3e, singular quark S-1/3e), which make up the protons (uud), neutrons (udd), and other substances [27, 28]. Quarks are the minor components of matter currently studied by physical science. Quarks are inseparable because of the 'force' of 'gluons' (this is called quark confinement: quarks with color charges have confined to other quarks due to the strong interaction force between quarks, which increases with distance and therefore cannot find alone [29]). Quantum chromodynamics (QCD) describes the strong interaction between quarks and gluons [30, 31]. Now, we compare a set of 8 diagrams with quark diagrams (protons and neutrons) (see Fig.7) and see that Yin/Yang in the Tai Chi diagram is equally divided (positive/negative) and is conserved, with negative (Yin) in positive (Yang) and positive (Yang) in the negative (Yin); Quarks (2/3e-1/3e-1/3e=0) are also positive/negative conserved. Thus, the positive/negative charge in physics corresponds to the positive/negative in philosophy. We see the proton and neutron composed of three quarks in Fig.7, besides ☰ pure Yang and ☷ pure Yin two diagrams; the remaining six divination have Yin-Yang, and all the gossip, protons, and neutrons are composed of three-part. We can boldly guess: Does Yin Yao + Yang Yao = quark? Whether or not a proton corresponds to one of ☲ / ☵ / ☶ and a neutron corresponds ☳/ ☵ / ☶ to one stick.

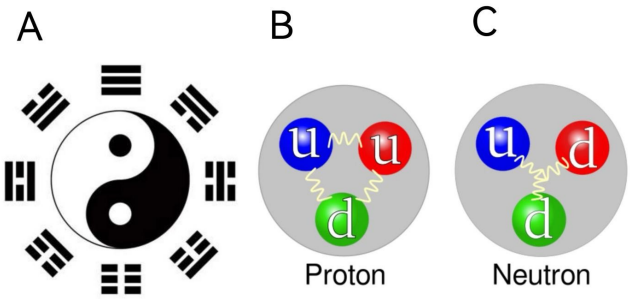

Fig.7. The Yin-yang Eight diagrams and quark (proton & neutron) diagrams

From: What is the Essence of Life? Comparative Study of Quantum Entanglement & Yin-Yang Empathy. The Eight Diagrams intersect with each other and establish 64(8^2=64) hexagrams(see Fig.8 qián(䷀), kū(䷁), zhūn(䷂), méng(䷃), xū(䷄), sòng(䷅), shī(䷆), bì(䷇), xiǎoxù(䷈), lǚ (䷉), tài(䷊), pǐ(䷋), tóng rén(䷌), dà yōu(䷍), qiān(䷎), yǜ(䷏), suí(䷐), gǔ(䷑), lín(䷒), guān(䷓), shì hé(䷔), bì(䷕), bō(䷖), fù(䷗), wú wàng(䷘), dà xù(䷙), yí(䷚), dà guò(䷛), kǎn(䷜), lí(䷝), xián(䷞), héng(䷟), dùn(䷠), dà zhuàng(䷡), jìn(䷢), míng yí(䷣), jiā rén(䷤), kuí(䷥), jiǎn(䷦), jiě(䷧), sǔn(䷨), yì(䷩), guài(䷪), gòu(䷫), cuì(䷬), shēng(䷭), kùn(䷮), jǐng(䷯), gé(䷰), dǐng(䷱), zhèn(䷲), gèn(䷳), jiàn(䷴), guī mèi(䷵), fēng(䷶), lǚ(䷷), xùn(䷸), duì(䷹), huàn(䷺), jié(䷻), zhōng fú(䷼), xiǎo guò(䷽), jì jì(䷾), wèi jì(䷿)) patterns by counting numbers. Then we compare the 64 hexagrams(*Tai Chi* to Yin-Yang to eight diagrams to 64 trigrams, see Fig.8A)with the decomposition diagram of matter(Water to water molecules to electrons/ nuclei to neutrons/protons to quarks, see Fig.8B) and find that it starts from the smallest constituent unit to matter (everything).

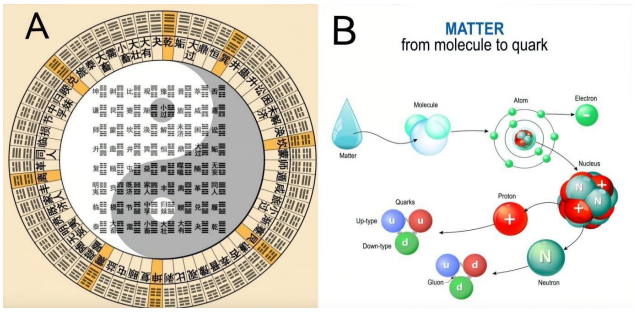

Fig. 8. 64 hexagram distribution and material structure diagram

From: What is the Essence of Life? Comparative Study of Quantum Entanglement & Yin-Yang Empathy. The *Book of Changes* uses the 64 hexagrams to construct a more complex and phenomenal material and spiritual world. The so-called used hexagrams to describe known things by experience objectively, infer (predict) the unknown by mathematical logic, divide the basis of existence, and abstract the natural reality by a rigorous mathematical logic system. In addition, *Inner Canon of Huangdi* (A masterpiece of Chinese medicine) · *Su Wen*: in ancient times, people who knew *Tao* were skillful in Yin-Yang and numbers[32]. Bing Wang says: The man of Yin-Yang, Heaven, and Earth are always *Tao*. The art of numbers is the ethics of preserving life [33]. It is the foundation of modern science building that the ideal image number presumption has taken as the fundamental mathematical basis in the *The I ching*. Quantum Theory is a scientific theory based on mathematics. A scientific theory is nothing more than a mathematical model we use to describe our observations: it exists only in our heads [34]. Mathematics is their only factual basis. Quantum theory has based on a mathematical model, and the mathematical model of the mathematical foundation is a kind of systematic construction reference. The gradual expansion on this basis is objectively solid and firm foundations. This construction is the connotation and internal requirement of a mathematical model [35]. Based on the mathematical model, it constructs a way to describe and explore the world and continuously expands the denotation to promote the cognition of the Nature of the world. The mathematical spatial and quantitative abstractions required by quantum theory reflect the necessary logical rigor and the mathematical Nature of Yin-yang theory. The existence mentioned in the Book of Changes has based on the absolute number, then on the primary number, and then on the applied number. Just as in quantum theory, E. Schrodinger stated that the eigenvalue of particle spectrum has obtained after mathematical reasoning of classical Hamiltonian function and the introduction of De Broglie Wave formula calculation: $a\Psi(r) = En\,\Psi(r)$, where *a* is the Hamiltonian operator, *En* is the

energy eigenvalue, and *r* is the coordinate operator. The Schrodinger wave function formula is a logical and rigorous mathematical system that abstracts the particle spectral object as a classical formula. However, the abstract and logical concepts of the *The I ching* converge with quantum theory in Nature. Thus, mathematics and physics are the basis of both quantum entanglement theory and Yin-yang sympathetic theory [36].

Principle of analysis: *Book of Changes · Zhun Gua* is the basic premise of the formation and existence of all things. There are only things between Heaven and Earth, so we accept it as *Zhun*. *Zhun* is full; *Zhun* is the beginning of all things [37]**.***Book of Changes · Xian Gua*: Salty, feeling also. Soft and just down, two *Qi* should be the sense of Heaven and Earth and all things; saints are touching the heart and world peace. At the intersection of Yin and Yang, there must be a sense of phase, phase sense will change, and then there is life [38]**.** *Book of Changes · Shuo Gua Zhuan*: Once upon a time, Yi, written by a sage, followed the principles of life. It is the way of Heaven that Yue Yin and Yang [39]**.** The *Book of Changes* puts forward the view that 'Yin and Yang produce each other. *Book of Changes· Xi Ci Shang*: One Yin and one Yang is called *Tao* [40]. Yin is the chaotic origin of all things, while Yang is the mixture of the evolution and growth of all things. However, the two are not absolute. The boundary is always human (all things in Nature). Everything that can see, touch, and listen is Yang (Light matter), and the opposite is Yin (Dark matter). In other words, Yang represents the explicit, and Yin represents the implicit. The clear and implicit yardstick is still a man (Nature). In terms of epistemology, the concept extension of Yin and Yang depends on the judgment function of human consciousness (quantum entanglement) for external things. About the origin of life, Yin and Yang are the existence of one body and two sides; life has both Yang and Yin. Within Yin, there is Yang, and within Yang, there is Yin. Plato mentioned similar ideas: Is there not a little ugly among these beautiful things? Is there not a little injustice among the many righteous things? In many sincere things, is there not a little insincere[41]? Because of this, Yin-Yang can transform into each other. The difference is whether they can be reflected and grasped by human consciousness. In quantum theory, the quantum field with high degrees of freedom includes the generation and destruction of particle pairs, which is one of the primary forms of matter and reflects the differentiation of the field in the form of quantization. When the Quantum Field is Excited, the electrons are excited to produce fundamental particles. When the quantum field is in the Ground State, the energy of the atoms decreases to maintain the lowest energy level. At this time, the vacuum state has formed. Vacuum is only one of the quantum field forms, so the vacuum is also a matter, full of the generation and destruction of particle pairs, and is a kind of objective existence; vacuum also has many properties of the fact of the matter. Quantum vacuum fluctuation, for example, means that the vacuum can change from Yin to Yang. In the case of the original creation of the universe, quantum physicists discovered that the Singularity of the actual design of the universe had to consider quantum entanglement. Thus, the *The I ching* can trace back: the universe evolved from *Tai Chi*(Yin-Yang). Singularity represents the primordial quantum transformation of the universe from Yin to Yang. In physics, the uncertain existence of the state is Yin. In the exposition of all microscopic particles, the performance of 'particle nature is more prominent, and the material wavelength is minimal in the physical particles. Physical particles with a more prominent particle nature have their source. For this source, quantum physicists believe that energy produces physical particles. The power to create biological particles is obtained from the cosmic gravitational energy and returned to the gravitational energy at the end of the universe. The universe's total energy is conserved, the universe's evolution means the differentiation of Yin-Yang energy, and quantum entanglement is compatible with Yin-Yang empathy.

Change &Uncertainty: Ancient Chinese people attach great importance to observing the changes in Yin-Yang. The changes in light and shade, cold and heat, and alternations show Yin-Yang changes. For example, the *Inner Canon of Huangdi · Su Wen* says that the signs of Yin-Yang are also. Therefore, the day and night have the alternating law of light and dark, the four seasons have the change of heat and cold, and all things in Heaven and Earth are biochemical and prosperous [42]. Jiebin Zhang Note: Yin-Yang is fire and water; fire and water have used in heat and cold, so the reciprocation of Yin-Yang, cold and heat, shows signs. Spring and summer are mainly Yang in growth, and autumn and winter are mainly Yin to hide [43]. *Spring and Autumn Dew· Five elements* of the Identical Life records: Heaven and Earth, the *Qi*, into one, divided into Yin-Yang, respectively, have four seasons, classified as five elements. The five elements have five features, which are more than one and more than one [44].The universe is constantly in motion, the seasons are constantly changing, and everything is constantly going through growth, maturity, and an aging cycle. Change is the fundamental way things exist. Everything in the world is in constant change. In quantum theory, everything is also a recurring existence of uncertainty. Entanglement involves the uncertainty of a random probability, which contradicts the improbability of classical physics. Classical physics is subject to the law of cause and effect, in which some vagaries are due to the immaturity of the measurement means and the measurement tools. However, in quantum mechanics, if we want to determine the exact position of a quantum, then we need to use the shortest wavelength wave so that the larger the perturbation of the quantum, the less accurate the measurement of its velocity. Suppose we want to measure the velocity of a quantum accurately. In that case, we have to use a wave with a longer wavelength, making it impossible to determine its position accurately[45]. The Uncertainty Principle proposed by W.K. Heisenberg in 1927 shows that the position of a particle and the momentum cannot be determined simultaneously. The position and the momentum uncertainty comply with the inequality $\Delta x\Delta p \geq h/4\pi$, where h is Planck's constant [46]. Similar uncertainty relations exist between physical quantities such as energy and time, angular momentum, and Angle. Since the uncertainty principle is an essential result of quantum mechanics, many general experiments often involve some problems. Some experiments specifically test this or similar principles. For example, check the 'digital-phase uncertainty principle' in superconducting or quantum optical systems. The relevant uncertainty principle research can use to develop the low-noise technology needed for the gravitational wave interferometer [47]. Some physical quantities of a microscopic particle (such as position and momentum, azimuth and moment of momentum, time, and energy) cannot have definite values simultaneously. The more confident one quantity is, the more uncertain the other quantity will be. The product of the error (standard deviation) of measuring a pair of conjugate quantities must be more excellent than the constant $h/4\pi$ (*h* is Planck's constant). It reflects the fundamental law of the motion of

microscopic particles — the probability amplitude function (wave function), which takes the conjugate quantity as the independent variable and constitutes the Fourier transform pair; the fundamental relation of quantum mechanics is another important principle in physics [48]. On this basis, Heisenberg completed his own quantum Mechanics system as Matrix Mechanics, which stated quantum mechanics in such a way that the relationship between quantities was no longer a regular number, but an operator relationship. There were p × q ≠q × q, that is, non-commutability. The birth of matrix mechanics is to complete the determination of uncertainty in mathematical logic. Quantum reality leaves old reality and makes new reality possible [49]. This uncertainty is standard with the connotation of Yin-Yang change[50]. *Book of Changes* traces the causes of movement and change in the world from the root of everything; in the hexagrams, Yin-Yang intersects and changes from small to large, Fierce, unchanged, from big to small. These 64 hexagrams represent the changing law of everything, and each hexagram is constantly changing; that is to say, change and unchanging exist dialectically.

While clarifying that there are two opposing sides, it also examines the interdependent relationship between them. It points out that the law of the unity of opposites, interdependence, and transformation between opposites is the fundamental cause of the change of things. Uncertainty runs through quantum theory, and the world presented in quantum theory is a world of probabilities. The argument of EPR, the Hidden Variable Theory of completeness, and Bell's Inequality of complete localization argument prove that quantum theory presents probabilistic characteristics. The conclusion of quantum theory is also a probabilistic conclusion, which can effectively reduce and reduce the uncertainty of any implicit quantity with no existing space. Therefore, the existence of a particle at a certain point in time in Hilbert Space is not fixed but can only be fixed probability. Presenting a probability is the basis of quantum theory, recognized by the modern quantum physics community. Therefore, the theory of knowledge, quantum physics, or quantum theory, is Determinism. It is precisely because of the constant entanglement between the quantum. It changes from time to time, and everything is known as uncertainty (probability) because the quantum is in change. Therefore, everything in the world is born of change, driven by the combination of rigid, soft, and Yin-Yang. The source is *Tai Chi*, then the two Yao (Yin/Yang), the four images, the Eight Diagrams, and sixty-four hexagrams. All these reflect that the *The I ching* is a symbol system based on the concept of Yin and Yang. It is only a step away from the philosophical concept of Yin and Yang. In the Book of Changes, the connotations of the Yin-Yang lines are constantly enriched and deepened so that everything in the world, even the internal structure and external form of things, can be studied and analyzed in the category of Yin and Yang. It can see that the uncertainty principle of quantum entanglement coincides with the idea of endless Changes of Yin-Yang in the *Book of Changes*.

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