Yijing and Energy Fields

Dr David Leong, PhD

Charisma University, Grace Bay TKCA 1ZZ, Turks & Caicos Islands
Email address:davidleongsk@gmail.com

ABSTRACT

The sequential patterns of the sixty-four hexagrams in the Yijing, variously known as *I Ching* (the Book of Changes) are structured to embrace the universe of possibilities, scenarios and probabilities. Each hexagram equates to each moment in space-time. With the arrow of time, a string of hexagrams represent a string of moments. A probability curve can be formed from the string of hexagrams. Physicists call this mathematical entity a wave function which is constantly changing and proliferating. A wave function is mathematical representation of all possibilities that can happen to an observed entity when it interacts with an observer. The form of the wave function can be calculated by the Schrodinger wave equation for any part of the range of moments. The string of hexagrams deal with probabilities. Physicists deal mainly with two wave forms and functions – dynamic wave that follows the Schrodinger wave equation and the second phenomenon is the "collapse of the wave function" which is abrupt and discontinuous. Which part of the wave collapses is a matter of probability and chance. The wave transition from the first to the second is call the quantum jump. This exhibited phenomenon is very similar to how the hexagram in the Yijing. When unobserved, the sequential formation of the hexagrams, moment by moment, form a probability wave but when it is observed, it abruptly collapses. It is the abrupt collapse of all the development aspects of the wave function except the one that actualizes and that particular hexagram is therefore the mathematical representation of the observed entity. What spurs all the changes is the energy that flows through the system and all the interacting waves are interconnected and interdependent and they form the energy fields.

Emphasis is on the stringed hexagrams, each possesses a sophisticated mathematical structure, suggesting at the same time that it would hold great significance as an integral part of the whole of the wave or energy field. The subject of this paper is on the quantum-informational theoretical framework of Yijing.

Key words: Yijing, Schrodinger wave, probability wave, wave function, hexagrams

A HISTORICAL PERSPECTIVE- FROM THE METAPHYSICS TO QUANTUM PHYSICS

In traditional Chinese culture, *qi* or *ch'i* is believed to be a vital force, life force, or energy flow. The practice of balance through the cultivation of *qi* is the central underlying principle in Chinese traditional medicine and organization of societies and family units. In India, there is an equivalent and similarly described vital force Prana that acts as a catalyst in all organic activities. Gurus of Vedic times placed great importance on Pranayama and advocated its practice in order to unleash the hidden potential energy known as the Kundalini Shakti. This is also similar to the Chinese way of curating and cultivating the balance of the qi. Indian culture has always laid great emphasis on Prana and Pranayama and ancient texts say, "God is breath" as well as "Breath is life and life is breath". Prana is the fundamental basis of whatever is, was and will be. (Ananda & Bhavanani, 2010). Concepts such as life force, qi, prana and elan vital existed from antiquity in most ancient cultures. Even for science as biologists studied embryology and developmental biology, particularly before the discovery of genes and genomes, a variety of organisational forces were posited and postulated to account for their observations. Ontogeny or ontogenesis is the study of the origination and development of an organism (both physical and psychological), usually from the time of fertilization of the egg to adult. (Matthews, 2016) The term can also be used to refer to the study of the entirety of an organism's lifespan and all developmental events that occur during the existence of the living organism. German biologist Hans Driesch (1867–1941), proposed entelechy, an energy which he believed controlled organic processes. However such ideas are discredited and modern science has all but abandoned the attempt to associate additional energetic properties with life. Driesch, believing that his results compromised contemporary mechanistic theories of ontogeny, instead proposed that the autonomy of life that he deduced from this persistence of embryological development despite interferences was due to what he called entelechy, a term borrowed from Aristotle's philosophy to indicate a life force which he conceived of as psychoid or "mind-like", that is; non-spatial, intensive, and qualitative rather than spatial, extensive, and quantitative. (Klir et al., 1972) Aristotelian entelechy can reveal a number

of very modern aspects of biology. The concept combines the achievement of a whole (holos) and of an ultimate purpose (telos), the purpose being a goal by construction internal to

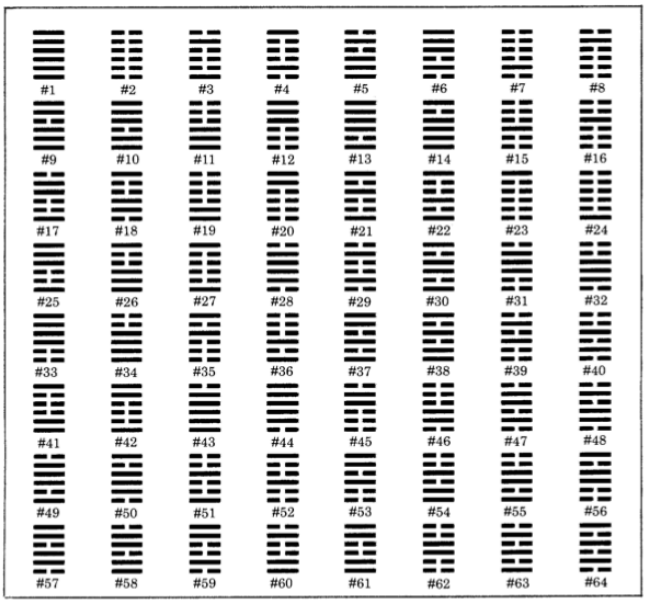


Figure 1

beings towards ever-greater complexity. The analysis of movements of living organisms and their complexity shows entelechy to be compatible with and complementary to Darwinian selection. (Klir et al., 1972)

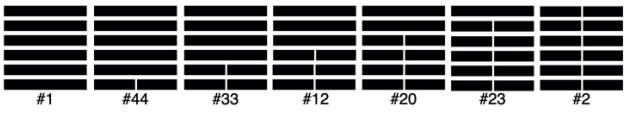
It is not the scientific concept of energy, qi, prana or elan vital that are being referred to in the context of these ancient interpretations because these reference of energy, qi, prana and vitalism are description of the non-observable waves and fields. What these refer and describe are the properties of waves and fields. Spiritual language employs 'energy' as metaphors for the connections and depths that the religious have always perceived to reality. Hence, in this regards, to study these ancient texts, it is best to adopt a looser understanding of the semantics and to focus on the essence and intended meaning of the metaphors. Energy is ubiquitous. The word employed in metaphysics colours every scientific model and red-flagged most scientific inquiries with scepticism. It has represented the quintessence of life - that vital endowment with which Aristotle distinguished the living from dull matter but it is best to note that these references are mostly metaphorical and their actual inference is the properties of waves and fields, in particular thermodynamic principles. Their derivations, in those historical times, were not subject to the same scientific rigour and methodologies but were based on their observations of nature. To know that these ideas permeated through time from their historical curiosities to find similarities with modern quantum science is uncanny. Hence, it is best to look at these ancient interpretations of energy as a representational “essence” and not to debunk them as unscientific but rather a family of resemblances crossing disciplinary boundaries. The fragmentary significance between metaphysics and modern science need not run so deep with the secular and scientific vocabularies that are constantly at odds and conflicts. What is needed is an intellectual unification that can bring together these ancient interpretations to modern science and to draw the parallels rather to put wedges in between the unification. What the ancient Chinese understood in the distant past must be seen from the perspective that they did not have sophisticated instruments and experimentations for empirical validation but from mere contemplation and observation of nature. Modern science is validating these findings, through complex and the sophistication of modern technologies what those ancient sages visualized and expounded in classical Chinese texts- in poetically languages.

From the Yijing perspective (*see figure 1 for the 64 hexagrams categorically numbered in a sequence*), the changes in the hexagram stack of 6 lines occur with energy agitation. In each movement up from the bottom to the 6th line, line by line, each movement generates a binary option, either yin (-) or yang (+) and when each hexagram has permutated in form at its 6th line, another hexagram formation begins and hence the iterations of the same follows. The stringed hexagrams therefore define the cycle of lives or any natural phenomenon with the perpetuation of the probability wave.

The study of energy grew in scientific stature and has become the core concept unifying all of physics. Classical Newtonian science builds on causes and effects. Causation begins with energy. Not dissimilar from how each line in the hexagram changes step-wise, line by line as described. Every event involves energetic exchange, whether through collision or intermediate forces. Different kinds of energy flow into each another, potential to kinetic; static to movements and vice versa. Newton's mechanics is time-symmetric, allowing both forward and backward descriptions of collisions and interactions. (Marsden & Ratiu, 1998). Thermodynamics is the subject of the relation of heat to forces acting between contiguous parts of bodies, and the relation of heat to electrical agency. (Kreith et al., 1997) Scots-Irish physicist Lord Kelvin was the first to formulate a concise definition of thermodynamics in 1854.

The initial application of thermodynamics to mechanical heat engines was quickly extended to the study of chemical compounds and chemical reactions. Chemical thermodynamics studies the nature of the role of entropy in the process of chemical reactions and has provided the bulk of expansion and knowledge of the field. Thermodynamics therefore explains the interchangeable forms of energies from heat and light to chemical reactions. They are just forms of energies permutating from state to state moving into chaos as defined in entropy. (Kaper & Goedhart, 2002) Again, the key here is the changing of states of energies. As with the change of line in each hexagram, each line changes will produce a hexagram of different form. The structure of the hexagram will change with each line changes. With hexagram changes, moment into moment, this leads to a certain chaos. The sequence in Yijing begins with Qian (all 6 positive/ yang lines) and Kun (all 6 negative/ ying lines) and as it morphs and

transforms through time with the line changes, it becomes increasingly complex and chaotic. In thermodynamics, this leads to the Second Law of Thermodynamics, which, in contrast with Newton's mechanics, enshrines irreversibility – the second law describe entropy. (Sharpe & Walgate, 2002) (*See Figure 2*) Entropy measures disorder, namely the number of microstates (each line change in the hexagram is a microstate change) that could correspond to a system's macrostate (hexagram change is a microstate change). Entropy always increases. Thermodynamics observes that isolated systems cannot become more ordered and instead decay irreversibly downward. (Sharpe & Walgate, 2002) From the initial 2 clearly defined Qian and Kun with all pure yang lines and all pure ying lines, the lines will change (microstate change) to all microstate possibilities (64 hexagrams in Yijing) – an irreversible decay downwards and eventually will return to the all yang lines and all ying lines. A full circle. Thermodynamics involves equilibrium. (Gnaiger, 1994) Systems close to thermal equilibrium gravitate ever inward. This is the entropic trend. Everyone assumed that thermodynamics applied to far-from-equilibrium systems as well as to those at equilibrium. (Sharpe & Walgate, 2002) The further from equilibrium you are, the faster you fall toward it. (Evans & Hoover, 1986).



Note: #1 is in a state of all pure yang lines (equilibrated state). When the first incipient change occurs with the first line and then the second line, each of the hexagram changes in form and structure. From the second hexagram to the sixth hexagram (far from equilibrium), they are markedly differently from each other and are in various stages of chaos. By the 7th hexagram, it has transformed to become all pure ying lines (equilibrated state).

Figure 2

Erwin Schrodinger recognised negative entropy. A founder of quantum mechanics, Schrodinger became so fascinated by life. (Sharpe & Walgate, 2002) He has a long standing interest in Vedic Hinduism which posit the identity of being and matter as energy. (Rao, 1986) What is Life? 'Life', he tells us, 'seems to be orderly and lawful behaviour of matter, not based exclusively on its tendency to go over from order to disorder, but based partly on existing order that is kept up'. (Williams, 1992) He is more explicit later: Every process, every event ... in nature means an increase of the entropy of the part of the world where it is going on .... [The living organism] can only keep aloof from [entropy] by continually drawing from its environment negative entropy - which is something very positive . ... What an organism feeds on is negative entropy. (Gnaiger, 1994) What is this mysterious 'negative entropy'? Perhaps it is celestial manna, or that Elan Vital of which Bergson (Marrati, 2005) wrote so passionately? The discovery came in 1967, worked through carefully by Ilya Prigogine and others (Nicolis, 1977). Not a force, not a spirit, but a process, negative entropy is a part of the energetic dance not dreamed of by thermodynamics. (Sharpe & Walgate, 2002)

Representational Metaphor of Energy - Hexagram

In China the teachings of Confucius (551–479 B.C.) have been expounded on the basis of the four books and the five canons termed the Nine Chinese Classics. Among them the Yijing is regarded as an implied canon in Confucianism. Although this canonical text originated from a divination teaching, an exceptionally long period ranging over three thousand years has established it as a representative classic implying an archetype of the Chinese philosophy. There are sixty-four hexagrams (*Figure 1*). Divination is often seen as a superstitious mean to foretell the future with mystical practices and therefore Yijing has been deemed a divination tool which is much misconstrued. Divination is another form of scenario planning in management theories or even in warfare where multiple trajectories or pathways are envisaged for the future. When a decision is taken based on the contexts of observations of the resources and risks, the rest of the probability spikes will collapse leaving the "actuality-becomes" spike to remain- the specific hexagram relating to the situation.

This Confucian canon and the subsequent commentaries on it constitute the origin and one of the most important legacies of traditional Chinese theories of the sign represented through the hexagram. A central notion of Yijing is the representational metaphor of the hexagram — variously translated as 'sign,' or 'image.' The purpose is to outline an indigenous Chinese theory of signs that has flourished for over two thousand years.

As is shown in Table 1 below, each hexagram possesses the name written with a single or two Chinese characters, which, in addition to a certain role in the highly symbolic system, can be interpreted as a tag for identification of a hexagram from others. In addition to the unequal division (64 = 30 + 34) of hexagrams between the Upper and the Lower Canon. The ordering of the hexagrams in Figure 1 shows a certain pattern and this must be understood to follow the principle of complementarity. This typography of signs/ hexagram has great relevance to the hermeneutical study of Yijing. The sequence are juxtaposed in pairs as (1, 2), (3, 4), ... , (63, 64), i.e., there arise thirty-two pairs in the entire sequence. Each pair arises as a result of a upside-down flip (180 degree turn). For instance, the third hexagram, Zhun, (010001) becomes the fourth, Meng, by (100010). There are 4 exceptions. There are 4 pairs within the 32 pairs that are outliers. The 4 pairs have symmetries across the centre axis. Hence any 180 degree rotation still generate the same hexagram. For these 4 pairs, the transformations come from inverting the polarity (yin = 0 to yang = 1 and yang to ying correspondingly). The four pairs are (#1, #2), (#27, #28), (#29, #30), and (#61, #62).

#1/ 111111 transforms to *#2/* 000000
*#27/*100001 transforms to *#28/* 011110
#29/ 010010 transforms to *#30/* 101101
#61/ 110011transforms to *#62/* 001100

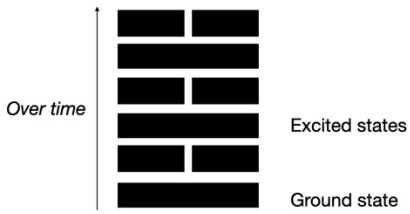
#1	111111	乾	Qian/ The Creative (Heaven)
#2	000000	坤	Kun/ The Receptive (Earth)
#3	010001	屯	Zhun/ Difficulty at the beginning
#4	100010	蒙	Meng/ Youthful folly
#5	010111	需	Xu/ Waiting
#6	111010	讼	Song/ Conflict
#7	000010	师	Shi/ The Army
#8	010000	比	Bi/ Holding together
#9	110111	小畜	Xiao xu/ The taming power of the small
#10	111011	履	Lu/ Treading
#11	000111	泰	Tai/ Peace
#12	111000	否	Pi/ Standstill
#13	111101	同人	Tong ren/ Fellowship with men
#14	101111	大有	Da you/ Possession in great measure
#15	000100	谦	Qian/ Modesty
#16	001000	豫	Yu/ Enthusiasm
#17	011001	随	Sui/ Following
#18	100110	蛊	Gu/ Work on what has been spoilt
#19	000011	临	Lin/ Approach
#20	110000	观	Guan/ Contemplation
#21	101001	噬嗑	Shi he/ Biting through
#22	100101	贲	Bi/ Grace
#23	100000	剥	Bo/ Splitting apart
#24	000001	复	Fu/ Return
#25	111001	无妄	Wu wang/ Innocence (the unexpected)
#26	100111	大畜	Da xu/ The taming power of the great
*#27**	100001	颐	Yi/ The corners of the mouth (providing nourishment)
*#28**	011110	大过	Da guo/ Preponderance of the great
*#29**	010010	坎	Kan/ The abysmal (Water)
*#30**	101101	离	Li/ The clinging (Fire)
#31	011100	咸	Xian/ Influence (wooing)
#32	001110	恒	Heng/ Duration
#33	111100	遁	Dun/ Retreat
#34	001111	大壮	Da Zhuang/ The power of the great
#35	101000	晋	Jin/ Progress
#36	000101	明夷	Ming yi/ Darkening of the light
#37	110101	家人	Jia ren/ The family
#38	101011	睽	Kui/ Opposition
#39	010100	蹇	Jian/ Obstruction
#40	001010	解	Jie/ Deliverance
#41	100011	损	Sun/ Decrease
#42	110001	益	Yi/ Increase
#43	011111	夬	Guai/ Break-through (resoluteness)
#44	111110	姤	Gou/ Coming to meet
#45	011000	萃	Cui/ Gathering together
#46	000110	升	Sheng/ Pushing upward
#47	011010	困	Kun/ Oppression (exhaustion)
#48	010110	井	Jing/ The well
#49	011101	革	Ge/ Revolution (molting)
#50	101110	鼎	Ding/ The caldron
#51	001001	震	Zhen/ The Arousing (Thunder)
#52	100100	艮	Gen/ Keeping still (Mountain)
#53	110100	渐	Jian/ Development (gradual progress)
#54	001011	归妹	Gui mei/ The marrying maiden
#55	001101	丰	Feng/ Abundance
#56	101100	旅	Lu/ The wanderer
#57	110110	巽	Xun/ Gentle, penetrating (Wind)
#58	011011	兑	Dui/ The Joyous (Lake)
#59	110010	涣	Huan/ Dispersion
#60	010011	节	Jie/ Limitation

*#61**	110011	中孚	Zhong fu/ Inner truth
*#62**	001100	小过	Xiao guo/ Preponderance of the small
#63	010101	既济	Ji ji/ After completion
#64	101010	未济	Wei ji/ Before completion

Table 1
***Note**:#1-#30 is the upper canon, #31 to #64 is the lower canon.*

Each hexagram therefore is a subject to interpretation and hermeneutical reasoning. Each hexagram represents a moment. A stringed hexagrams represent stringed moments. The stringed hexagrams, with each hexagram possessing a sophisticated 6 lines mathematical construct holds great significant as an integral part of the energy field subject to a quantum process. The term quantum refers primarily to the discrete packet of energy E in the system, to which the fundamental oscillation frequency ν is ascribed, according to the famous Planck formula E = hν, where h is the Planck constant. This deep relation between discrete energy levels and oscillation frequencies is the basis of wave/particle duality, characteristic of quantum phenomena. (Raković, 2019) The laws governing these microscopic quantum entities differ from those that govern the everyday classical Newtonian world. Quantum particles can exist in multiple states or multiple locations simultaneously, where such multiple parallel quantum superposition alternatives would be described by a mathematical quantum wave function. (Raković, 2019)

There are two fundamental procedures in quantum mechanics. The first procedure relates to continuous deterministic evolution of the quantum state, known as unitary evolution (described by fundamental Schrödinger equation). The second procedure is applied in the measurement on the quantum system where the quantum state is discontinuously and probabilistically replaced by another quantum state, known as a state reduction or wave function collapse (described by von Neumann projection postulate). (Sneed, 1966)



Note: With energy infusion into the system, the line changes as it progresses (to either become a yin line or a yang line) upward. It is in the state of excitation that line changes.

Figure 3

The hexagrams changes, from moment to moment, in state to state in continuous unitary evolution and also subject to the collapse of the waves, when an "actuality-becomes" and rest of the probabilities options collapse. When the rest of the probabilities options collapse, the one standing state of reality will be a particular hexagram. In such case, it notably demonstrates that consciousness (through acts of observation), space, time and matter are deeply interwoven and welded together.

Effect of Harmonization

According to the classic Chinese doctrine, Taiji represents all existential flow of the primordial energies arising from the Wuji. Taiji is also an universal principle upon which is Qi (chi or ch'i), frequently translated as "life force" or "energy flow", polarized in two complementary modes – Yang (Yáng) and Yin (Yīn). This concept of Taiji/Wuji in China dated to the 3rd century BC in formalized texts.

The physical observable world (in the state of Taiji) is teeming with energies and activities, with energies permuting from one form to another. In thermodynamics, it is found that heat is nothing but atoms and molecules in random motion. Electricity is found to be electrons in motion along a conductor. Light is nothing but electromagnetic waves in motion. Sound is nothing but vibrations in a medium.

Even in the unobservable quantum space (in the same state of Taiji that arises from Wuji), this dynamism is evident. It is known that the elementary particles in atoms are in constant motion. The quarks in the nucleons are jiggering at all time in a flux pool held together tightly by the strong nuclear force – gluon. The narrower the region of confinement , the faster it moves.

19th century physics that hypothesized on the "ether" drift was not verifiable experimentally with adequate proof to stay within the bound of science. The concept of ether was expelled from physics in the light of the null result of Michelson-Morley experiment (Illingworth, 1927), which led to the prevailing opinion, during the 20th century, that photons can move in an empty space which has no physical origin. The 20th century theoretical physics brought the idea of a quantum vacuum as a fundamental medium subtending the observable forms of matter, energy and space-time. As a consequence of quantum field theories and cosmology, the physical vacuum (defined as Wuji, in classical Chinese interpretation) can be regarded as a unified system governing the processes taking place in the micro- and the macroworld, which manifests itself on all spacetime scales. The real particles such as electrons, positrons, photons, hadrons etc. as well as all macroscopic bodies are quantum wave-like excitations of this medium endowed with certain quantum numbers ensuring their relative stability. According to the Standard Model, the physical vacuum can be characterized by a total vacuum energy density which has at least the following three contributions: the fluctuations characterizing the zero-point field, the fluctuations characterizing the quantum

chromodynamic level of sub-nuclear physics, and the fluctuations linked with the Higgs field. (Fiscaletti, 2017) Out from the quantum vacuum fluctuations (Jaffe, 2005), from zero-point energies of quantum fields, there are quantum forces of charges (described in the classic Chinese texts as yin/yang) and particles arise (arising of the Taiji). The Casimir effect is often invoked as decisive evidence that the zero-point energies of quantum fields are "real." On the contrary, Casimir effects can be formulated and Casimir forces can be computed without reference to zero-point energies. They are relativistic, quantum forces between charges and currents. (Jaffe, 2005). Hence, even vacuum as understood in quantum science is active. The Wuji is not a static emptiness and void. The empty space is not empty at all. The void exhibits quantum mechanical phenomenon mentioned above -quantum fluctuation. Basically there are minor fluctuations in the energy system over brief moment of time like wobbling a bit towards the positive and negative sides of the zero so as never to be zero. It is in a state of constant equilibrating to the zero but never really zero. And with this fluctuations, it results in spontaneous creation and annihilation of pairs of particles and thus the state of Taiji arises.

A common conundrum and often thought that static state guarantees stability because of inertia. No movement means stability. Motion causes disturbances and is seen as a threat to stability. These notions are debunked with modern scientific understanding of the universe. It is motion, with high velocity spin and agitation that try to find equilibrium, wobbling to the left and right of the zero, but never zero – this constant motion that gives the sense of stability. The stability of the atomic world depends on the continuous motion of the particles constituting the atoms. The electrons and the nucleons react to their confinement by whirling around at enormous speed. (Nambu, 1976) It is this enormously high speed motion that give the sense of solidity and stability. In the larger cosmos context, planets are kept in their stable orbits because of their motion. If the planets stop their movement, they will collapse inwards and will be annihilated.

This attribute of Taiji is comprised in its term, tai – "great; grand; supreme" and ji – "pole; roof ridge; highest/utmost point", The inherent principle of Taiji is Li, simply "Principle" or "Law", and represents the fundamental order of Nature. Since Taiji and Li are rational. The Li refers to the same principle explained above where planetary movements in their orbit brings about regularity and stability. This regularity is Li. The high speed spin of the quarks in the nucleons or the electrons whirling around in the cloud, this is the Li. "Non-polar and yet Supreme Polarity (Wuji er Taiji) Accordingly, the supreme polarity in activity generates Yang; yet at the limit of activity it is still. In stillness it generates Yin; yet at the limit of stillness it is also active. As explained above, even in the state of vacuity, there is quantum-mechanical activities. In stillness, there is activity. When there is activity, with the high velocity motion of the particles, there is stillness, stability in the structure.

The alternation and combination of Yang and Yin generate Water, Fire, Wood, Metal, and Earth. This is the 5-elements circulatory system with a production cycle and a destruction cycle movement. Such movements produce harmony and equilibrium and this is how the ancient Chinese perceived harmony with such references of the 5 elements. Again, , water, fire, wood, metal and earth are just convenient metaphors as simple, understandable references.

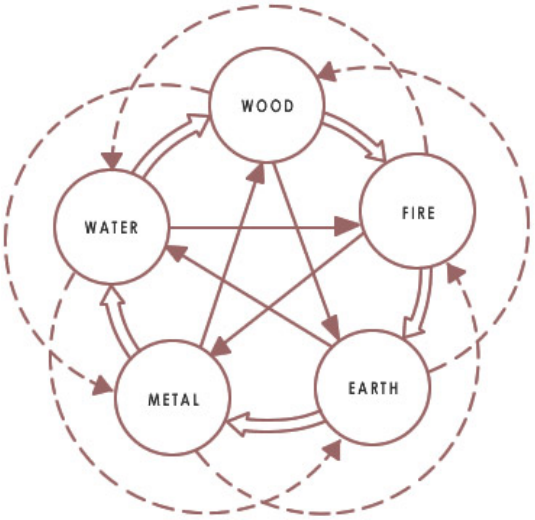


Figure 4

The production cycle, seen from Figure 4, is Wood-Fire-Earth-Metal-Water-Wood. The destruction cycle is Wood-Earth-Water-Fire-Metal-Wood. These 2 cycles will perpetuate indefinitely and such flow is again referred to as Li. The 5 elements are not energy, per se but are seen as the carriers of energies in their circulatory flow. From a quantum and particle perspective, they are like the gauge bosons. Gauge bosons are carrier particles for three of the four fundamental forces. In the Standard Model of particle physics (Figure 5), there are four kinds of gauge bosons. The three gauge bosons are as follows: W and Z bosons, which carry the weak force. Gluons, which carry the strong force. Photons, which carry the electromagnetic force. The only remaining fundamental force that has no known gauge boson is gravity. The theoretical gauge boson for gravity is called a graviton. The 5 elements are the interactions/ force carriers. For energy to flow through the system, a complete circuitry of this production order - Wood-Fire-Earth-Metal-Water will facilitate energy flow. If there is a missing element, there will be impediment to the flow. Or if the force carriers take the destruction order - Wood-Earth-Water-Fire-Metal, there will be energy conflict with negation effect. There is also polarity of Yin/ Yang within the elements.

There are 10 heavenly stems – Jia, Yi, Bing, Ding, Wu, Ji, Geng, Xin, Ren, Gui.

Jia (+)/ Yi (-) represent the element of Wood
Bin (+)/ Ding(-) represent the element of Fire
Wu (+)/ Ji (-) represent the element of Earth
Geng (+)/ Xin represent the element of Metal
Ren (+)/ Gui (-) represent the element of Water.

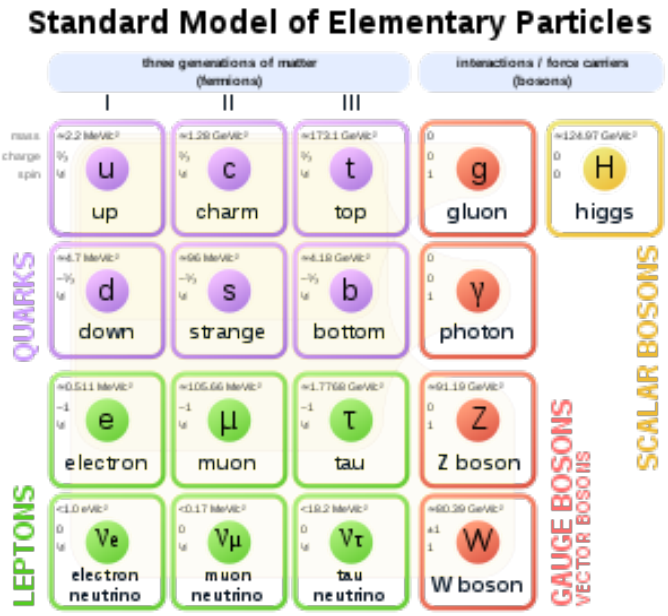


Figure 5

Every elementary particle in the Standard model has an anti-particle. The antiparticle of a particle is simply that particle with the same mass but opposite electrical charge. (Griffiths, 2008) One could also speak of 'complementary' or 'mirror' particles. Each of the twelve matter particles has an antiparticle, and all of these antiparticles have already been detected experimentally. The positron (antiparticle of the electron) and other antiparticles can be found in nature, namely in the radiation falling down on Earth from outer space. Wherever energy is converted into matter – be it during the Big Bang nearly 14 billion years ago, be it in the collision of cosmic radiation in the atmosphere, be it at CERN in Geneva – a similar amount of matter and antimatter is generated. When matter and antimatter are brought together (matter-antimatter annihilation) (Griffiths, 2008) , they disintegrate and produce energy. This follows from the same principle of Yin/Yang in Yijing and can be similarly expressed as:

- be a dual (Yin and Yang);
- be a part (the Yin in Yang, Yang in Yin);
- be a harmony (balance of Yin and Yang);
- be a whole (the unity of Yin and Yang).

If we consistently apply these principles, then they must coherently exist at each level at the level of small Yang in a big Yin and small Yin in a big Yang, which means that in a big Yang is not only small Yin and vice versa, such co-existence and as a part or balance of polarity or the union of the yin-yang (matter-antimatter annihilation), energy is carried, amplified (imbalance), reduced (imbalance), transferred or is annihilated to always thrive for a state of equilibrium, hence the constant agitation and motion. In reality, the Yin-Yang harmony perspective is not in a state of rest but always in a state of excitation and agitation thriving to move to a point of equilibrium but never in complete equilibrium.

Energy Fields

We are constantly swimming in a vast sea of life energy fields, thought fields, and bioplasmic forms, moving about and streaming off the body. The energy fields, though unobservable by the naked eyes are the basic construct of realities. We are vibrating; radiating, transacting and exchanging. The ancient wise contemplated such interactions and use the wave concepts to explain the works of the world. These wave properties were recognized phenomenon in the past. Scientists and researchers are rediscovering it. This is thus not a new phenomenon; but rather, a new observation, a growing awareness, a new perspective, and a renewed interest in studying the intricacies of the waves and their mutual interactivities.

Everything in the universe is just a vibration. Nikola Tesla said, " If you wish to understand the Universe think of energy, frequency and vibration." (Tesla, 2019)

Energy, not matter, is the fundamental reality of the universe. (Okun, 2009) In scientific terms, energy is the dynamic quality of matter and is encapsulated elegantly in the equation $E=mc^2$. (Bodanis, 2001) Although matter appears solid, it does not have an independent existence of its own: "Matter is energy bound in quantized wave-packets and these packets are further bound together to create the vast and harmonious architecture that makes up the world." (Laszlo, 2006) From every atom, every part therein including the electron, every elementary "particle" from organic matter to inorganic matter, from observed realities to observing human, they are all are just vibrations. (Griffiths, 2008) Nothing is solid. They are an illusions. Einstein said, **"**Reality is merely an illusion**,** albeit a very persistent one**.**" This concept of vibrational construct is the basis of Yijing emergence – where the energy flows through the system in the hexagram, moving upwards or changing line/ state to create a different hexagram with each line change. Such changes come about from the energy excitation. See Figure 3.

Einstein related energy with mass and the speed of light- in short stating that matter and energy are invariably interchangeable. Einstein's work showed that concepts such as space and time, which had previously seemed to be separate and absolute, are actually interwoven and relative. Einstein went on to show that other physical properties of the world are unexpectedly interwoven as well. His most famous equation provides one of the most important examples. In it, Einstein asserted that the energy (E) of an object and its mass (m) are not independent concepts but are one and the same except in form in different conditions; we can determine the energy from knowledge of the mass (by multiplying the latter twice by the speed of light, c^2) or we can determine the mass from knowledge of the energy (by dividing the latter twice by the speed of light). (Bodanis, 2001) In other words, energy and mass are interconvertible currencies.

On 4 July 2012, researchers working with the world's biggest atom smasher—the Large Hadron Collider (LHC) in Switzerland—announced that they had spotted a particle that

appears to be the long-sought Higgs boson, the last missing piece in physicists' standard model of fundamental particles and forces. (Butterworth et al., 2008) Hypothesized more than 40 years ago, the Higgs boson is the key to physicists' explanation of how other fundamental particles get their mass. The Higgs solves a basic problem in the standard model. The theory describes the particles that make up ordinary matter: the electrons that swirl around in atoms, the up quarks and down quarks that make up the protons and neutrons in atomic nuclei, the neutrinos that are emitted in a type of radioactivity, and two sets of heavier cousins of these particles that emerge in particle collisions. (Michael., 2019) These particles interact by exchanging other particles that convey three forces: the electromagnetic force; the weak nuclear force, which spawns neutrinos; and the strong nuclear, which binds quarks. Energy exchanges and transactions exist, unobservable to the naked organic eyes, morphing from one matter to another in a multiplicity of forms. Energy is the inherent effort of every multiplicity to become unity. (Selme, 1976)

Max Planck said: "Energy and not matter, is the fundamental reality of the universe." As physicality is being progressively shown to be immaterial and information to be physical, their congruence is leading to an increased awareness that to understand the essential wholeness of reality requires restating the principles and laws of physics in informational terms. (Selme, 1976) Two of the most fundamental laws are the First and the Second Law of Thermodynamics, which describe the conservation of energy and the flow of entropy, respectively. The emerging insight is that information is expressed both as universally conserved energy and as embodying entropy. From the first moment of spacetime, the incredibly fine-tuned information underpinning the totality of energy-matter and the interactions of the fundamental forces from which physical reality is manifest, is universally conserved. By also being encoded entropically, from its minimum level at the beginning of our universe, it is inexorably increasing through time. (Selme, 1976)

The findings of the theory of relativity provide further evidence for the inherently dynamic universe revolutionizing the concept of matter. (Flores, 1999) Mass/matter and energy are interconvertible and interchangeable from mass/ matter to energy or from energy to mass/ matter. These are two aspects of the same reality. Mass/ matter is energy not just has energy.

One of the most significant findings of quantum physics is that space is not an empty vacuum or void of 'nothingness,' but, rather, a giant reservoir of energy or qi. Subatomic particles are never completely at rest, but are in constant motion due to a ground-state field of energy (sometimes called the "Zero-point Field") constantly interacting with all subatomic matter. (Selme, 1976) In the quantum domain, this 'virtual state' is invisible and intangible. It is from this nonphysical domain that subatomic particles emerge: "The virtual state lies outside the manifest creation. When a wave turns into a particle, which is the basic step that brings photons, electrons, and other subatomic particles into the world of our experience, the virtual state is left behind. The virtual state is also why physics computes that every cubic centimetre of empty space is not actually empty. (Okun, 2009) At the quantum level, it contains a huge amount of virtual energy. (Selme, 1976) The basic substructure of the universe is a sea of quantum fields which is how Yijing interprets the world. The particulate level is the individual hexagram but a strong of hexagrams produce a wave. A stable, static universe is in fact a seething maelstrom of subatomic particles fleetingly popping in and out of existence because of the interaction of the waves/ particles. All elementary particles interact with each other by exchanging energy through other quantum particles, which are believed to appear out of nowhere, combining and annihilating each other in less than an instant, causing random fluctuations of energy. (Selme, 1976) The fleeting particles generated during this brief moment are known as 'virtual particles.' They differ from real particles because they only exist during this exchange. This subatomic tango, however brief, when added across the universe, gives rise to enormous energy, more than is contained in all the matter in all the world. Physicist David Bohm has proposed a model of the universe in which the phenomenal realm of existence (the 'explicate order') emerges from a deeper, underlying 'implicate order.' (Schöter, 2010) This hidden order is enfolded in "the warp and weft of our reality" and possesses an infinite ocean of potential energy. In The Holographic Universe, Michael Talbot writes: "According to our current understanding of physics, every region of space is awash with different kinds of fields composed of waves of varying lengths. Each wave always has at least some energy. When physicists calculate the minimum amount of energy a wave can possess, they find that every cubic centimetre of empty space contains more energy than the total energy of all the matter in the known universe." Space is not empty. It is full, a plenum as opposed to a vacuum, and is the ground for the existence of everything, including ourselves. (Selme, 1976) The universe is not separate from this cosmic sea of energy, it is a ripple on its surface, a comparatively small "pattern of excitation" in the midst of a unimaginably vast ocean. This excitation pattern is relatively autonomous and gives rise to approximately recurrent, stable and separable projections into a three-dimensional explicate order of manifestation. This infinite sea of energy is not all that is enfolded in the implicate order. Because the implicate order is the foundation that has given birth to everything in our universe, it also contains every subatomic particle that has ever been or will be; every configuration of matter, energy, life, and consciousness that is possible. Bohm concedes that there is no reason to believe the implicate order is the end of things. There may be other undreamed of orders beyond it, infinite stages of further development and all such possibilities, seemingly random, unrelated and chaotic are enfolded in the implicate order waiting to unfold. (Schöter, 2010)

Conclusions

We are products of our western scientific heritage. This has hindered our growth into full awareness that we are much more than we seem as science dictates that we need experimental and verifiable data that can be empirically tested and are repeatable. Now, as science expands into new theories,

there will be the discovery of new phenomena. We may not be able to explain the phenomena with the existing theories. New theories must be postulated to cover all of the knowledge. Newtonian physics encouraged science to focus on the study of the physical world. Now, as theories have developed on relativity, the electromagnetic theory, the particle theory, and quantum physics, we can better see the connection between scientific, objective descriptions of our world, and the world of subjective human experiences in relation to the ancient Chinese Yijing which pivots on the relativity and uncertainty principle.

The present scientific view of reality currently supports the idea that we are composed of energy fields, and presents a holographic view of the universe. In this universe all things are interconnected and interdependent. Still, we continually tend to depict the universe as a huge mechanical system, running according to Newton's laws of motion. These laws held firm the ideas of absolute time and space at the observable level. Everything could be described objectively through our physical sensing of the matter-level world. Even though Newton doubted his original theory before his death, the Newtonian laws ruled our thinking from the late 17th through the 18th, and the 19th century. As we know, when matter is broken to its molecular and atomic level and to the particle level, it is reduced to interacting waves and vibrations. A vision very similar to the Hindu's description of the dances of Lord Shiva Nataraja, dancing the world into being. (Muktananda Swami, 1978)

The whole thing about the dancing and jiggering particles with interlocking, interconnected and interdependent waves define realities at a level we cannot see. The world of space and time, and matter and energy, the world of creation and destruction, the world of humanly experiences is not linear like how we all see time – past, present and future. Our Newtonian world of solidity is surrounded and permeated by a fluid world of radiating energy. It is constantly moving and changing; an ocean of dancing, spinning, jiggering particles of light, energy interchanging and permuting into different forms. Our linear way of thinking, seeing, and expressing needs to expand to accommodate this new reality and quantum science is slowly approaching such a comprehensive symbol, which is both cosmic and psychological, and spiritual in line with the way Yijing is used to see the world.

***About The Author**: David Leong, PhD started his entrepreneurial ventures early, soon after he graduated from the National University of Singapore in 1994 with a Bachelor of Business Administration degree. He has founded various ventures from corporate finance, business consultancy, design consultancy, human resources (HR), publication and technology.*

David was awarded his PhD from Charisma University in 2020 and is pursuing his Doctor of Business Administration with the University of Canberra for a double doctorate. His research is in entrepreneurship and he is venturing to define "entrepreneurial energy" as the energy field spurring entrepreneurial actions in the light of complex science and quantum science. His other research area is in the Chinese Yijing and he draws the relatedness of Yijing with modern science in particular quantum physics.

http://straitstrades.com/david/

REFERENCES:

Ananda, Y., & Bhavanani, B. (2010). Pranayama: It's Therapeutic and Spiritual Potential. In *Integral Yoga Magazine*.

Bodanis, D. (2001). E=mc2: a biography of the world's most famous equation. *Choice Reviews Online*, *38*(08), 38-4512-38–4512. https://doi.org/10.5860/choice.38-4512

Butterworth, J. M., Davison, A. R., Rubin, M., & Salam, G. P. (2008). Jet substructure as a new higgs-search channel at the large hadron collider. *Physical Review Letters*, *100*(24), 2–6. https://doi.org/10.1103/PhysRevLett.100.242001

Evans, D. J., & Hoover, W. G. (1986). Flows Far From Equilibrium Via Molecular Dynamics. In *Annual Review of Fluid Mechanics* (Vol. 1). https://doi.org/10.1146/annurev.fluid.18.1.243

Fiscaletti, D. (2017). Dynamic Quantum Vacuum and Relativity. *Annales Universitatis Mariae Curie-Sklodowska, Sectio AAA – Physica*, *71*, 11. https://doi.org/10.17951/aaa.2016.71.11

Flores, F. (1999). Einstein's theory of theories and types of theoretical explanation. In *International Studies in the Philosophy of Science, 13(2), pp. 123-133.*

Gnaiger, E. (1994). Negative entropy for living systems: controverxy between Nobel laureates Schr"dinger, Pauling and Perutz. In *Univ. Press, Innsbruck* (Vol. 3).

Griffiths, D. (2008). *Introduction to elementary particles*. John Wiley & Sons.

Illingworth, K. K. (1927). A repetition of the Michelson-Morley experiment using Kennedy's refinement. *Physical Review 30, No. 5 (1927): 692.*

Jaffe, R. L. (2005). Casimir effect and the quantum vacuum. *Physical Review D*, *72*(2), 021301. https://doi.org/10.1103/PhysRevD.72.021301

Kaper, W. H., & Goedhart, M. J. (2002). "Forms of energy", an intermediary language on the road to thermodynamics? Part II. *International Journal of Science Education*, *24*(2), 119–137. https://doi.org/10.1080/09500690110049123

Klir, G. J., York, N., London, •, & Toronto, S. •. (1972). *Trends in General Systems Theory EDITED BY*.

Kreith, F., Bohn, M., & Kirkpatrick, A. (1997). Principles of Heat Transfer. In *Journal of Solar Energy Engineering* (Vol. 119, Issue 2). The Intext Series in Mechanical Engineering, New York: Harper and Row, 1973, 3rd ed. https://doi.org/10.1115/1.2887901

Laszlo, E. (2006). *Science And The Reenchantment Of The Cosmos: The Rise Of The Integral Vision Of Reality Author: Ervin Laszlo, Publisher*. Simon and Schuster. http://www.openisbn.org/download/1594771022.pdf

Marrati, P. (2005). Time, life, concepts: The newness of Bergson. *MLN 120, No. 5 (2005): 1099-1111.*

Marsden, J. E., & Ratiu, T. S. (1998). Introduction to Mechanics and Symmetry. In *Physics Today* (Vol. 48, Issue July). https://doi.org/10.1063/1.2808303

Matthews, W. E. (2016). *The Homological Cosmos*. University College London (University of London).

Michael., R. (2019). *The hunting of the quark: a true story of modern physics.* Plunkett Lake Press.

Muktananda Swami. (1978). *Play of consciousness.* Harper & Row.

Nambu, Y. (1976). The confinement of quarks. *Scientific American*, *235*(5), 48-63.

Nicolis, G. (1977). *I. prigogine." Self {Organization in Nonequilibrium Systems*. John Wiley, New York.

Okun, L. B. (2009). Energy and mass in relativity theory. In *Energy and Mass in Relativity Theory*. https://doi.org/10.1142/6833

Raković, D. (2019). ON EXTENDED QUANTUM-HOLOGRAPHIC FRAMEWORK FOR CONSCIOUSNESS AND FREE WILL: ROUND TRIP FROM SCIENCE TO SPIRITUALITY. *International Journal of Prenatal & Life Sciences*, 1–27. https://doi.org/10.24946/IJPLS.20.19.00.00.181107

Rao, V. R. (1986). *The Upaniṣads and Modern Thought.* Mittal Publications.

Schöter, A. (2010). *The Yijing as a Mathematical Metaphysics* (Issue June). http://www.yijing.co.uk

Selme, P. L. (1976). Energy and physics. *Soviet Physics - Uspekhi*, *19*(2), 169–173. https://doi.org/10.1070/PU1976v019n02ABEH005135

Sharpe, K., & Walgate, J. (2002). The ultimate reality of energy as a unifying paradigm in the new millennium: The elusive Élan vital. *Ultimate Reality and Meaning*, *25*(4). https://doi.org/10.3138/uram.25.4.248

Sneed, J. D. (1966). Von Neumann's argument for the projection postulate. *Philosophy of Science*, *33*(1/2), 22-39.

Tesla, N. (2019). *The problem of increasing human energy.* A Distant Mirror.

Williams, T. I. (1992). What is life? With mind and matter and autobiographical sketches. In *Endeavour* (Vol. 16, Issue 3). Cambridge University Press. https://doi.org/10.1016/0160-9327(92)90102-u

Dr David Leong, PhD, davidleongsk@gmail.com