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Numerology and Arithmology in Pythagorean Philosophy and the Yijing

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Abstract

While much scholarly work has been done to compare and contrast the philosophical traditions of the Eastern and Western traditions in antiquity, the oriental and occidental traditions as they have been classically referred to as, a different comparative perspective is offered based upon the latest developments in understanding of ancient human population migration throughout Eurasia in the Upper Paleolithic period. In particular, the underlying cosmology and numerology embedded within Pythagorean and Middle Platonism is compared and contrasted to that of the *Yijing* (*Book of Changes, or Classic of 'Yi'*), the classic ancient Chinese text which underpins all of Eastern philosophical thought. We look not only at similar themes and parallels that can be drawn between the two disparate metaphysical frameworks but also the underlying differences and their implications on the development of their respective civilizations.

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Introduction: The Development of Philosophy in Antiquity

The genesis of this work stemmed from an initial seed thought, an idea as it were. A question: *Is it possible that the basic metaphysics of the Chinese and the Greeks stemmed from the same initial intellectual, abstract framework?*

An interesting question I thought, and a hypothesis based upon two rather revolutionary ideas about human evolution that have arisen in the last decade or two, both of which are outlined in detail the arguably revolutionary work, *Origins of the Worlds Mythologies* which was first published in 2012 by the renowned Vedic and Sanskrit scholar Michael Witzel.[1] His work looks to (re) categorize and revolutionize the study of mythological studies, which as analyzed by the likes of Joseph Campbell and Carl Jung in the twentieth century, had already gleaned many common parallels between cultures and civilizations that could only be seen as eerily coincidental, what in fact led in no small measure to the theory of the *collective unconscious* and *archetypical* psychological theories for which Jung is so well known.

By (re)aligning the study of the world's mythologies with the latest developments in human genetic research, linguistics, and archeology, Witzel theorizes that perhaps the similarities in the mythological narrative that can be found across many disparate and geographically separated cultures and civilizations throughout the globe is due to the "invention" and subsequent "spread" of what he refers to as a "Laurasian" mythological story line by a male, shamanic based culture around the same time as the second migration of humans out of Africa, i.e. again around 40,000 years ago somewhere in Southwest Asia[2].

Irrespective of the strength or weakness of his claims, a topic much too broad and involving disciplines that I am in no position to speak critically about one way or another, his claims do rest on two basically scientifically proven facts (although I hate to use this term, perhaps a better term would be 'widely accepted historical truths'):

1. advancements in human genetic population analysis that point to migration (actually two migrations) of relatively small populations of homo sapiens out of Africa, the first ~65,000 years ago and the second migration after the last Ice Age (~52,000 BCE – 45,000 BCE) around ~40,000 years ago into central and northern parts of Eurasia, including East Asia, the Near East and Europe, and

[1] *Origins of the World's Mythologies*, E.J. Michael Witzel. Oxford University Press, 2012. See pages 208-278.
[2] He juxtaposes this mythological narrative with what he refers to as "Gondwana" mythological narrative which predates it and is more prehistoric, and in turn less sophisticated, in its narrative form.

2. evidence for the development of advanced abstract thought that occurs in homo sapiens starting around 40,000 years ago as evidenced from cave art across Europe, Asia and Australia.

We can add to these the art of domestication and farming that occurs around 10,000 BCE along with evidence for the existence of sophisticated language, and writing, from at least 4,000 BCE and evidence for written language in the second and first millenniums BCE – all dates that are fairly consistent across the Mediterranean, Middle East, Near East and Far East more or less. This relatively consistent evolutionary progress of what we might call, "civilization", across what Witzel would refer to as Eurasia, along with the genetic evidence that speaks directly to the migration of peoples throughout this geographic area, combined with his study of the parallels of mythological narratives across the same reason begs the question that is stated in the first sentence of this work which we will repeat here: *Is it possible that the basic metaphysics of the Chinese and the Greeks stemmed from the same initial intellectual, abstract framework?*

If we were to ask this question twenty or thirty years ago the answer would be a resounding "No!" and you would no doubt not find a single scholar who was willing to put forth such a foolish thought without entirely suspending reason. However, given the advancements in the fields referred to above, combined with Witzel's work which draws parallels both linguistically, genetically and mythologically between and among these peoples from the Eurasian region, it does beg the question as to when these early lines of narrative are first drawn, and when the art of expression, i.e. spoken language, is actually born to carry with it consistent and persistent symbolic thought.

It's not an enormous intellectual leap to hypothesize that the first stories that are told, and are preserved, are the mythological narratives that Witzel specifically analyzes, what we have come to refer to as "myth". But mythology morphs and is interwoven into theology deep in antiquity and arguably the two fields – mythology and theology - if we can call them that, do not split from each other until the advent of the written word, and in turn philosophy, in the latter part of the first millennium BCE.

In other words, if any symbolic set of thoughts, words or ideas were to be preserved and/or spread amongst these early Upper Paleolithic populations of homo sapiens which we have ample evidence now that had and were spreading throughout Eurasia during the Upper Paleolithic (c. 50,000 years ago to 10,000 years ago until the advent of the Bronze Age), it would in fact be the kind of ideas, figures, shapes, symbols and relationships that we find being explored by the Pre-Socratic philosophers as well as the original authors and interpreters of the *Yi Jing* (I Ching).

Hence the question as to whether or not the core, underlying symbolic representations of these seemingly disparate philosophical systems share some resemblance or similarity with each other. For if they do, it most certainly cannot be attributed to the "borrowing" or "learning" of philosophers/shamans/priests between and among these cultures as there is no evidence, none from the written record at least, that philosophers and/or intellectuals from (classical) antiquity at least, moved between and among the Mediterranean to the Far East.

While there is evidence from Herodotus and other sources that there was cultural exchange occurring in at least the beginning of the first millennium BCE between the Greeks and the Mesopotamians (Sumerians), the Chaldeans, the Magi (Persians) and even as far East as India (so-called "gymnosophists"), and most certainly we have cultural exchange occurring toward the later part of the first millennium BCE with the conquests of the Macedonian Alexander the Great reaching as far East again as India, we have no evidence whatsoever from the archeological or historical record that there was any cultural or intellectual exchange between peoples of the Mediterranean - dominated first by Greek (Hellenic) and then Latin (Roman) civilization - and the peoples of the Far East (i.e. China) that were dominated by Chinese language and culture; that is prior to the spread of Buddhism throughout modern day China in the first few centuries of the common era.

Therefore, if any strong patterns of similarity and analogy could be drawn between the seed metaphysical constructs of these geographically separated and culturally distinct civilizations, once could make a strong argument – leaning along the same lines as Witzel – that these similarities are due to the spread or diffusion of similar ideas by prior generations of men rather than distinct inventions by two separate and vastly different intellectual centers of development if we can call them such.

Open versus Closed Systems: What's the difference?

The notion of 'closed systems', or 'bound systems', have been the hallmark of Western intellectual development since the beginning of philosophical inquiry and have continued to be one of the defining characteristics of Western thought even today. Scientific development, from its first method of philosophical inquiry by the ancient Greeks straight through the more modern "Scientific Revolution" and even into the modern "Quantum" era has looked at the world primarily through a mechanistic and systematic lens, looking to establish the basic characteristics of matter and the objective world, and in turn the relationships between these objects of perception.

The view is primarily physical and objective, and looks to mathematical laws that can be gleaned from the universe at large, i.e. discovered, which govern the behavior of these "things". All of these things being capable of objective description and whose states are ultimately defined by one or more physical, and measurable, properties. Things that can be said to exist within the system in question – be it a set of atomic data within the context of a quantum experiment or a set of interplanetary or galactic objects that are viewed within the context of the "known" or "visible" universe as a whole.

In fact the boundaries of the entire system itself, the Universe of Cosmos, is considered to be everything in scope that can be seen or said to exist since the beginning of time – the "beginning" in this sense being defined as the universal creation event that we refer to as the Big Bang which marks the primordial event after which all cosmological and theoretical physical study is concerned with and the beginning of not just "time" as we know it, but also the physical laws that govern "our" universe. To think beyond these boundaries, before the Big Bang or beyond the known or visible universe is not considered a proper or even conceivable act of study from a physics perspective. Once someone leaves these boundaries they have left the boundaries of (Western) Science itself, and into the realm of philosophical speculation or inquiry with which Science is fundamentally not concerned.

The view from the East however - as seen through the eyes of Vedanta, Buddhism and Chinese philosophy for example – is cyclical and "open". Open in the sense that the universe itself is not considered to have a beginning per se, but is believed to be eternally existent. This is evident in the Hindu belief in the cycles or "Ages" of time that defines the cosmological worldview of the Hindus, marked by the inbreathing and outbreathing of Brahman to borrow the mythological and anthropomorphic explanation put forth in the Vedas; the *Upanishads* primarily.

Speculation about the universal order of things and our place in it is viewed within this cyclical, or "unbound" context, not within a set physical boundary in time or space per se. Science is not

completely segregated from other fields of study as it is in Western academia, but integrated within it as a branch of knowledge but not complete within itself. This can be seen in the practice of Vedic (Ayurvedic) or Chinese medicine for example, where the underlying "science" of the respective approach is built on top of and integrated with the underlying philosophical system rather than standing alone outside and separate from it.

In these worldviews that are typically categorized as Easters, the universe is not looked upon as fundamentally "objective" per se, but more humanistic in the sense that human experience, and ultimately "liberation" or "balance", is seen as the primary goal of life, rather than the discovery of laws that govern the physical world as it were or in the case of capitalism itself – a primarily Western invention – the acquisition of goods and accumulation of wealth as the goal of life.

Given this seemingly diametrically opposing worldviews, each of which cannot be proven or disproven per se, neither of which that can be seen as perhaps "better" or "worse" than the other, but this holistic or "open" versus 'delineated" or "closed" represents perhaps "the" distinction between the Eastern and Western way of thinking about the world. Given the rapid globalization and synthesis of all human thought that is occurring throughout the world today as more and more Eastern works are translated and transliterated into Western languages and are the topic of much intellectual pursuit by not just academic scholars but also by individuals in the West as Yoga, Vedanta, Tai Chi and other classically Eastern philosophical systems have become more and more prevalent in Western society, it perhaps is a good time to look for, and look back to, how these two systems of belief really differ from each other and where this difference stems from and perhaps come to a better understanding as to how they might be better integrated.

The Book of Changes: History and Context

While the translational difficulties from Traditional Chinese into English are fairly well documented, even with the introduction of the *Pinyin* Romanization system of Chinese words in the middle of the twentieth century which is now predominantly used, it's with noting that with respect to a numerological and arithmological interpretation of the *Yijing* much of these translational difficulty is bypassed given the level of abstraction that is used for comparison. That is to say while the words and meanings of the commentary are definitely open to interpretation and multiple translations, transliteration and meanings, given the level of abstraction of the symbols themselves and their construction or architecture, we have an opportunity to be able to understand the text, at least form a metaphysical point of view, independent of any translational difficulty to at least some extent.

While we look to and reference several translations of the Ten Wings as the source material for this analytical work in order to double (and sometimes triple) check the underlying meaning and interpretation of various passages which we use as evidence for the views and conclusions drawn herein, it is with the underlying numerology and arithmology that underpins this work in fact which gives us an opportunity to takes us beyond a linguistic interpretation of words and meanings, or in the case of Traditional Chinese the characters that underlie the Chinese words and their meanings, hence the power of number and arithmology.

It is for this reason that this type of interpretative view is perhaps the only place to look to compare the two seemingly distinctive philosophical traditions, and potentially common ancestry, which is the main thrust of this work. For while these two philosophical traditions which clearly developed independently of each other – specifically the Far Eastern/Ancient Chinese tradition as reflected in the *Yijing* and the and Classical Greek or Hellenic philosophical tradition as reflected in Pythagorean philosophy – as we will show the underlying numerological and arithmological structure which underpins the two systems shares many similarities, almost eerily so.[3]

When we look to the Far East however, particularly to China and the systems of thought that originated in the Luohe River and Yellow River (Huáng Hé) valleys in the Upper Paleolithic and Bronze Age China (6th through 1st millennium BCE), we see string evidence for a similar fascination and underlying belief in the cosmological world order being based upon a basic numerical structure and form, and somewhat less so basic geometry, as put forth by their intellectual

[3] For a detailed look at the translational challenges of Chinese language in antiquity into modern English please see *Philosophy in Antiquity: The Far East* by Juan Valdez. Lambert Publishing, 2016. Chapter entitled "Classical Chinese: The Translational Challenge", pages 22-32.

counterparts to the West. They did however create an altogether unique and distinct system of metaphysics (if we may call it that) to represent the world order that although shares some of the basic characteristics as the Pythagorean/Platonic system which persisted in the West from Hellenic times certainly into the period of Roman/Latin influence in the Mediterranean and lingering even into the period of Judeo-Christian influence well into the first millennium CE. Along with some basic similarities however, it also carried with it significant unique characteristics and underlying assumptions which, as it turns out, we will propose have come to have significant implications for their worldview as a whole as juxtaposed with the West that persist even well into modern times and even to this day.

It is not too far-fetched to say that the tradition surrounding the *Yijing*, or *Classic of Changes*, (怡靜), contains within it the seed of virtually all Chinese philosophical thought. It is the earliest philosophical work that we have from Chinese antiquity undoubtedly, if we may even call it a philosophical work. It certainly was not in its earliest form. It is first and foremost, and continues to be even today, a "divination" text, one of the oldest in existence in fact, and the text was devised as a way to get a glimpse of fate as it were, a manual or guidebook devised to determine the current state of affairs and how best to maneuver them to one's one advantage, to achieve balance and harmony with the basic cosmic principles which governed the universe.

It accomplishes this by (supposedly) establishing a system of signs or symbols that account for all past, present and future events, as well as a means for "divining" the current state of affairs and their context within the system of signs, signs which provide a map of the entire set of possible circumstances which can exist. The symbols, in their earliest form being referred to as the *Zhou Yi*, each back at least into Bronze Age China (mid to late 2nd millennium BCE), reaching its present day form as the *Yijing* which include Confucian commentaries commonly known in the west as the "Ten Wings" (*Yizhuan* or 易傳). It is well established that these commentaries were added in the latter part of the first Millennium BCE by Confucian scholars, and it is also clear that virtually all subsequent philosophical thought in China, Confucian, Daoist, Yin/Yang, etc. all include the *Yijing* to a greater or lesser extent as part of their textual canon as it were.

While again the *Yijing* is not a philosophical work per se, it does have an implied or inferred metaphysics and even cosmology that can be gleaned from the material. It must be kept in mind however that a) the text clearly comes from deep antiquity and much of our understanding of its origins and creation is buried in mythology, and b) the only "direct" and earliest material that survives that describes its underlying philosophy and origins, its underlying metaphysics, was compiled by Confucian scholars.

As described in the *Ten Wings*, the *Yijing* was designed to be consulted as a divination tool through a complex ritual involving "yarrow stalks", or long reeds, through which the individual consulting the *Book of Changes* could better understand a specific question or problem which

was "posed" to the text. The practice itself was intended to be overseen and guided by a trained priest or scholar of sorts who not only ensured that the proper rights and rituals were performed as part of the divination process, but also who could "interpret" the symbol, or signs, that were illuminated as part of the ritual.

Via the divination process, again historically performed with yarrow stalks[4] but today sometimes performed in a slightly less complicated process using coins, a set of broken and solid lines, what came to be known as *yin* and *yang* lines respectively, is created. Six lines in total are established during the process, along with a sense of direction (or not) implied within the sign itself within the system as a whole. There are 64 total symbols, or "gua", in all and each symbol consists of what is called a "hexagram", again a series of six lines, read from the bottom to the top, each of which is either broken or solid. The selected hexagram was interpreted to represent not only an explanation of the state of affairs as reflected by the individual and the question posed, but also an element of process or change (*yi*) to which the state of affairs was explicitly moving towards as well as, and in addition to, which state of affairs the current situation was implicitly moving away from.

The process of yarrow stalk divination of the text combines the fixed underlying cosmological world order of the ancient Chinese[5], which is reflected in the underlying order and creation of the 64 hexagrams themselves (and in particular in the creation and establishment of the order of the *bagua*, or eight primary trigrams, more below), combined with an element of chance so to speak as the yarrow stalks are divided in turn by the individual and the hexagram lines are drawn. It is important to emphasize that any given state of existence to which an individual symbol reflected was not looked at as representing some state of independent existence, but looked upon as a state of existence within a comprehensive whole that had embedded within it a sense of movement or change (again *yi*) as well as an underlying cosmology which was embedded in the hexagram symbols themselves.

The *Ten Wings* are believed to have been appended to the textual tradition surrounding the *Yijing* in and around the Han Dynasty period of classical Chinese antiquity (c. 206 BCE – 220 CE). However, it's also clear that these commentaries contain material and "sayings" that reach at least as far back as the Zhou Dynasty period (c. 1046 – 256 BCE) if not much earlier, just as the *Upanishads* and the Vedas as they stand in written form reflect a much earlier oral tradition as well. As all traditions from all early civilizations in antiquity were first and foremost oral

[4] "These [yarrow stalks] are usually genuine *Achillea millefolium* stalks that have been cut and prepared for such purposes or any form of wooden rod or sticks which are plain, lacquered or varnished. When genuine *Achillea* is used, varieties local to the diviner are considered the best as they would contain *qi* [the underlying energy of which any living thing consists of] closer to and more in-tune with the diviner." From https://en.wikipedia.org/wiki/I_Ching_divination

[5] As well as the present day Chinese as the *Yijing* is consulted even to this day in many circles and is still actively studied and the "art" still actively practiced.

traditions, passed down from master to student over the course of generations, and then only later written down by scholars after a) writing was invented, b) after it was deemed worthy and important to have the tradition codified or "captured" as it were by the written word, and c) typically sponsored by a particular ruling class or authority. The latter fact in and of itself should always cause any later interpreters of a specific, "written" philosophical tradition a healthy dose of skepticism, for in any of the traditions that pass down to us from antiquity is very clear that much of the material, understanding or even entire schools of thought could have been systematically removed from the historical record, or simply by being ignored or deemed unimportant by keepers of the tradition. There is evidence of the former in the case of the ancient Chinese as much of the works of Chinese antiquity are supposed to have been lost in the great Burning of the Books in ancient China by the first emperor of the Qin dynasty in 213 BCE.[6]

It's also worth noting that the existence and use of the *Yijing* as a divination manual in Chinese antiquity also ran parallel with the belief and worship of the a monotheistic God of sorts called Shangdi, an element of ancient Chinese civilization that underlies the text and commentary, and also is reflected in the so-called "mandate of heaven" (*tiānmìng*, or 天命 which means literally "heaven decree"), which the rulers of the Zhou Dynasty (c 1046 – 256 BCE) and later dynastic rulers looked to as justification for their authority over the people. So in other words Heaven in Chinese antiquity was not only used for divination purposes, as manifesting signs that could be read and understood through the Yijing, but also as a fundamental part of the social fabric of society as well.

[6] We also see for example in the Hellenic philosophical tradition reference to the "unwritten teachings" of Plato by Aristotle.

The Hetu and Luoshu Diagrams: Numerology in Chinese Antiquity

What we can definitively say about how the underlying symbols of the Yijing were created can be ascertained primarily from the commentaries that survive and were appended to text itself as it has been received from antiquity, a process that we know and has already been indicated was influenced by socio-political factors. It is clear however that numerological and arithmological beliefs were instrumental in their creation, as indicated not only in the commentaries themselves which speak to how the hexagrams and their constituent trigrams were created, but also by associated mythology surrounding two figures in particular that seem to point to even deeper Chinese antiquity.

The two figures I question are the Yellow River Map, or *Hetu* (河圖), and the "Inscription of the River Luo", or *Luoshu* (洛書, also written 雒書), each of which is connected in mythological lore to Fu XI and King Wen, two figures from Chinese antiquity lore that are integrally linked to the establishment of Chinese civilization. The figures are referred to not only in the Ten Wings itself, but also in the "Book of Documents", or *Shujing* (書經) which dates to the middle of the Western Zhou period (11th to 8th centuries BCE), as well as the Guanzi (管子), or "Master Guan", which is a collection of various philosophical treatises on statecraft collected during the Spring and Autumn period (8th to 5th centuries BCE).[7]

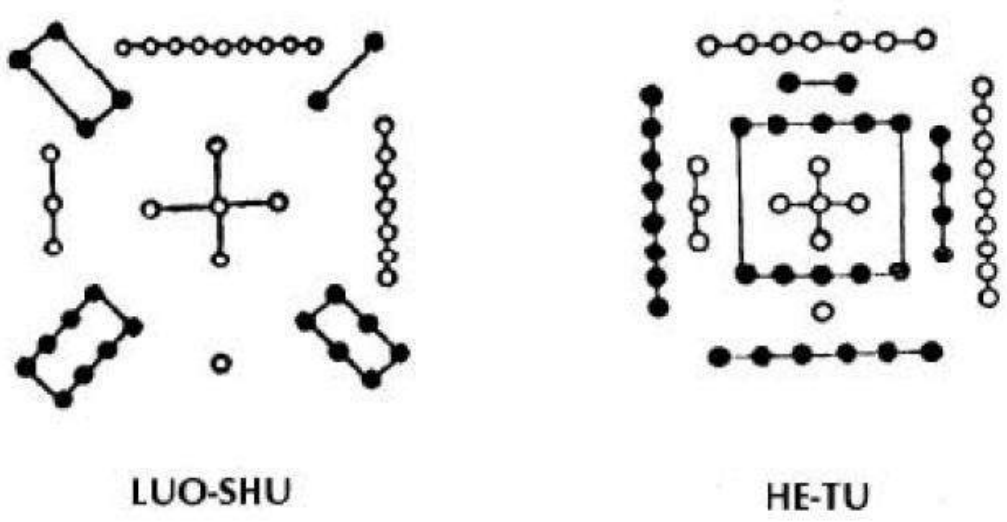

Figure 1: The Luo-shu and He-tu

[7] Reference the online resource Chinese Literature and Philosophy, from ChinaKnowledge.de entitled "The River Chart and the Inscription of the Luo" at http://www.chinaknowledge.de/Literature/Daoists/hetuluoshu.html

While the derivation of the Hetu and Luoshu diagrams to the Earlier and Later Heaven arrangements of the bagua, or eight trigrams, which form the basis of the hexagrams of the *Yijing* does not show up in the written records until the Song Dynasty period (960 – 1279 CE), there is ample evidence to surmise that that the numerological and/or metaphysical connection between them reaches back into at least Bronze Age China from which the first evidence of the *Zhou Yi* emerges.

First and foremost, we have a direct reference to the Hetu and Luoshu in the Ten Wings commentary itself, albeit in a form that does not allow for too much explanation as to how precisely these diagrams are related to Yijing divination other than referring to the Hetu as a "map" and the Luoshu as a "document" or "inscription", and indicating that they were used as a "model" for the ancient sages who used or created the *Yijing*. The specific verse or passage from the Great Commentary is below:

> *Therefore: Heaven creates divine things; the holy sage takes them as models. Heaven and earth change and transform; the holy sage imitates them. In the heavens hang images that reveal good fortune and misfortune; the holy sage reproduces these. The Yellow River brought forth a map and the Lo River brought forth a writing [document]; the holy men took these as models.*[8]

It's also clear from the archeological record though that ancient *Yijing* divination was performed in conjunction with the burning of tortoise shells so that does offer further corroborating evidence that these symbols, or at least the Luoshu, was related to ancient *Yijing* divination in some way. We could speculate that that this ancient practice, using the Luoshu and Hetu diagrams, was the origins of the divination practice in deep Chinese antiquity and these practices ended up evolving into the yarrow stalk and hexagram based divination process that ended up being encapsulated in the *Zhou Yi* and then codified finally in the *Yijing*.

Furthermore, we have from Chinese mythology the association of the Hetu diagram with the legendary Fu XI who witnessed a "dragon horse", or *longma* (龍馬), emerge from the Yellow River with a set of symbols on its back, i.e. the Hetu diagram, from which he supposedly "divined" an ordered system of trigrams within which the universal ordering of things could be understood. This is the mythology that surrounds the creation of the "Earlier than Heaven", or Fu Xi, arrangement of the eight trigrams. We also have a very similar myth associated with the Luoshu diagram that speaks to the emergence of a dragon turtle, or longgui (龍龜), from the River Luo from which had the Luoshu symbol on its back, actually its turtle shell, from which an alternate

[8] *The I Ching: Or Book of Changes*. Translated from the Chinese into German by Richard Willhelm and then to the English by Cary F. Baynes with a foreword by Carl Jung. Princeton University Press. Third Edition 1967. *The Great Treatise* (*Dazhuan*) *Book II* Ch. XI verse 8 pg. 320

trigram arrangement or sequence was established, the "Later than Heaven", or King Wen arrangement.

It also seems clear that the design of the Hetu and Luoshu diagrams, being based upon the collection and arrangement of sets of dark and light circles, speaks to a much more archaic and older numerological system that predates the formulation of the trigrams or hexagrams that constitute the core part of the *Yijing*.

For in deep antiquity, and this is perhaps true of the evolution and creation of all counting systems in antiquity, numbers were represented by simple representations and collections of objects, objects that were typically easily accessible. For example, the early numbering system of the Chinese, which was base 10 like ours and as reflected in the Hetu and Luoshu each of which have numerical representations of all of the numbers 1 – 9, used small bamboo rods (stalk like figures in fact) to denote the numbers 1 through 10. This system of symbols allowed for not only the representation of very large numbers using a small set of symbols which were easy to learn and communicate, but also allowed for relatively straightforward arithmetic operations as well.[9]

The Luoshu diagram significantly, also is a clear representation of the magic square of base three – where each of the numerical representations on all of the lines of the diagram, the vertical, horizontal and diagonal axes, all add up to 15. This may be perhaps the earliest known evidence for a magic square in antiquity.

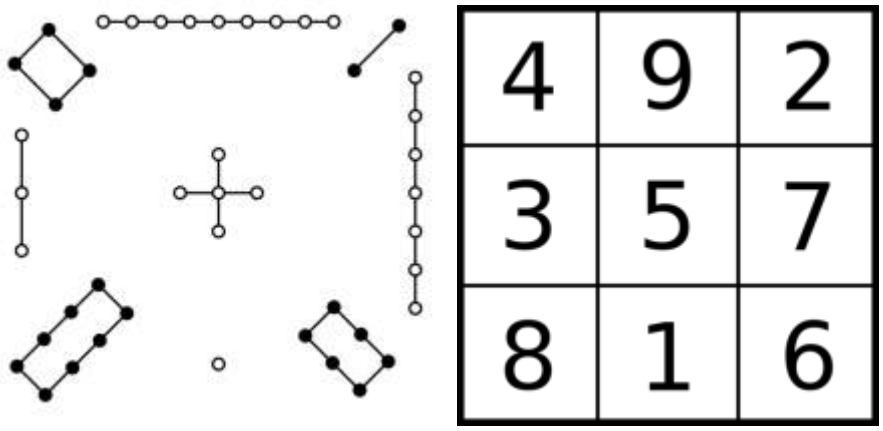

Figure 2: Luoshu diagram as a Magic Square of base 3

[9] See http://www.storyofmathematics.com/chinese.html

This numerical diagram, across all ancient cultures and civilizations that understood numbers in fact, indicates not only a belief in the "divine" or "revealed" nature of base 10 as the core counting system upon which all numerology and arithmology is subsequently based, but also the "divine" or "eternal" nature of the numbers 1 through 9 and their inherent symmetry and harmony, tying these basic numbers directly with universal harmony and balance upon which the *Yijing* squarely (pun intended) rests.

We also find a reference, albeit indirect, to the Hetu diagram in specific passage from the Great Commentary (*Dazhuan*):

> *Heaven has 1, 3, 5, 7 and 9. Earth has 2, 4, 6, 8 and 10. Thus heaven has five numbers and earth has five numbers. The two series are interlocked in order; each number in one series has its partner in the other [When they are distributed among the five places, each finds its complement]. The sum of heaven's numbers is 25; the sum of earth's numbers is 30; the sum of the numbers of heaven and earth is 55. This is what stimulates alternation and transformation and animates spirits [It is this which completes the changes and transformations ad sets demons and gods in movement]. The full Number is 50, of which 49 are used. Dividing into two lots represents duality. Setting one aside completes the triad. Counting by fours represents the four seasons. Reserving the remainder between the fingers represents the leap month.*[10]

As per the first part of this passage, in the Hetu diagram we see the odd numbers between 1 and 10 - 1, 3, 5, 7 and 9 respectively - being represented by the white, or "yang", circles/dots, yang being the primary attribute of the trigram named Heaven (Qian) which is made up of three solid lines. And conversely we see in the Hetu all of the even numbers between 1 and 10 - 2, 4, 6, and 8 respectively - being represented by black, or "yin" circles/dots, yin being the primary element associated with the Earth trigram (Kun) which is represented by three yin, or broken, lines. Furthermore, we can see in the Hetu diagram that in fact the two series of even and odd numbers are in fact paired, each number having its counterpart on the opposite side of the diagram – 1 opposite 2, 3 opposite 4 and so on.

It is within this framework of basic numbers, specifically the numbers 1, 2, 3 and 4 (from which 10, the most "complete" or "perfect" number is derived arithmetically in the Pythagorean system; 1 + 2 + 3 + 4) upon which the yarrow stalk divination framework is built upon. We start with a reference to the calculation that is used to determine the total number of yarrow stalks, from the arithmetic summation of all the even and odd numbers between 1 and 10, summing 55 in all, of which 50 are used as the basis for calculation. The fundamental duality underpinning

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[10] *The Book of Changes (Zhouyi)*. Translation and commentary by Richard Rutt. Routledge Publishing, 1996. From the *Ten Wings* section, the *Dazhuan or Great Commentary*. Wing 5, *Dazhuan I*, Chapter IX verse 1-3 pg. 415 and alternate translations in brackets from *The I Ching: Or Book of Changes*. Translated from the Chinese into German by Richard Willhelm and then to the English by Cary F. Baynes with a foreword by Carl Jung. Princeton University Press. Third Edition 1967. *The Great Treatise* (*Dazhuan*) Book II Ch. IX verses 1-3; pgs. 308-311

the universe, represented by the number 2 (the *Dyad* in Hellenic philosophical parlance), is then manifest in the initial division process of yarrow stalks into two piles or sets. The number 3 (the Triad) is then signified by the setting aside of one yarrow stalk after the initial division into 2 piles is completed. We then use the number 4 (the Tetrad) as the means by which the yarrow stalks are counted, by fours. We also see here a direct reference to (at least one of) the universal meanings of 4, i.e. the 4 seasons.

It's important to note that the *Yijing* is in fact NOT a counting system, and despite the best efforts of many numerologists over the centuries, it is clear that the underlying hexagrams, as well as the underlying trigrams upon which the hexagrams are based, do *not* represent numbers per se. However, it is factual to say that that the system of broken and solid lines from which the trigrams and hexagrams are constructed, as well as the divination process itself which underlies *Yijing* consultation, clearly has a strong numerological and arithmological basis - a numerological basis and theory that in all likelihood rests upon, and was formulated out of, the prehistoric numerology that is reflected in the Hetu and Luoshu diagrams.

So while the textual evidence seems to be unclear or hazy at first glance, upon reflection and analysis it's clear that there existed a strong relationship between the inherent numerology encoded in the Hetu and Luoshu diagrams to the numerology and arithmology that underpinned the *Yijing* tradition, even if the textual and written evidence for the correlation and ultimate derivation of the bagua arrangements of Earlier and Later Heaven from the Luoshu and Hetu diagrams respectively is not clarified in the written record at least until a much later period in the Song dynasty circa 1000 CE.

Hexagram Construction and Formation: Yijing Metaphysics[11]

It's reasonable to assume, as is true of many of the earliest theo-philosophical works from deep antiquity, that many of the passages in the *Shuogua* and the *Dazhuan* spring from not only a common oral traditional source, given that they contain similar content and "language", but that this source reaches back at least into Bronze Age China where we find the earliest evidence of the core of the *Yijing* in its earliest form, the *Zhou Yi*, which was then only later "canonized" and interpreted and commented on by the Confucian scholars in the late Zhou and early Han dynastic periods. This implies of course that much of the tradition surrounding the hexagrams, and certainly much of the cosmological and metaphysical meanings underpinning the trigrams upon which the entire text is based, have not been captured by the "received" tradition surrounding the text and its interpretation. Having said that, if looked at closely, and looked at in conjunction with the *Hetu* and *Luoshu* diagrams, some of this knowledge can perhaps be recovered.

In the *Dazhuan*, or "Great Commentary", the mythical tradition surrounding the *Yijing* attributes its original creation to Fu Xi, a Prometheus type figure from deep Chinese antiquity who is credited with the invention of fishing, hunting, cooking as well as the initial eight trigrams, stemming from his observation and understanding of the natural world.

> *In high antiquity, when Fuxi ruled the world, he looked up and observed the figures in heaven, looked down and saw the model forms under heaven. He noted the appearances of birds and beasts and how they were adapted to their habitats, examined things in his own person near at hand, and things in general at a distance. Hence he devised the eight trigrams [*bagua*] with power to communicate with spirits and classify the natures of myriad beings [*wànwù*].*[12]

[11] Given the inherent difficulties in English translation/transliteration of the commentary and text compiled in the *Shuagua*, three different translations have been consulted to ensure that the interpretations and conclusions arrived at in this section stand on the most solid rational ground. The first and foremost is the latest translation by Richard Rutt initially published in 1996 which makes us of the important discoveries of the Mawangdui Silk Texts in the 1970s which contribute greatly to the textual and philosophical tradition surrounding the *Zhou Yi* / *Yijing* and its related commentaries. The second is the classic translation of the *Yijing* by Willhelm and Baynes published in the middle of the twentieth century which although does not include the findings at Mawangdui, nonetheless includes very valuable commentaries on the Ten Wings themselves which elucidate the sometimes esoteric and hidden meanings within the verses. The third, which is primarily used an arbiter of sorts when the first two translations differ is the classic translation of the *I Ching*, or *Book of Changes* by James Legge which although published at the end of the 19th and beginning of the 20th century, nonetheless has been electronically and digitally published [11] and has the added advantage of being digitally published alongside the original, Traditional, Chinese, allowing for the dissection of individual Chinese characters from which alternate, or more broad, meanings can be ascertained from the individual verses.

[12] *The Book of Changes (Zhouyi)*. Translation and commentary by Richard Rutt. Routledge Publishing, 1996. From the *Ten Wings* section, *Great Commentary* (*Dazhuan*), the Wing 6, *Dazhuan II*. Chapter II verse 1 pg. 421. A hint of Platonism can be found in this passage no doubt, as well as in the opening verses of the Great Commentary quoted above – for both verses speak to the model of the Earthly world being "modelled" or "informed" by the realm of heaven, reminiscent no doubt to Plato's Theory of Forms where the material world can only be understood via the every existent and underlying "Form" through which true knowledge can be obtained.

This is an interesting verse as it reflects, at least on a superficial basis, not only an understanding of some type of 'natural selection' of sorts that underpins the animated world – the world of animals, birds, man, etc. – but also a hint that the world of man is a reflection of, or is created from, the model of Heaven, the bagua being the instrument he devised to communicate with, or perhaps better put "align", the natural world with the man and ultimately heaven to which life of all kinds is ultimately connected to.

We find an alternate view of the creation of the Book of Changes from the opening verse of the *Shuogua* as well. Here we have another explanation of the purpose and origins of the text, as well as an allusion to its formulation based upon (fundamentally theological) numerological principles.

> *In ancient times the holy sages made the Book of Changes thus: They invented the yarrow-stalk oracle in order to lend aid in a mysterious way to the light of the gods [*spirits*]. To heaven they assigned the number three and to earth the number two; from these they computed the other numbers. They contemplated the changes in the dark [*yin*] and the light [*yang*] and established the hexagrams in accordance with them. They brought about movements in the firm and the yielding, and thus produced the individual lines [*yao*]. They put themselves in accord with tao [*dao*] and its power, and in conformity with this laid down the order of what is right. By thinking through the order of the outer world to the end, and by exploring the law of their nature to the deepest core, they arrived at an understanding of fate.*[13]

The author here refers to the *Yijing* as the "yarrow stalk oracle" as well as makes direct reference to the "gods" or "spirits" which inspire or inform the text, indicating not just the integral nature of the divination aspect of the work, but also the underlying "divine" or "theological" inspiration of the text. This attribute of the work puts it on the same footing of all of the other texts from antiquity which claim divine inspiration; i.e. the Old Testament or Torah, the Vedas, the New Testament and the Qur'an as well. This passage also explains how it is that the *Yijing* can ultimately comprehend, and at some level predict, the future – what is referred to here as "*an understanding of fate*".

We also find here in this passage a reference to the numerological significance of the two basic principles of Heaven and Earth, which are assigned the numbers 3 (really odd) and 2 (really even) respectively. The reference to 3 and 2 being the source of all numbers seems to be a veiled reference to the underlying numerology of embedded in the Hetu and Luoshu diagrams which

[13] *The I Ching: Or Book of Changes*. Translated from the Chinese into German by Richard Willhelm and then to the English by Cary F. Baynes with a foreword by Carl Jung. Princeton University Press. Third Edition 1967. *Shuo Kua* (*Shuogua*) Chapter I verse 1; pages 262.

lay out the odd and even numbers between 1 and 10 in different arrangements, and map them each out as representative of the core dualism that underlies the material universe – yang (male/creative) and yin (female/receptive). We also see here the assertion that it is from the initial odd and even numbers, 3 and 2 respectively, from which all numbers are formed, establishing the numerical basis not only for all the numbers between 1 and 10 but also by each all numbers, all of which stem from 1-10 and their corresponding representations within all numbers greater than 10, which are simply the numbers 1-10 combined with their base 10 categorization.

The next passage/verse from the *Shuogua* speaks the underlying architecture and structure of the hexagrams themselves as well.

> *In ancient times the holy sages made the Book of Changes thus: Their purpose was the follow the order of their nature and of fate. Therefore they determined the tao [*dao*] of heaven and called it the dark and the light. They determined the tao [*dao*] of the earth and called it the yielding and the firm. They determined the tao [*dao*] of man and called it love [*goodwill*] and rectitude [*duty*][14]. They combined these three fundamental powers and doubled them; therefore in the Book of Changes [*Yijing*] a sign [*gua*] is always formed by six lines. The places are divided into the dark and the light. The yielding and the firm occupy these by turns. Therefore the Book of Changes [*Yijing*] has six places, which constitute the linear figures.*[15]

In this very condensed passage, we find the reference to 3 (Triad) fundamental aspects of the universe upon which the hexagrammatical structure is based - Heaven, Earth and Man. Each of these is then combined, twice (the Dyad), to constitute a single linear figure of which there are 64 in all are derived. The *dao* (typically translated as "way") is perhaps better translated in this context as "fundamental aspect" or "fundamental "characteristic", the term used to describe the underlying core dualistic attributes of each of these 3 universal agents.

So while within the hexagrams the same symbol is used in each of the six lines, either a broken (yin) or solid (yang) stroke, it nonetheless represents a different fundamental principle that characterizes the opposing or balancing forces that underlie that particular aspect of the universal picture – again Heaven, Earth and Man respectively - to the ancient Chinese. For Heaven it is the dark and light which constitute its core being, for Earth it is the firm and the yielding, and for Man it is love (or goodwill) and rectitude (or duty).

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[14] Richard Rutt translates these terms to "goodwill" and "duty".

[15] *The I Ching: Or Book of Changes*. Translated from the Chinese into German by Richard Willhelm and then to the English by Cary F. Baynes with a foreword by Carl Jung. Princeton University Press. Third Edition 1967. *Shuo Kua* (*Shuogua*) Chapter I verse 2; pg. 264.

We also find the same theological numerological references of bagua and hexagram construction from a passage from Book II of the *Dazhuan*:

> *Yi is a document that is wide, covering all matters. It contains the* dao *of heaven, it contains the* dao *of man, it contains the* dao *of earth. It contains all three and doubles them. Thus there are six – six: naught but the dao of the three.*[16]

Here again we see the explanation of the construction of the (6 unit) hexagram from the great 3 pillars of Chinese cosmology - the dao of Heaven, Man and Earth. Each of these elements again being represented by solid (yang) or broken (yin) lines, which are doubled (the 2) in turn to form each of the 64 hexagrams, the full extent of which "covers all matters".[17]

From the opening passage of the *Dazhuan* ("Great Commentary" or "Great Treatise"), we find an alternative description of the core purpose and meaning of the Yijing presented, another view or perspective as it were.

> *Heaven is high, the earth is low; thus the Creative [*Qian*] and the Receptive [*Kun*] are determined. In correspondence with this difference between low and high, inferior and superior places are established. Movement and rest have their definitive laws; according to these, firm and yielding lines are differentiated. Events follow definitive trends, each according to its nature. Things are distinguished from one another in definitive classes. In this way good fortune and misfortune come about. In the heavens phenomena take form; on earth shapes take form. In this way change and transformation become manifest.*[18]

We see here another description as to not only how the *Yijing* came to be structured, with Heaven on high or above, and Earth on low, or grounded, from which "inferior" and "superior" positions, or states of being ("definitive classes"), are established. This is used to explain again how it is

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[16] *The Book of Changes (Zhouyi)*. Translation and commentary by Richard Rutt. Routledge Publishing, 1996. From the Ten Wings section, the *Dazhuan* or *Great Commentary*. *Dazhuan II*, Wing 6. Chapter X Verse 1 pg. 429.

[17] It is commonly understood that 1 is excluded from the list given its primordial and indivisible status. Also note the similarity here between the significance held to the numbers between 1 and 10 by the authors of the *Shuogua* and the Pythagorean principle of the Decad (which in all likelihood has Egyptian origins), stemming no doubt from the notion that counting was done in base 10 by both cultures – 10 being the number of fingers we have and therefore the most probable method of counting in prehistory. All of these numbers, each of them between 1 and 10 in fact, were considered to have a relationship with divine order and were laid out as such in Pythagorean philosophy. See http://www.storyofmathematics.com/chinese.html for a good overview on the counting system of the ancient Chinese.

[18] *The I Ching: Or Book of Changes*. Translated from the Chinese into German by Richard Willhelm and then to the English by Cary F. Baynes with a foreword by Carl Jung. Princeton University Press. Third Edition 1967. *Ta Chuan* (*Dazhuan*) / The Great Treatise (Great Commentary) Chapter I verse 1; pg. 280-281.

that good fortune and/or misfortune comes about, reflecting the underlying process of change and transformation which manifests from the shape or design that is established in the heavens from which our materials, and spiritual, existence takes shape.

The next passage of the Great Commentary goes on to describe not just how it is that the eight trigrams upon which all of the hexagrams are formed, but also what each of them represents, marking the introduction of the idea of "arrangement" or "sequencing" of the bagua which underpins the entire work.

> *Therefore the eight trigrams [*bagua*] succeed one another by turns, as the firm and the yielding displace each other. Things are aroused by thunder and lightning; they are fertilized by wind and rain. Sun and moon follow their courses and its now hot, now cold.* [19]

Here we see specific allusion to the structure of the underlying hexagram unit, as solid and broken lines, translated here as the "firm" (solid stroke) and the "yielding" (broken line stroke). We also see reference here to the underlying natural principles upon which the bagua, the eight core trigrams, are formulated - the basic elemental and archaic universal principles upon which the eight trigrams are constructed. They are called out here in pairs; "thunder and lightning", "wind and rain", "sun and moon", and "hot and cold", not necessarily having a direct mapping to the classical *bagua* symbols that we see in the Earlier or Later Heaven arrangements, but still nonetheless calling out, with the initial Heaven above and Earth below as laid out in the first verse, the process by which change and transformation occurs – via "thunder and lightning" which is fertilized by "wind and rain", principles which are ultimately governed by the progression and movement of the sun and moon from the Heavens which ultimately determine the progression of seasons, here described as "hot and cold".

From the first Book of the Dazhuan we also find the following, distinctively Confucian, description as to how the hexagrams are constructed:

[19] *The I Ching: Or Book of Changes*. Translated from the Chinese into German by Richard Willhelm and then to the English by Cary F. Baynes with a foreword by Carl Jung. Princeton University Press. Third Edition 1967. *Ta Chuan* (*Dazhuan*) / The Great Treatise (Great Commentary) Chapter I verses 1-3; pages 280-284.

*Thus: Yi holds the Ultimate Limit[*taiji*][20], whence spring the Two Primal Forces, yang and yin. The Two Forces generate four diagrams and the four diagrams generate eight trigrams [*bagua*]. The eight trigrams define good and ill fortune; good and ill fortune determine the Great Task.*[21]

Here we not only see a reference to the significance of the bagua as the ultimate source of the 64 hexagrams and their construction, but also a description of the source and method as it were, by which the *bagua*, is established. Yin and yang, the two primal forces, are unfolded from the ultimate source of all creation, or *taiji*, which are combined to form the "four diagrams" – Greater and Lesser Yang (*Tai-yang* and *Shao-yang*) and Lesser and Greater Yin (*Shao-ying* and *Tai-ying*) - which then are combined with yang and yin again to form the eight primary trigrams.

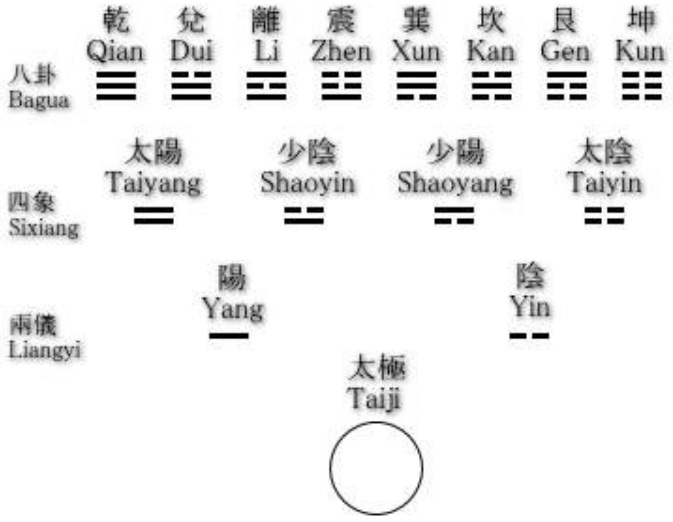

Figure 3: Formation of the Bagua[22]

In brief then, we can see the fundamental numerical forces at work here in the creation of the *Yijing* as reflected in the commentaries that describe its original formation, albeit inferred from the construction of the hexagrams via the trigram/bagua structure rather than called out directly as they are in the Western/Pythagorean tradition. We see a reference to the One (taiji) from

[20] From Rutt's comment on the translation of this word: "The Ultimate Limit. This is *Taiji*, the combination of primal *yin* and *yang*, later symbolized as a circle with two commas. The two commas are variously explained as one red for *yang* and one blue or black for *yin*, or one azure blue for *yang* and one orange-red for *yin*." From Notes to the Dazhuan, page 432, note n. This is the elemental structure, and name/symbol, of the classic Daoist symbol Yin/Yang herein described in its original derivative form in antiquity.

[21] *The Book of Changes (Zhouyi)*. Translation and commentary by Richard Rutt. Routledge Publishing, 1996. From the Ten Wings section, the *Dazhuan* or *Great Commentary*. *Dazhuan I*, Wing 5. Chapter IX verse 5 pg. 418.

[22] Source: https://en.wikipedia.org/wiki/Bagua

which the Two (yin and yang) emerges from, and then we see the Three (the great Triad of Heaven, Man and Earth) to which the system of yin and yang is applied to yield the underlying hexagramattic structure of the 64 symbols (3 x 2), and then the Four being used as the underlying structure from which the bagua, the Eight, is built off of.

So while we don't have a direct reference to the numbers themselves being used, or being understood, as basic metaphysical constructs, we clearly see evidence of the relationship between these basic numbers, the abstract principles which they represented, and their use in the establishment of a system, a cosmology and divination practice for consultation, to bring their lives into balance with the world order that the ancient Chinese understood to be based upon these basic numerical principles of the One, Two, Three and Four.

The Symbolism and Meaning Behind the Arrangements of the Bagua

To understand the underlying process of movement, or change (*Yi*), that is core meaning behind the *Yijing*, we must have some understanding of the basic principles at work which govern the worldview within which the *Yijing* was created. It is with this understanding that we can begin to comprehend, if at all, the underlying cosmology embedded in the philosophical treatise and how the underlying numerology and arithmology which clearly underpin the work fit into this worldview.

While the *Dazhuan* (also called "Great Commentary" or "Great Treatise", or *Xici zhuan*, classically the 5th and 6th of the "Ten Wings")[23] describes the history and construction of the *bagua* and their relationship to the fully formed hexagrams, and hints at the existence of an underlying order of the *bagua*, or eight primary trigrams[24], it does not embed or imply any specific arrangement of the bagua which has come to be an important part of the interpretative tradition surrounding the *Yijing* text, i.e. *Yijing* metaphysics. The *Shuogua* (or literally "explanation of the signs", classically the 8th Wing of the "Ten Wings") however, which is also made up of two Books combined together, alludes more directly to, and explains in somewhat esoteric and seemingly contradictory language, several underlying orders and symmetries inherent in the *bagua* symbols.

These underlying orders of the *bagua* are typically referred to as "Sequences"[25], the most common of which are the "Earlier Heaven" (attributed to the mythical figure Fu Xi) and "Later Heaven" (attributed to King Wen). In the Earlier and Later Heaven arrangements, each of the eight primary elements are formed from the combination of three broken or solid lines together (again *yin* and *yang* respectively), each with its own symbolic, and (implied) numerical and ordered meaning. The sequence is then arranged in a circular, octagonal form – of which there are primarily two: the Earlier Heaven sequence (aka the Fu Xi sequence) or the Later Heaven sequence (i.e. the King Wen sequence).

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[23] A great deal of what we know of the manuscript tradition surrounding the *Dazhuan* or "Great Commentary" was found in the Mawangdui Silk Texts in 1973, texts that are dated from around the 2nd century BCE.

[24] See *Dazhuan* Chapter 1, verses 1-3

[25] However, "Sequence" implies a linear process and embeds a very prototypical Western outlook upon a fundamentally foreign belief system. The distinctively Chinese principle of change, or Yi (易), not only underlies the entire philosophical system embedded in the *Yijing* but also conversely underlies any of the proposed arrangements of the eight primary trigram "symbols" or "powers". Any of these proposed arrangements rest more on the idea of "transformation" of one symbol or state to another rather than a serialized process of movement between symbols within a geometric shape or planer space - in this case a circle made up of eight points, an octagon. In other words, any representation of the eight primary forces of nature as represented by the bagua from a Chinese perspective is a process which is better characterized by "derivation" and "transformation" – ultimately based upon the principle of "Yi" - rather than a "process" or "cycle" of "change" which is typically how the character for Yi (易) is transliterated into English.

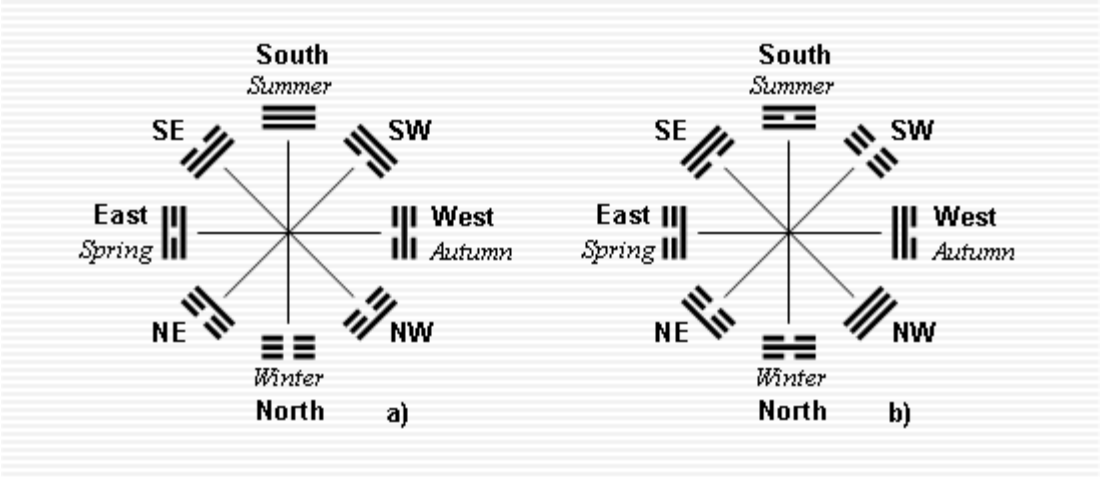

Figure 4: Earlier Heaven (Fu Xi) and Later Heaven (King Wen) Bagua Arrangements[26]

These Earlier and Later heaven sequences of *bagua* lay out how each of the basic eight principles of Chinese metaphysical and philosophical thought which come together in these classic formations to form a circular, and cyclical octagonal shape of trigrams, a trigram being three lines, one on top of the other, read from bottom to top each of which represented one of the eight primary states of being so to speak, or perhaps better put states of existence or world order. However, as Willhelm/Baynes intuitively point out, each of the arrangements is not to be viewed independent of each other, but more as complementary descriptive metaphysical aspects of the world order which underpins *Yijing* philosophy and are ultimately responsible for its practical use as an oracular or divination tool.

> *To understand fully, one must always visualize the Inner-World Arrangement [*Later Heaven, or King Wen, Sequence*] as transparent, with the Primal Arrangement [Earlier Heaven, or Fu Xi, Sequence] shining through it. Thus when we come to the trigram Li [*or Fire, which rests at the top/Southernmost point in the King Wen Sequence*], we come at the same time upon the ruler Chi'ien [*Qian, or Heaven, the symbol that rests at the top/Southern point of the Earlier Heaven Sequence*], who governs with his face turned to the South.*[27]

[26] From http://www.i-ching.hu/chp00/chp1/introduction.htm

[27] *The I Ching: Or Book of Changes*. Translated from the Chinese into German by Richard Willhelm and then to the English by Cary F. Baynes with a foreword by Carl Jung. Princeton University Press. Third Edition 1967. *Shuo Kua* (*Shuogua*) Chapter II verse 5 commentary; pg. 271

It is from the *Shuogua* that we primarily have the reference to the *bagua* arrangements and their theo-philosophical significance for the *Yijing* divination tradition, the first of which is reference to the Fu Xi arrangement, or the dualistic or inverted pairs arrangement.

> *Heaven [*Qian*] and earth [*Kun*] determine direction. The forces of mountain [*Gen*] and lake [*Dui*] are united. Thunder [*Zhen*] and wind [*Xun*] arouse each other. Water [*Kan*] and fire [*Li*] do not combat each other. Thus are the eight trigrams [*bagua*] intermingled [*combined with each other*].*[28]

In this verse, each of the eight trigrams is matched with a counterpart symbol which "balances" or "comingles" with the its opposing force, the sum total of all matching or coupled forces representing the sum total of forces in an abstract sense which create and preserve realms of Heaven, Earth and Man. The eight trigrams here are presented in a "directional" based view, classically interpreted as Heaven [Qian] in the South and Earth [Kun] in the North, the two establishing the basic "axis" upon which the entire set of bagua operate within and among. The trigrams of Mountain [Gen] and Lake [Dui], Thunder [Zhen] and Wind [Xun], and Water [Kan] and Fire [Li] are all related to each other and described as interactive and/or balancing forces which underlie the cosmological world order of again Heaven, Earth, and Man.

In this passage we find the description of the eight primordial natural and universal principles "combining" or "intermingling" to establish the world order, a world order that includes and encompasses the realms of Heaven, Earth and Man, the great Triad within which the universe is to be understood. In this group of pairing, each set of symbols is the inverse of the other, in trigram gua formation. So Mountain (Gen) inverted in trigram form is Lake (Dui), Thunder (Zhen) inverted becomes Wind (Xun), Water (Kan) inverted becomes Fire (Li) and of course Earth (Kun) inverted is Heaven (Qian). In other words, an important aspect of this "arrangement", if we can call it that, is that each of the counterpart symbols, is the exact inverse of the trigram symbol of its partner, establishing the harmonious or balancing aspect of the pairs of trigram symbols with each of its partners.

For clarity, each of the symbols are illustrated below, along with their typical English translations and underlying basic primordial meanings, along with their Traditional Chinese symbols, are set forth below. Here the inverted pairs of trigrams Heaven/Earth, Thunder/Wind, Mountain/Lake, Water/Fire can clearly be seen.

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[28] *The I Ching: Or Book of Changes*. Translated from the Chinese into German by Richard Willhelm and then to the English by Cary F. Baynes with a foreword by Carl Jung. Princeton University Press. Third Edition 1967. *Shuo Kua* (*Shuogua*) Chapter II verse 1; pg. 265, with Rutt's translation (*Zhou Yi, Book of Changes*, translated by Richard Rutt. "Shuogua" Chapter 1 verse 3 pg. 446) of the last sentence added for clarity, and to illustrate the variance between translations of the text.

乾 Qián	兌 Duì	離 Lí	震 Zhèn	巽 Xùn	坎 **Kǎn**	艮 Gèn	坤 **Kūn**
Heaven/Sky	Still Water/Lake	Fire	Thunder	Wind	(Moving) Water	Mountain	Earth
天 Tiān	澤(泽) Zé	火 Huǒ	雷 Léi	風(风) Fēng	水 Shuǐ	山 Shān	地 Dì
☰	☱	☲	☳	☴	☵	☶	☷
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*

Figure 5: 八卦 Bāguà—The eight trigrams in the Earlier Heaven established sequence[29]

In the fairly cryptic and not necessarily well understood passage that follows, the explanation of movement, or process, embedded within four sets of interrelated/comingled trigrams, along with its significance in understanding the rational basis for both the events of the past as well as the process by which seeds of future events unfold, is explained and further illustrated, effectively providing the rational basis for the *Yijing* text, and specifically in this context the bagua themselves, to be used as a divination tool.

> *Heaven [Qian] and earth [Kun] determine direction. The forces of mountain [Gen] and lake [Dui] are united. Thunder [Zhen] and win [Xun] arouse each other. Water [Kan] and Fire [Li] do not combat each other. Thus are the eight trigrams intermingled. Counting that which is going into the past depends on the forward movement. Knowing that which is to come depends upon the backward movement. This is why the Book of Changes has backward moving numbers [Thus Yi reckons time in its coming and going].*
>
> *Thunder [*Zhen*] brings about movement, wind [*Xun*] brings about dispersion, rain [Kan] brings about moisture, the sun [*Li*] brings about warmth, Keeping Still [*Gen*] brings about standstill, the Joyous [*Dui*] brings about pleasure, the Creative [*Qian*] brings about rulership, the Receptive [*Kun*] brings about shelter.*[30]

Here, the idea of movement between and among the four pairings of trigrams is explicitly referred to, quite paradoxically in fact, as "forward movement" is indicated as relating to past events, and "backward movement" is related to those events which have yet to come to pass. The next verse describes the same set of pairings of basic trigram principles but in a different order, presumably indicating the "backward movement" which provides insight into future events, allowing the text to reveal "Fate" as it were.

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[29] Adapted from: Wikipedia contributors. "Bagua." *Wikipedia, The Free Encyclopedia*. Wikipedia, The Free Encyclopedia, 29 Jul. 2016. Web. 10 Aug. 2016. Note that this sequence, read left to right is the classical "Earlier Heaven Sequence", which is logically constructed from Greater Yang + Yang to Lesser Yin + Yin, from left to right.

[30] *The I Ching: Or Book of Changes*. Translated from the Chinese into German by Richard Willhelm and then to the English by Cary F. Baynes with a foreword by Carl Jung. Princeton University Press. Third Edition 1967. *Shuo Kua* (*Shuogua*) Chapter II verses 3 and 4; pgs. 265-267

The next verse lays out the same combination and "intermingling" of forces and their respective cosmic symbolism in a different order and with different language which carries with it a subtle and nuanced perspective while still calling out the same underlying structure so to speak. It starts with Thunder [Zhen] and then to Wind [Xun], then onto Rain [Xan] and then Fire [Li]. Followed then by Mountain [Gen] and Lake [Dui], and then finally ending with Heaven [Qian] and Earth [Kun]. Willhelm/Baynes notes in this passage that the first four principles of the bagua – Zhen, Xun, Kan and Li - are referred to with their specific "images", or primary symbols, while the last four bagua are referred to by their "names" or primary attributes – Keeping Still [Mountain/Gen], Joyous [Dui/Lake], the Creative [Heaven/Qian] and Receptive [Earth/Kun]. His explanation as to why this is so is worth quoting:

> *Here again the forces for which the eight primary trigrams stand are presented in terms of their effects in nature. The first four are referred to by their images, the last four by their names, because only the first four indicate in their images natural forces at work throughout time, while the last four point ot the conditions that come about in the course of the year.*[31]

It is from these passages that later interpreters of the *Yijing* formulate the Earlier (Fu Xi) Arrangement. The Earlier Heaven, or literally "Before-the-World", arrangement[32] is not explicitly laid out in the commentary text but is inferred based upon knowledge of the pairings and the directional, global, design implied in the arrangement itself.

The Fu Xi arrangement then has at the top, the Southern point of the compass, the guiding force of Heaven (*Qian*) and this marks the beginning of a cycle of creative force. The cycle of the creation of what the ancient Chinese referred to as the "myriad of things" (or literally "ten thousand things", *wànwù* or '萬物' in traditional Chinese) begins, if it must be said to have a beginning, and then movement stirs. Earth (or *Kun*), is the opposing symbol to Heaven that sits at the bottom of the Earlier Heaven sequence, representing directional North. Kun is represented by three broken (yin) lines and represented the utmost receptive or passive principle of the universe - yin deriving from the symbol/word meaning "shady side of the mountain" and came to represent the passive, female and receptive principle of the universe, or even "darkness" or

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[31] *The I Ching: Or Book of Changes*. Translated from the Chinese into German by Richard Willhelm and then to the English by Cary F. Baynes with a foreword by Carl Jung. Princeton University Press. Third Edition 1967. *Shuo Kua* (*Shuogua*) Chapter II verses 4 explanation; pg. 267. It is worth pointing out that some scholars, Richard Rutt included, the author of *Zhou Yi, Book of Changes* which is used as a primary source of *Yijing* interpretation and meaning in this work, as outlined in his introduction to the *Shuogua* commentary, sees no such explicit reference to the Fu Xi or Earlier Heaven arrangement implied in any of the *Shuagua* passages. See *The Book of Changes (Zhouyi)*. Translation and commentary by Richard Rutt. Routledge Publishing, 1996. From the *Ten Wings* section. Wing 8, Shuogua Introduction, pgs. 439-445.

[32] What Willhelm/Baynes refer to perhaps more fittingly as the "Primal" arrangement

"bad" or "ominous". In this sequence the symbol for Water (*Kan*) was placed in the West, and opposite to Water was Fire (*Li*) in the East.

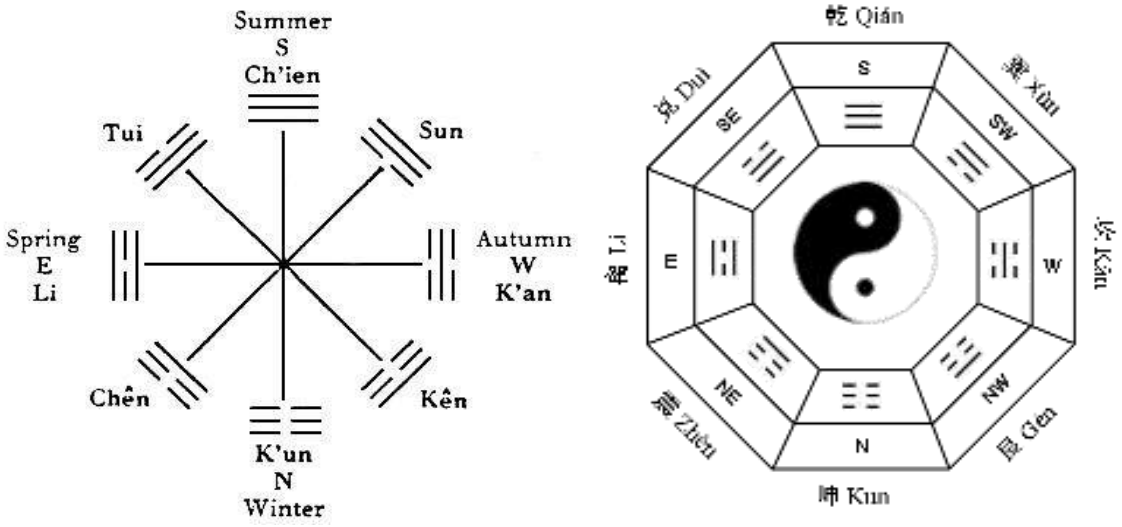

Figure 6: Earlier Heaven ("Before the World") Arrangement.[33]

These symbols represented the four cardinal points, South, West, North and East moving clockwise around the arrangement, and also the four seasons starting with Summer at the top (Heaven), and then moving clockwise again first to Autumn, then Winter, and then finally Spring before the cycle begins again. To these were added the trigrams representing Lake (*Dui*) and Mountain (*Gen*), Thunder (*Zhen*) and Wind (*Xun*), in the various positions around the sequence, again each representing the inverted trigram symbolic representation of its opposite on within the sequence.

It's important to understand that in this arrangement, each of the symbols sits across from, and interacts with, it's opposing force which is represented by the inverted trigram, its counterpart as it were. This is a primary characteristic, and esoteric and symbolic structure, that is spoken to in the Ten Wings and underlies the Earlier Heaven (Fu Xi) sequence. It is from this model – the Earlier Heaven Sequence (Fu Xi Sequence of trigrams) that the great Yin/Yang symbol of the interplay of darkness and light in infinite and interwoven circular form is handed down to us.

[33] Left image from Willhelm/Baynes pg. 266 and right image from http://zoroastrianheritage.blogspot.com/2011/09/yin-yang-dualism-development-of-concept.html.

In other words, embedded in the Earlier Heaven sequence is not only the outline and creation of the basic fundamental archetypical elements of the universe, all eight of them building off an initial binary system of broken and solid lines (2 cubed as it were), but also an ordered sequence of states of being, a process of change as it were, between all of the elemental states of being represented by the each of the individual trigrams.

The next verse of the Shuogua speaks to a different ordering of the eight primary trigrams, another way of looking at the interacting basic principles of the universe as it were, in what has come to be known as the Later Heaven Arrangement, or King Wen Sequence.

> *God comes forth in the sign of the Arousing [*Zhen*]; he brings all things to completion in the sign of the Gentle [Xun]; he causes creatures to perceive one another in the sign of the Clinging (light) [*Li*]; he causes them to serve one another in the sign of the Receptive [*Kun*]. He gives them joy in the sign of the Joyous [*Dui*]; he battles in the sign of the Creative [*Qian*]; he toils in the sign of the Abysmal [*Kan*]; he brings them to perfection in the sign of Keeping Still [*Gen*].*[34]

Here we have reference to a more cyclical view of the eight primary universal forces, in what Willhelm/Baynes calls the "Inner World" relationship which in his view reflects the cyclical inner struggle of life as manifest and represented by the universal forces within our spiritual, or mental forms. This process begins with the arousing of energy which is symbolized by Thunder [Zhen], which then completes itself, the creative process, in the sign of the Gentle [Xun]. It is then followed by attachment, or "clinging" to that which we have created, symbolized by Li. These forces then "serve one another" in the sign of the Receptive [Earth or Kun], and then become Joyous in the sign of the Lake [Dui]. We then battle, or struggle, with our creation and the associated clinging or attachment in the sign of the Creative [Heaven or Qian], after which we then toil, or labor to overcome, in the sign of the Abysmal [Kan or Water]. The cycle then comes to an end in a "balanced" or perfect state in the sign of the Keeping Still [Gen or Mountain].

[34] *The I Ching: Or Book of Changes*. Translated from the Chinese into German by Richard Willhelm and then to the English by Cary F. Baynes with a foreword by Carl Jung. Princeton University Press. Third Edition 1967. *Shuo Kua* (*Shuogua*) Chapter II verse 5 commentary; pg. 268

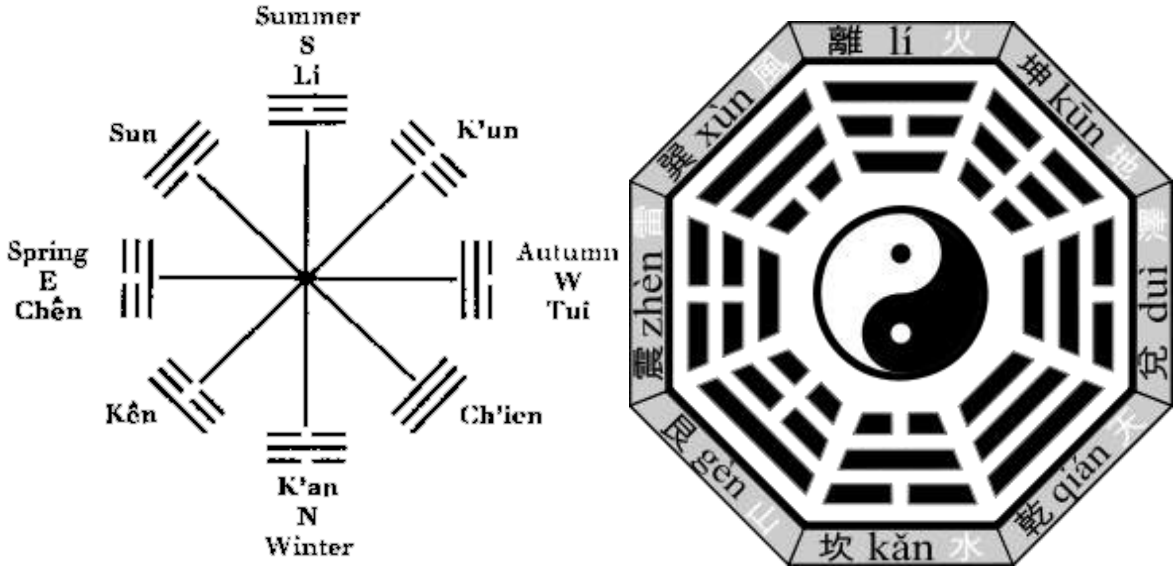

Figure 7: Later Heaven (King Wen), or "Inner World", Arrangement of the Bagua[35]

This arrangement is then further explained in the next passage from the *Shuogua*, with the four cardinal points as well as the movement of the four seasons explicitly called at as outer manifestations of the inner world arrangement of bagua.

> *All living things come forth in the sign of the Arousing [*Zhen*]. The Arousing stands in the east. They come to completion in the sign of the Gentle [*Xun*]. The Gentle stands in the southeast. Completion means that all creatures become pure and perfect. The Clinging [*Li*] is the brightness in which all creatures perceive one another. It is the trigram of the south. That the holy sages turned their faces to the south while they gave ear to the meaning of the universe means that in ruling they turned toward what is light. This they evidently took from this trigram. The Receptive [*Kun*] means the earth. It takes care that all creatures are nourished. Therefore it said: "He causes them to serve one another in the sign of the Receptive." The Joyous [*Dui*] is midautumn, which rejoices all creatures. Therefore it is said: "He gives them joy in the sign of the Joyous." "He battles in the sign of the Creative." The Creative [*Qian*] is the trigram of the northwest. It means that here the dark and the light arouse each other. The Abysmal [*Kan*] means water. It is the trigram of due north, the trigram of toil, to which all creatures are subject. Therefore it is said: "He toils in the sign of the Abysmal. Keeping Still [*Gen*] is the trigram of the northeast, where beginning and end of all creatures are completed. Therefore it is said: "He brings them to perfection in the sign of Keeping Still.* [36]

Here we see an explanation of the arrangement which describes the relationship between the inner world and the outer world, a perfect example of how the trigrams relate to not just the world of man, but the world of earth as well which manifests, or is reflected, in the state of being

[35] Image on the left from Willhelm/Baynes pg. 269 and image on the right from https://en.wikipedia.org/wiki/Bagua
[36] *ibid* pgs. 268-269

of the individual. From the outer we have the inner and vice versa. The cardinal points and seasons are overlaid on the arrangement here as well, reflecting the creative process which begins in the Spring, or East represented by the sign of the Arousing (Zhen), culminates and blooms in our clinging to that which we have created, represented by the Summer (South/Li). Then the creative process culminates in the Joyous represented by Autumn (West of Dui), and then begins to decay in the Winter where we must labor in the Abysmal (North or Kan) and then come full circle again to the East after the cycle completes itself in the sign of Keeping Still, or perfection (Gen or Mountain).

The bagua arrangements then can be seen as reflecting not only the overall cosmological world order in all its possible states, from beginning to end and back again, but also the sense of movement (change or *yi*) from one state to the next which reflects the ancient Chinese belief that the predominant metaphysical principle which underlies creation is not limited to the physical or material world necessarily, or even the spiritual world as represented by the individual Soul and its relationship to the natural world, but the process of constant *change* (*yi*), change that permeates not just our own individual existence but the cosmological world order within which we live as well and through which any understanding of reality must be based.

In this symbolic representation of the cosmos, if we can use that term to describe the system despite its inherent Western bias[37], there is movement within and among these bagua and that movement has both numerological as well as geometrical significance. In this model the myriad of creation, the 'ten thousand things' are forever existent and constantly changing and fluctuating from states of balance to imbalance, from disharmony to harmony and vice versa in a cosmic dance that has no beginning or end.

It is from this basic understanding of the universe, and mankind's place within the Heaven, Earth and Man Triad, as reflected by the various bagua arrangements which are explained in the Ten Wings, through their understanding that balance and order can be brought into the world and supported by basic individual, or even social, interactions and experience.

[37] Interestingly what is missing from this cosmological worldview as reflected in the *Yi Jing*, if we may call it that, is any reference at all to what we in the West would classically consider "cosmology". Cosmology in this sense being the description of the creation of the cosmos or how the world has come into being, a dominant metaphysical and theological principle in the West which underpinned not only philosophical thought in antiquity but also theological thought as it came to be understood and interpreted in the Judeo-Christian (and Islamic) traditions which looked to the creation mythology in the Old Testament as the explanation for the existence of the universe and mankind's place in it.

Pythagoras and Plato: From the One to Many

Philosophy to the Greeks not only helped them understand the cosmos, creation and destruction of the universe and the essence of the natural world, but also the harmony within which we as individuals should lead our lives, and in turn – as described by subsequent philosophers such as Plato and Aristotle and others – how the pursuit of excellence and harmonious virtue in our own individual lives corresponded to and aligned with a greater social good within which society as a whole could be organized.

In order to find this source of this "closed" view of the West, this almost obsession to break things apart and drill further and further into the constituent components of a thing until once can literally go no further, one needs to reach back to the beginning of development of thought, and language, in the West. To the ancient Greeks who laid down the intellectual foundations – linguistic, metaphysical and otherwise – that we have inherited in the West through language and culture down through the ages.

One can look at the beginning of this "bound" and "closed" systemic view of the world as having its roots in Pythagorean philosophy, a philosophy that as we understand it rested on the harmony and eternal co-existence of numbers and their relationship to each other, forming the underlying ground of all existence. It is from the Pythagorean tradition as we understand it, that Plato's fascination with geometry – as reflected most readily in perhaps his most lasting and influential dialogues the *Timaeus* – was founded.[38]

Pythagoras (c. 570 – c. 495 BCE) , or Pythagoras of Samos as he is sometimes referred to as, was born at the beginning of the 6th century BCE reportedly on the island of Samos in the Aegean Sea. While we don't have any of his writings directly he was widely regarded as one of the most influential Ionian philosophers in antiquity and his views and beliefs greatly influenced the later philosophical schools of Plato and Aristotle among others. He is believed to have travelled widely throughout the Mediterranean in his youth, studying with the Egyptians, the Chaldeans and Magi, and even the Hebrews according to later biographers and interpreters of his school.

The Pythagorean school was known primarily for their obsession with, their identification with a complex and yet straightforward geometric symbol known as the *tetractys* – an equilateral triangle. The tetractys represented the core tenet of Pythagorean thought as understood by outsiders and later philosophical schools which either criticized and/or adopted some of its core principles, Plato being the prime example. The symbol, no matter how it is interpreted,

[38] For a more detailed look at Pythagorean philosophy please see https://snowconenyc.com/2014/08/23/pythagorean-theology-truth-in-numbers/.

represents the harmony of numerical order and relationships, and of course the underlying symmetry and geometry of the equilateral triangle, as reflected in the universe as a whole, the underlying symmetry and harmony of musical theory, and the underlying (or overarching depending upon your perspective) principle that sheds light on the comprehension of the universal order and in turn mankind's place within it.

The Tetractys symbol is a perfect triangle of sorts that is classically viewed as a base of 4 equidistant points, on top of which a layer of three, then two and then at the top 1 point rested, altogether creating a perfect equilateral triangle with a base of 4 and a total of 10 total points in the system.

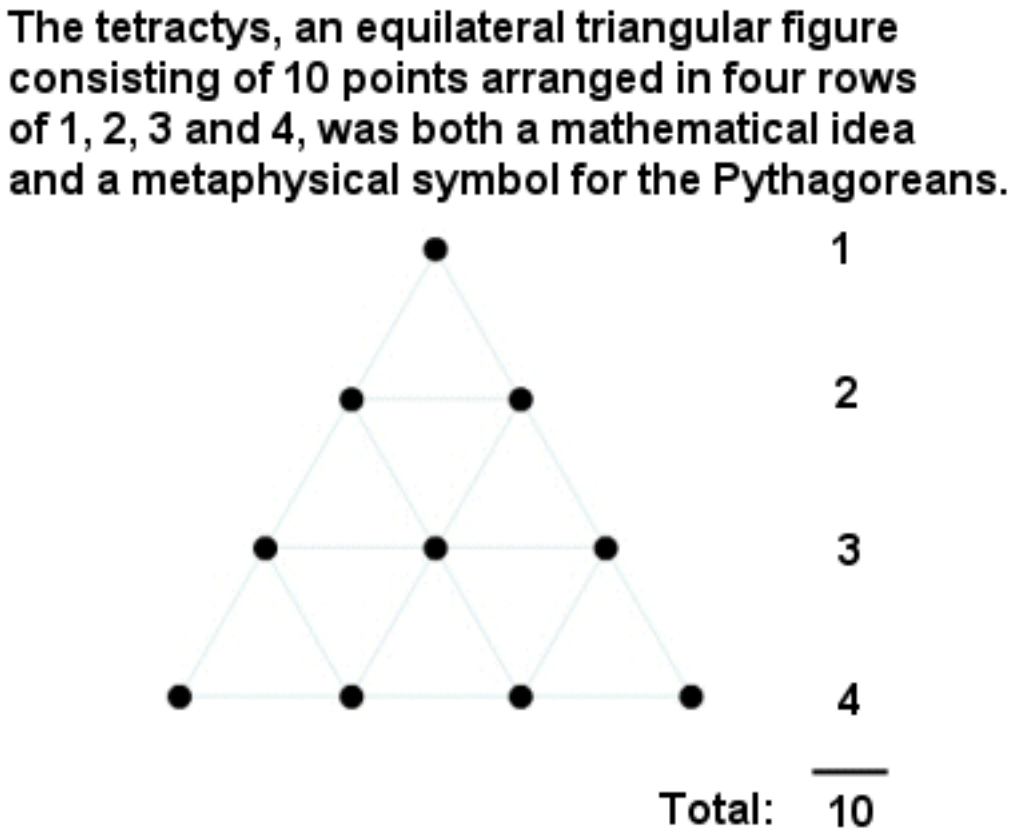

Figure 8: Pythagorean Tetractys.[39]

While there are a variety of ways to interpret the meaning of this geometric structure and how the Pythagoreans themselves understood it (no works from Pythagoras or his direct followers are

[39] Source: http://arpitapal.com/2016/02/03/tetractys-or-ten-in-math-and-in-laungage/

extant), most later philosophers imposed a metaphysical transliteration of this geometric structure, applying some Neo-Platonic (actually Middle Platonic which integrated both Pythagorean/Italian philosophical elements with Peripatetic – Aristotelian concepts) principles onto the system, and looked at it as representing the cosmological world order.

At a very basic level of interpretation we have the top point of the triangle as the Monad, or the grand unifying principle from which the entire cosmos emanates, the next layer representing the Dyad or the grand opposing forces of nature within which the natural world comes into being, the third layer represents the great Triad of principles which culminates in later Hellenic philosophical development as the One, the Intellect and the Soul, and then at the base the Tetrad, or foundation of the world as represented by the four basic elements that the ancient Greek believed underpinned the entire physical world – earth, air, water and fire.

This geometric figure, along with the numerical and arithmological attributes associated with it, represented the finest layer of abstraction, the best explanation, of the underlying structure and order of the universe. The cosmos seen as having a beginning from the vast void comes forth, explained in the Judaic mythological tradition as "*the spirit moving against the waters*", where the the One begets Two, and the Two beget Three the great Triad, and the Three rests on the foundation of the Tetrad (Four).

We can see this type of worldview all throughout the Mediterranean in antiquity in all the great schools of thought be they primarily philosophical or again theological. The foundational basis of the cosmos and its relationship to number and geometry was no doubt adopted by Plato from the Pythagoreans - "Let no one ignorant of geometry enter here" was said was to be inscribed on the Academy at its entrance. While Plato's philosophical system was broad and far reaching as reflected in his dialogues, it is in the *Timaeus* where we find his cosmological world view put forth and geometry, and the tetrahedron specifically, came to represent one of the core foundational building blocks of the known universe.[40]

While we again do not have direct sources of the underlying meaning and explanation of this geometric symbol according to the Pythagoreans themselves, we do have later interpretations of the symbol and its underlying meaning from later Hellenic philosophers. One of the best sources of this material is Philo Judaeus (c. 25 BCE – c. 50 CE), or Philo of Alexandria, who lived and wrote in the first century CE in Ptolemaic Egypt. Philo was first and foremost a Jewish scholar,

[40] See https://en.m.wikipedia.org/wiki/Tetrahedron, a geometric shape which fascinated Pythagoras (hence his association with triangles even to this day), which was one of, if not the core foundational geometrical building block in Plato's cosmological world order which he describes in painstaking detail in the *Timaeus*. See also https://en.m.wikipedia.org/wiki/Platonic_solid. For a detailed look at the geometry underlying the *Timaeus*, please see https://snowconenyc.com/2014/08/27/sacred-geometry-in-platos-timaeus/.

but he was trained in the Hellenic philosophical tradition and read and wrote in ancient Greek, the lingua franca from the Mediterranean in antiquity prior to the prevalence of Latin as advanced by the Roman Empire.

Embedded in Philo's extensive analysis and "allegorical" interpretations of the five books of Moses from Hebrew Bible, or *Pentateuch* (πεντάτευχος in Greek or literally "five scrolls")[41], specifically in perhaps his most influential work which was a commentary on the beginning of Genesis entitled *De Opificio Mundi*, or *On the Creation of the World*, we find a fairly extensive description of the symbolic figure in his explanation of the establishment of the heavenly bodies on the fourth day, the text of which is quoted below[42]:

> ***14*** *And God said, Let there be lights in the firmament of the heaven to divide the day from the night; and let them be for signs, and for seasons, and for days, and years:*
>
> ***15*** *And let them be for lights in the firmament of the heaven to give light upon the earth: and it was so.*
>
> ***16*** *And God made two great lights; the greater light to rule the day, and the lesser light to rule the night: he made the stars also.*
>
> ***17*** *And God set them in the firmament of the heaven to give light upon the earth,*
>
> ***18*** *And to rule over the day and over the night, and to divide the light from the darkness: and God saw that it was good.*
>
> ***19*** *And the evening and the morning were the fourth day.*

This passage, which describes the creation of the Sun, Moon and Stars by God (Yahweh) on the fourth day of creation is interpreted by Philo from an intrinsically Hellenic philosophical perspective, and in particular Pythagorean, as he interprets these heavenly bodies and their importance in the theo-philosophical traditions of antiquity as representing the establishment, and ultimate representation, of time and order underlying the universe.

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[41] The *Pentateuch* is the first five books of the Old Testament; namely *Genesis, Exodus, Leviticus, Numbers and Deuteronomy*, names which are incidentally derived from the titles of the books in the *Septuagint* (or simply the *LXX*), a Koine Greek translation of the Hebrew Bible reportedly done by seventy Jewish scholars (12 from each of the six tribes of Israel as the story is told) commissioned by Ptolemy II in the 3rd century BCE. The Septuagint became the standard Greek edition of the Old Testament in antiquity and the one which Philo primarily used for his works.

[42] Genesis verses 14-19, King James Version. From https://www.biblegateway.com/passage/?search=Genesis+1&version=KJV

In his explanation of this part of Genesis, in particular on day Four of creation, Philo lays out the understanding of the importance of the number 4 within the context of the Hellenic philosophical tradition, a tradition marked quite clearly – at least from a numerological and arithmetic standpoint – by Pythagorean philosophy as embedded in the tetractys even though he does not specifically allude to the tetractys.

> *But the heaven was afterwards duly decked in a perfect number, namely four. This number it would be no error to call the base and source of 10, the complete number; for what 10 is actually, this, as is evident, 4 is potentially; that is to say that, if the numbers from 1 to 4 be added together, they will produce 10, and this is the limit set to the otherwise unlimited succession of numbers; round this as a turning-point they wheel and retrace their steps.*[43]

Philo describes the underlying perfection, or *completeness*, implied by the number Four as viewed within the context of the number Ten which he calls the most "complete" or "perfect" number (the sum of the four layers of the tetractys – 1 + 2 + 3 + 4) within classically Aristotelian terms of *potentiality* (4) and actuality (10). He also describes the sense of motion, or cyclical nature implied by this number 4, which actuates to the number 10, as a "turning point" and "wheel", alluding to the base 10 that was used by the Greeks for counting and within which after the number 10 one begins to "count again", starting with 11, 12 and so on.

He also describes the number Four as embedding within it three dimensional space, making it the perfect day (symbolically speaking of course) within which God should establish the foundations of the Heavens within which the world of man was thought to be governed in antiquity, and speaking to the importance the field of geometry held to the ancients, a tradition that became the hallmark of the West.

> *There is also another property of the number 4 very marvelous to state and to contemplate with the mind. For this number was the first to show the nature of the solid, the numbers before it referring to things without actual substance. For under the head of 1 what is called in geometry a point falls, under that of 2 a line. For if 1 extend itself, 2 is formed, and if a point extend itself, a line is formed: and a line is length without breadth; if breadth be added, there results a surface, which comes under the category of 3: to bring it to a solid surface needs one thing, depth, and the addition of this to 3 produces 4. The result of all this is that this number is a thing of vast importance. It was this number that has led us out of the realm of incorporeal existence patent only to the intellect, and has introduced us to the conception of a body of three dimensions, which by its nature first comes within the range of our senses.*[44]

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[43] Philo Judaeus, *On the Account of the World's Creation Given by Moses (De Opificio Mundi).* Translated by F. H. Colson and G. H. Whitaker. Loeb Classical Library, Philo Volume I. Harvard University Press, first printed in 1929, last reprint 1981. From Chapter XV pg. 37.

[44] Ibid, Chapter XVI, pages 37-39.

And lastly, in reference to the four elements, and four seasons upon which the ground and order of human existence ultimately rests, Philo concludes with the following summation:

> *There are several other powers of which 4 has the command, which we shall have to point out in fuller detail in the special treatise devoted to it. Suffice it to add just this, that 4 was made the starting-point of the creation of heaven and the world; for the four elements, out of which this universe was fashioned, issued, as it were from a fountain, from the numeral 4; and, beside this, so also did the four seasons of the year, which are responsible for the coming into being of animals and plants, the year having a fourfold division into winter and spring and summer and autumn.*[45]

Another source of Pythagorean philosophy in antiquity is through the works of Porphyry (c. 234 – c. 305) and Iamblichus (c. 245 – c. 325 CE) who were contemporaries in 3rd century CE antiquity and who both wrote biographies of Pythagoras, who by that time had become a pseudo mythical figure. It is from Porphyry that we find the reference that it was Pythagoras who created and "would swear by" the Tetractys, what Porphyry referred to as the "eternal Nature's fountain spring".[46]

Within Porphyry's biography, he describes the fascination of the Pythagoreans with numbers, arithmology, and ultimately geometry thus:

> ***49.*** *As the geometricians cannot express incorporeal forms in words, and have recourse to the descriptions of figures, as that is a triangle, and yet do not mean that the actually seen lines are the triangle, but only what they represent, the knowledge in the mind, so the Pythagoreans used the same objective method in respect to first reasons and forms. As these incorporeal forms and first principles could not be expressed in words, they had recourse to demonstration by numbers. Number one [Monad] denoted to them the reason of Unity, Identity, Equality, the purpose of friendship, sympathy, and conservation of the Universe, which results from persistence in Sameness. For unity in the details harmonizes all the parts of a whole, as by the participation of the First Cause.*
>
> ***50.*** *Number two, or Duad [Dyad], signifies the two-fold reason of diversity and inequality, of everything that is divisible, or mutable, existing at one time in one way, and at another time in another way. After all these methods were not confined to the Pythagoreans, being used by other philosophers to denote unitive powers, which contain all things in the universe, among which are certain reasons of equality, dissimilitude*

[45] ibid, Chapter XVI, pages 39-41.

[46] *Porphyry, Life of Pythagoras*. Translated by Kenneth Sylvan Guthrie, 1920. Verse 20. From http://www.tertullian.org/fathers/porphyry_life_of_pythagoras_02_text.htm.

and diversity. These reasons are what they meant by the terms Monad and Duad, or by the words uniform, biform, or diversiform.[47]

Here we see not only an explanation of the underlying geometrical formation of the Tetractys in terms of Platonic Forms, reflecting the underlying sentiment of the period that geometry and numbers are the best and most profound way to describe elemental reality, but also an explanation of the principles of the Monad (the One) and the Dyad (the Two) as the basic archaic elements of the universe from which all numbers, all of reality really, ultimately originates and emanates from.

Porphyry goes on to describe the meaning of the Triad, and in turn the Decad (Ten), which is formed from 1 + 2 + 3 + 4, the four layers of the Tetractys, and underpins the Pythagorean philosophical system which reflected in the Tetractys thus:

51. *The same reasons apply to their use of other numbers, which were ranked according to certain powers. Things that had a beginning, middle and end, they denoted by the number Three, saying that anything that has a middle is triform, which was applied to every perfect thing. They said that if anything was perfect it would make use of this principle and be adorned, according to it; and as they had no other name for it, they invented the form Triad; and whenever they tried to bring us to the knowledge of what is perfect they led us to that by the form of this Triad. So also with the other numbers, which were ranked according to the same reasons.*

52. *All other things were comprehended under a single form and power which they called Decad [10], explaining it by a pun as decad, meaning comprehension. That is why they called Ten a perfect number, the most perfect of all as comprehending all difference of numbers, reasons, species and proportions. For if the nature of the universe be defined according to the reasons and proportions of members, and if that which is produced, increased and perfected, proceed according to the reason of numbers; and since the Decad comprehends every reason of numbers, every proportion, and every species, why should Nature herself not be denoted by the most perfect number, Ten? Such was the use of numbers among the Pythagoreans.*[48]

Here we see the direct metaphysical link drawn between Nature and Number, Ten being the reflection of the most perfect of numbers, upon which – to use Philo's analogy – the (metaphysical) world turns. We also here can see the source of the Trinity, not in terms of the language and words that are used to describe it as defined by the early Church Fathers, but the

[47] *Porphyry, Life of Pythagoras*. Translated by Kenneth Sylvan Guthrie, 1920. Verses 49-50. From http://www.tertullian.org/fathers/porphyry_life_of_pythagoras_02_text.htm.

[48] *Porphyry, Life of Pythagoras*. Translated by Kenneth Sylvan Guthrie, 1920. Verses 51-52. From http://www.tertullian.org/fathers/porphyry_life_of_pythagoras_02_text.htm.

underlying potency and perfection of the Triad as a symbolic representation of that which is most holy.

Numerology in the Timaeus

Plato's Lambda

Pythagorean number theory (harmonic theory) and numerical relationships (4:3, 3:2, 2:1)… ??? word?

So with Philo and Porphyry, both of whom undoubtedly had access to knowledge regarding the Pythagorean philosophical school and their obsession with the tetractys that has subsequently been lost (even though later scholars indicate that his teachings were incorporated into those of the Hellenic philosophical tradition that followed), we find a full and complete explanation of the numerology and arithmology embedded in the Pythagorean philosophical system as manifest in the *tetractys*, a system which ultimately bounds the spatial dimensions of the material universe within it and from it, as well as enclosing it as it were with a beginning and an end as represented by the underlying numerology, arithmology, and geometry of the figure itself which represented to the ancient philosophers the best possible representation of the inherent cosmological world order.[49]

[49] This ultimately Pythagorean belief system, which had at its basis numerology and arithmology described herein, was reflected not just in the in the Hellenic tradition, but also in the early Christian tradition (most notably in the apologetic works of Clement of Alexandria and Origen) which looked to Philo's allegorical interpretation of the Old Testament ironically enough to establish the rational and logical foundations for the New Testament which was based upon the life and teachings of Christ. For it is with the early Christian theologians rather than their Jewish/Hebrew counterparts that the works of Philo are preserved.

Analysis and Comparison: The Metaphysics of Number

While it's tempting to look at the sequences of the bagua, again the "eight trigrams" or "eight gua", which as far as the tradition goes represent the earliest form of the *Yijing* from which the system of the 64 hexagrams was derived from, as a geometric formation that runs at some level akin to Pythagorean esoteric geometrical symbology, the interpretation of either sequence of the bagua (Earlier or Later Heaven) is a stretch to say the least.

There is an ordering to the bagua, an arrangement, of which there are two – Fu Xi and King Wen, Earlier and Later Heaven respectively – no doubt, but the ordering reflects more a process of change (*yi*) of elemental forces rather than a geometric construct within which the universe can be understood or which the universe can be said to manifest. This differs greatly from the metaphysical systems that evolved to the West which believed that the universal order, the natural world, was best expressed in terms of geometry - basic perfect geometric figures such as the square, the circle and perhaps most importantly the triangle.

In the Chinese philosophical and intellectual belief system, its worldview, philosophy and science are all viewed within an integrated and synthetic framework, stemming in no small part due to the "open" or "unbound" nature of the underlying system within which the realm of knowledge is considered. This belief system is perhaps best understood and reflected in the *Yijing*, a work which reaches deep into Chinese antiquity as originally devised in the *Zhou Yi*, which in later form evolved into the *Yijing* as we know it today – consisting of not only the 64 hexagrams and their associated symbols as they existed in the *Zhou Yi*, but also the Confucian commentaries that have come to be called the *Ten Wings* which now accompany all the standard editions of the text.

While in some respects one can look at the *Yijing* as the parallel to the Hebrew *Torah*, or *Pentateuch* (Five Books of Moses) to which all later Western theological traditions looked to as the foundation of their belief system, it is nonetheless a truly distinctive work, especially given the way in which it is communicated – via symbols and diagrams – and the way in which it was used, i.e. as a divination text. There is no real counterpart in the West really, given our obsession with Scripture and the characteristic notions of Truth and Falsehood which underpin the theological arguments which have been so prevalent historically in the West. And whereas in the West we have come to divide knowledge between Science - the study of the "natural" or "physical" world – and the humanities which include disciplines like history and philosophy which are not classically "scientific" per se, along with religion as defined as the study of the world of the spirit, i.e. *theology*, in the East arguably all disciplines of study and thought fall under a single domain as it were, or at least are looked at in a more holistic and integrated fashion.

So the *Book of Changes* then not only represents a set of symbols and relationships explain the total "composite reality", as we might call it in the West. This reality spanned the realm of Heaven, the gods or universal world order as you might call it, but also the realm of natural phenomena (element of Earth), as well as our own individual lives and experience (Man), along with the underling notion of change through which all actions and consequences can be properly understood, the overall purpose of the consultation, of the book itself, being the alignment of our own individual lives (the element of Man or the individual who is consulting the *Yijing*) with the cosmological world order (the element of Heaven) as well as the "natural" world order (again the element of Earth).[50]

The hexagrams in the *Yijing* not only represent the underlying cosmological order (i.e. Heaven), but also the realm of Earth and Man, the great Triad of existence as seen in the eyes of the ancient Chinese authors of the *Yijing*, where the "state" of each realm is reflected in two of the underlying six of individual hexagrams which are selected as part of the divination process. This great Triad, akin to the great Trinity of principles which was so elemental to the theo-philosophical systems of the West, represents the underlying philosophical principle of alignment between the realms of Heaven, Earth and Man which the individual was looking to align for optimal balance and harmony, each of which was manifest in specific parts of the underlying symbols or hexagrams that make up the text.

So we have the Triangle (One, Two, Three and Four) versus the Circle made of eight combinations of broken and solid lines (2 cubed or 8), each system resting on the same metaphysical foundations of the Many emanating from the One, specifically the Two, or Dyad, emanating from the One, and each system in no small part resting on the foundational belief in the cosmological significance of numbers and their relationship to each other, and the belief that the universal order is formed out of, and is best understood by, the existence and interdependence of and some very basic primordial elements – earth, air, water and fire in the West and Heaven, Lake, Fire, Thunder, Wind, Water, Mountain and Earth in the East.

Interestingly the Greeks (for the most part) landed on four basic principles, perhaps derived from the Pythagorean Tetractys, while the Far East landed on eight – the relationship between the two metaphysically speaking having the same source - the two systems being based on, and fundamentally derived from, the number Two which of course is the natural and logical cosmological deduction from a primordial One – they seem to take the next (metaphysical) step quite distinctly, with the West arriving at an intermediary step of Three (which again can be seen so well reflected in the Judeo-Christian and Neo-Platonic traditions), from which perhaps their

[50] For a more detailed look at the *Book of Changes*, its origins and history and how it was used for divination purposes please see https://snowconenyc.com/2015/09/24/the-book-of-changes-the-wisdom-of-the-far-east/ and https://snowconenyc.com/2015/10/03/divination-in-the-i-ching/

love of geometry emerges and/or is reflected, while the Chinese go from the two to the four and from the four directly to the eight, leaving the intermediary steps as metaphysical building blocks as it were and not core philosophical principles in and of themselves necessarily, at least as reflected in how the *Yi Jing* and the trigrams are understood by the Confucian philosophers form the last few centuries BCE.

China's metaphysical system as reflected in the *Classic of Changes* is a binary system, there is no denying this elemental fact yes, but the underlying order of the system is not *materialistic* in any sense of the word, preeminence given to the concept and notion of change within basic primordial states of being which are reflected the tripartite universal order of Heaven, Man and Earth. Whereas Pythagorean philosophy, as we understand it, and clearly the Platonists, created a metaphysical system where the many emanated from the One, and through *Logos*, or Divine Intellect, the universe is created and maintained by the One and through the One.

> *Yi, being aligned with heaven and earth, can wholly set forth the dao of heaven and earth. Yi looks up to observe the patterns of heaven, and looks down to examine the veins of the earth. Thus: it knows the causes of darkness and light, origins and ends; it comprehends the meaning of birth and death, how form and essence fuse in an entity, lasting till the soul departs in alternation.*[51]

While the ancient Chinese notion of Three is an important intermediary concept in the creation of the bagua, for each of the eight symbols is created from three distinct broken or solid lines (again yin and yang respectively), they don't necessarily place the same metaphysical significance on the notion of three that their Western counterparts did. Perhaps an analogy can be drawn, at least at a very basic level, of the similarity between the intermediary step of three points on the Pythagorean Tetractys - in between the Dyad and the Tetrad (the base) and from which it is believed the great Triad of Neo-Platonic thought is derived – and the utilization of Three as a metaphysical construct to form the bagua (eight symbols, two to the power of three). But again the Chinese did not, at least again as we understand the text as it has been handed down to us by Confucian scholars in the 3rd and 2nd centuries BCE, apply metaphysical significance or meaning to this intermediary tier as their counterparts in the West did, the number simply reflecting the inherent structure of the basic elemental universal forces rather than having significance in and of themselves.

Furthermore, and perhaps most significantly, the Western philosophical and theological traditions that sprung forth from these ancient Greek philosophical roots always presumed a beginning and an end to the cosmological world order – the Garden at the start, when sin was

[51] *The Book of Changes (Zhouyi)*. Translation and commentary by Richard Rutt. Routledge Publishing, 1996. From the *Ten Wings* section, the *Dazhuan* or *Great Commentary*. *Dazhuan I*, Wing 5. Chapter IV verses 1 and 2 pg. 411.

born and we knew what we were, we ate the forbidden fruit – and the end, the Revelation and the Last Judgment. Perhaps this stems from the belief of the importance of the Soul, a notion that is reflected certainly in the oldest myths of all the Mediterranean cultures - the Egyptian scale of Thoth that awaits to evaluate our Soul against the forces of darkness and the forces of good and from which our afterlife will be determined – to which the Western philosophers looked upon as a reflection of the divine. For perhaps if the Soul must have a beginning and an end in life then the universe, the cosmos, must also have a beginning and end. The geometrical symmetry established by first Pythagoras and then built upon at the Academy started by Plato was bastardized to a certain extent, or morphed is perhaps a better term, to be superimposed upon a fundamentally Judeo-Christian world order which had a Creation in time by the one and only true God and which because it has a beginning must in turn have an end.

The Chinese system went in an altogether different tact though, and to this extent was no doubt influenced by the predecessors who thought of the world as a cycle, the grand myth of the un-ending cycle of time which expands, holds, contacts, holds again and then outbreathes the universe into existence once more. To the ancient Chinese, the ones who worked with symbols and to whom Heaven, Earth and Man were not distinct beings but all aspects of a single unified reality within which states of being, balance amongst the three – and imbalance – waxed and waned like the coming and goings of the moon.

The *Yi Jing*, through inference and interpretation by later mostly Confucian scholars, explains not only how the universe came into being – an almost secondary or natural byproduct of the model rather than the starting point of the model itself - but also how the universe is sustained, and shall be sustained going forward. Through the combination and natural progression of the basic two elemental forces in the universe; darkness and light, creative and receptive, expanding and contracting, male and female, the broken and whole lines (later called *Yin* and *Yang*) which came together in various combinations to not just describe the nature of things, cosmologically and psychologically speaking, but also to be laid out in a framework which could be 'consulted' via the following of a specific practice with a specific ritual tied to it and guided by a competent and well trained expert in the model itself and its manifestation in hexagram form.

From this elemental structure of the Many emanating from first the One and then the Two which emerges in the West, as we see reflected in not just the Pythagorean tetractys but also in the more mature and evolved form of Platonism classically referred to as Middle Platonism, we see the parallel development, and fascination with, geometry as the best and foremost reflection of the underlying order of the universe. This feature is characteristically Western, in the sense that it is altogether absent from philosophical traditions of the ancient Far East.

The parallel to the bagua metaphysics, as reflected in the Earlier and Later Heaven arrangements, in the West is more the system of the four (or five depending upon the philosophical tradition)

elements rather than the constituents or constructs which made up these various elements, as reflected in Plato's *Timaeus*, perhaps the most lasting and influential works that is attributed to Plato. Here Plato puts forth his "likely story" of universal creation which stands within basic (perfect in his view) geometrical figures which not only combine in various ways to form the basic elements that make up the universe but also stand behind the material formation of the universe itself.

Again the ancient Chinese did not look to geometry to solve all these problems, and they were not fundamentally materialists as the Western philosophical systems eventually evolved to in one form or another. They were more Platonists in this respect, resting on the principle of Form and Idea as the ontological first principles of the universal creation, of which there were eight – based upon a clean and simple binary polar system of the intermixing of opposing forces – all of which combines to describe the universal order in its entirety and from which the universe, and its underlying order, could best be understood.

In the West, the Idealist and Materialists continued to diverge throughout history, starting with the intellectual lines that were drawn by Aristotle with his metaphysical system of *substantial form* which he contrasted with Plato's belief in the ontological prevalence of Forms and Ideas, a contrast that marks the evolution of thought in the West even to this day, where the lines are correspondingly drawn between the theologians (religion) which are Platonists more or less, and the materialistic determinists that are characteristic of academic scientists, at least in the most pure and undiluted form.

We see this undercurrent of belief, an obsession almost, of geometry and mathematics as the language of the heavens so to speak, prevalent in Western intellectual development throughout antiquity - from Pythagoras to Plato to Euclid, embedded in the Greek language itself (Greek *gematria*, also referred to as *isopsephy*) in its depiction and description of the Gods, and even reflected in some of the mythology of the New Testament, in particular in the concept of the Holy Trinity which harkens back to Pythagorean geometry as well as embedded in the story of the Fisherman and the Net in the Gospel of John, the so-called Gnostic Gospel, within which the Hellenic obsession with mystical geometry clearly persists[52].

The ancient Chinese philosophers made no such pivot away from this divine interplay of forces, and kept to their old ways - at least philosophically and spiritually speaking - through the lasting creation of the *Yi Jing* which had not just philosophical value, but also very practical significance as well. Which although had its basis and underlying beliefs in numerology, never adopted a fully geometrical and planer view of time and space - and perhaps more importantly experience.

[52] See https://snowconenyc.com/2016/07/30/the-fisherman-and-the-net-geometric-symbolism-in-the-gospel-of-john-i-of-ii/ and https://snowconenyc.com/2014/09/12/the-fisherman-and-the-net-geometric-symbolism-in-the-gospel-of-john-ii-of-ii/ for a full description of the underlying geometry reflected in the story of the Fisherman and the Net in the Gospel of John.

Experience which was not the perception of something which perhaps was qualified by sole abstractions and pre-understood intellectual framework, but by an unfolding as it were of an interplay of basic archetypical forces of which man, and spirit, formed an integral part - a part of a whole rather than the whole part.

Modern Science: The Boundaries Are Drawn

The early Christian Church Fathers looked to the *Timaeus* perhaps more than any other ancient Hellenic philosophical work for the intellectual and rational foundations for their creation mythology that we see in the Old Testament, a work which of course the Christians wholeheartedly adopted as their own.[53] And of course from the Judeo-Christian religions, through the ages of first the Roman, then the Byzantine and Muslim empires, we find the worldview of the West, resting on these so called rational, and fundamentally geometric and "bound" universal foundations.

It was not until the Scientific Revolution some 1500 years later that intellectual thought breaks free of religious dogma, and while the basic principles laid down by the ancient Greeks which established the Truth of the Biblical narrative were for the most part altogether abandoned, at least from a physics perspective, later philosophers and the first scientists in fact remained nonetheless convinced of the underlying geometric foundation of the universe as the ultimate expression of God. None of these great thinkers were atheists in any sense of the word and although they may have rejected most, if not all of the basic tenets of the Church, especially with respect to Creation mythology as laid out in Genesis (at least from a literal standpoint), the still held onto the firm belief that mathematics, and in turn geometry, represented the ultimate and best expression of the divine in the material world.

Even to the enlightenment philosophers, mathematics and geometry were the core basic building blocks of universe from which our natural world can be understood. Newton rested his grand three laws of motion, which underpin classical mechanics even today, upon Euclidean geometry which described physical space in terms of spatial coordinates on a three dimensional plane as well as their movement through time via a new method of mathematics called calculus which facilitates the calculation of the rates of change of objects and the slope of their respective curves in Euclidean space (differential calculus) as well as the calculation of the areas under and between these curvatures (integral calculus). Using these tools, along with his universal law of gravitation, Newton was able to more accurately predict the orbits of the planets around the sun – as first put forth by Copernicus – as well as establish the firm mathematical, and of course fundamental geometrical, ground for physics which is still taught in schools today. This system that he created, which rested on his three laws of motion that described the interaction between objects within

[53] For example, in the works of Philo Judaeus, Clement of Alexandria, Origen and St Augustine to name just a few of the key figures who attempted to build Judeo-Christian theological doctrine on top of the fundamental Greek philosophical intellectual systems that came before them.

Euclidean geometrical space, were the cornerstones of physics until the twentieth century when Einstein upended physics with his theory of Relativity.

Relativity, as Einstein "discovered" it, expands upon the three dimensional notion of space put forth first by Euclid and leveraged by Newton, and established a new geometrical fabric of reality based upon the notion of curved spacetime, fully integrating gravity into the geometrical framework (as the bending, or curvature of spacetime) rather than it being described as an external "force" acting on objects across space and time as Newton did.

Einstein was required to create – or perhaps better stated "borrow" – a new and more complex geometrical framework within which the fabric of spacetime, its underlying curvature, as well as the objects moving within it could be described. The mathematics used to support General Relativity falls under the heading of *differential geometry*.[54] It is within the framework of General Relativity that his famed equivalence of mass and energy is yielded ($\boldsymbol{E = mc^2}$), where the overall system is bound by, and fundamentally constrained by, the constant limit of the speed of light no matter what an observer's frame of reference is.

Quantum mechanics is no exception either. Despite it being a fundamentally different mode of understanding of the behavior of objects, one that is based upon the inability to completely determine the value of complementary variables (such as position and momentum) - also known as the famed Heisenberg uncertainty principle - and also resting on the premise of what is called the *superposition* of particles where a particle is said to exist in a potential *distribution* of positions and momentums until an actual measurement takes place[55], i.e. as described via the *wave-function*. Basically, a new geometrical framework needed to be established in order to describe the movement of objects, particles, at the sub-atomic. The classic geometry that describes the motion of these objects[56] is called Hilbert space.

Leaving aside the fundamental inconsistencies and philosophical questions with respect to physical determinism that Quantum Mechanics poses, a topic of debate and inquiry by minds much more adept and astute than mine for the last 100 years, regardless both physical models are understood are understood and described within the context of *bound*, *closed* systems. Each

[54] The mathematics used to support General Relativity falls under the heading of *differential geometry*. Within this framework Einstein leveraged Riemann curvature tensors, specifically a 4 dimensional Lorentzian manifold of signature (3, 1) or equivalently (1, 3) to model the movement of objects within a spacetime continuum.

[55] A distribution mathematically described as the *wavefunction.* See https://en.wikipedia.org/wiki/Wave_function for a detailed explanation.

[56] If we can truly call these sub-atomic particles "objects" for whether or not they truly are "objects" in the classical physics sense of the term is one of the great debates and quandaries of twentieth century physics as a vast array of experimental data shows that they behave not just like particles as we would understand them, physical objects moving through space and time, (*corpuscles* as they were originally called), but also as waves as well depending upon the experiment. Their wavelike behavior is illustrated in the classic double-slit experiment, a full explanation of which can be found here: https://en.wikipedia.org/wiki/Double-slit_experiment.

system – whether it be General Relativity or Quantum Theory – attempts to describe reality as physical systems of which interact with each other and reside at specific physical states that can be described via various geometrical formulations, as well as the movement of the these "objects" through physical space giving us the ability to predict – and this is the power of modern science – future states of these various phenomena which as the subject of observation[57].

Such is the nature of Physics as it stands today, both when studied at the grand scale as governed by the laws of General Relativity "discovered" by Einstein as well as Quantum Mechanics, as put forth and articulated by the likes of Bohr, Heisenberg, Schrodinger, De Broglie and others in the twentieth century. Nonetheless this undying and unfailing belief that the natural world is best understood through the lens of mathematical laws and formulas which govern the various states and relationships of the "physical" world as it moves through a specifically described and formulated geometric continuum, reality in fact as we have defined it, is a belief shared by and first promulgated by the ancient philosophers from the Mediterranean starting with Democritus, Pythagoras, Plato and Aristotle among others and has carried forward into the 21st century.

Ironically some things change and some things forever remain the same one might say in this context.

[57] Part of the problem that true "determinists" (like Einstein) have with Quantum Theory is that it is not a fully deterministic model, hence the question that was posed in the famed EPR paper co-authored by Einstein which posited that the theory was incomplete, sparking the quest for the so-called "hidden variables" that were missing from Quantum Mechanics that would make the theory fully deterministic, i.e. not stochastic or probabilistic as is encapsulated and described by the wave function. This is perhaps best illustrated by the now famous thought experiment by Erwin Schrodinger posed in 1935, aptly named "Schrödinger's cat" – see https://en.wikipedia.org/wiki/Schr%C3%B6dinger%27s_cat for a detailed history and explanation.

Summary and Conclusion

In summary then we have looked at the metaphysical foundations of science as it stands today in the West, looking back upon its initial roots in the espousal of numerology and especially geometry as representative of the eternal ever present truths of the cosmos as reflected in (what we know of) the philosophical traditions surrounding first Pythagoras and then Plato.

And then conversely we have looked at the philosophy of the Far East as representative in the symbology and interpretations of the *Yi Jing*, the *Classic of Changes,* as it has come down to us through the ages as well, resting at some level on some of the same basic epistemological tenets – that is that that cosmos and universe at large is best understood in the language of symbols that reflect the basic delineation of two forces – yin and yang – and their comingling and interrelationship with one another to establish the foundation of the world as we know it.

While it is tempting and attractive to draw parallels to the two systems, it is clear from this analysis that the only basic parallels that can be drawn between the two belief systems, as drawn from the ancient texts which have come down to us, is that there rests at the heart of all philosophical and metaphysical inquiry the fundamental notion of the creation of the many – what the ancient Chinese texts refer to as the "myriad of things" or "ten thousand things" - from the One, which in turn is produced from the reaction and intermingling of the forces of dark and light, or creative and receptive. This symbology can be found buried in the mythology of the ancient Greeks (as well as other ancient Mediterranean cultures in fact) as well as buried within the basic, core tenets of the *Yi Jing*, despite its usage, its purpose, as a divination tool rather than a philosophical text per se.

Beyond this what we are left with are two cultures separated by several thousand years of migration and independent development (at least), that developed very different ways of communication both from a linguistic (spoken) language point of view as well as, and perhaps more importantly, from a written language point of view. The Greeks developed an alphabet that reflected and documented the sounds, vocal words, that were used to name and describe things, one that contained embedded within it nouns and verbs that delineated objects from actors against and among such objects, as well as the actions themselves (verbs), and also included a sense of time (tense).

The Chinese system of language was much more raw, and evolved more directly from the symbols that were used in deep antiquity to denote concepts and notions in and of themselves, and did not have (markedly so) implicit subject and object delineation. One can look at the Chinese system as a more direct representation of Plato's forms and ideas in fact, as their symbols, their written language, was a more direct representation of Forms and Ideas that could

ever be reflected in Western linguistic systems. The Western systems were more powerful now doubt, more powerful to the extent that they were simpler, easier to learn, and had more far reaching and broader meanings that could be drawn and expressed than their Chinese counterparts. Perhaps this is the reason why the intellectuals in the West created what could be considered to be a more sophisticated philosophical and metaphysical system than their counterparts to the Far East, the ancient Chinese philosophers being more concerned with ethics, behavior and right living (Dao), rather than a comprehensive description of metaphysics and the nature of reality that was a hallmark of the early Greek philosophers.

While it is difficult to say whether or not the linguistic system within which these various philosophical systems developed was the cause of such a divergence, or the other way around, it is clear that the two civilizations, civilizations which had no real contact with each other until well into the Common Era, took very different routes in their approach to understanding the world around them and their development of intellectual thought to support the evolution and growth of their respective civilizations.

At first glance the underlying metaphysics of the Pythagorean and Platonic philosophic systems of the Mediterranean, especially as reflected in the *Timaeus*, and the intellectual underpinnings of the philosophical system that emerged in the Far East as reflected in the *Yi Jing* in its earliest form appear to be wholly distinct belief systems that share no common ancestor or root, and have vastly different implications in the development of intellectual and academic thought in their respective civilizations – the former leading to a more closed systemic view of the universe while the latter manifests as a more cyclical, or open, metaphysical system of belief.

At closer look however, some interesting parallels can be drawn in terms of the systems of numerology which underpin the two distinct metaphysical systems, specifically with what can only be understood as the fundamental belief in the establishment, creation and preservation of the world order viewed in terms of the fundamental coexistence and intermingling of *Two* eternal, primordial opposing forces. Two forces which emerge from the *One* single creative principle which sits on top, or initiates, the entire universe - however this One came to be understood or called in the respective philosophical (and/or theological) belief systems that emerged in antiquity in the two respective civilizations.

Furthermore, parallels can also be drawn at the next level of material existence beyond the Two primordial forces, namely the Three and Four which represented the basis for, and entire scope of the cosmological existence within which mankind himself lived and depended upon. The Three is applied to the Two primordial forces and from which emerge the basic elements which underlie the entire cosmological worldview of the respective philosophical systems – the four elements

of the ancient Greeks (earth, air, water and fire) which are represented by the base of the Pythagorean Tetractys and the eight bagua of the ancient Chinese which form the Earlier (and Later) Heaven sequence diagrams (Heaven, Lake, Fire, Thunder, Wind, Water, Mountain and Earth).

While it is certainly far-fetched to conclude that these basic metaphysical parallels are due to the sharing of some common ancestral system of philosophy which is buried deep in pre-history, it is certainly worth considering the possibility. Or perhaps the similarities are simply due to the fact that the basic elemental intellectual constructs, no matter what the underlying language, symbology or philosophy, can only converge into one and only one basic system that rests on the abstract symbolic power of the numerical constructs of the One, Two, Three and Four, a conclusion that can certainly be attributed to the Plato himself in this Theory of Forms, from which the Neo-Platonic One, or the Good, remains the penultimate essence of Being.

Bibliography

While this work in its entirety is an original creation of the author, like all scholarly academic works it rests upon the shoulders of other academics, particularly in the fields of ancient Greek and Chinese philosophy. The author has the luxury of having readily available translations of ancient manuscripts, many of which are available directly via the Internet, that represent the painstaking work of many scholars over many years, decades even in some cases, and much of which can now be analyzed within the context of the latest developments in archeology, linguistics and even genetics as is specifically called out in the Introduction, all of which combine to provide a much clearer picture of the development of ancient civilization, and in turn philosophy, in antiquity than ever before upon which this work is founded.

Much of the analysis and material used as the basis for the conclusions and interpretations that are drawn here in this work are cited below, divided into two sections which denote the relative priority of the work within the context of the research herein - Primary sources being reflective of core works that are heavily leaned upon to upon (rather than textual translations of manuscripts from antiquity per se) and Secondary sources are those that were leveraged and support the underlying analysis but were not necessarily directly applicable to the analysis and conclusions drawn herein. Note that Where Internet based translations and works have been leveraged, they are cited directly in the text as footnotes.

Special consideration is given to Wikipedia (https://www.wikipedia.org/), which not only a good starting point for many of the terms, concepts and interrelationships of the topics covered herein, but also an invaluable resource in and of itself. Google Translate (https://translate.google.com/) was also used and is an invaluable resource for the translation of English words and terms into Traditional Chinese and Greek and vice versa.

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