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Generation and Constitution: A Comparative Study of Cosmology in the Zhouyi and Laozi and Ancient Greek Natural Philosophy

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Abstract. This paper analyzes the cosmological systems embedded in the Chinese classics Zhouyi and Laozi in comparison with the tradition of ancient Greek natural philosophy. Focusing on the philosophical concepts of "Becoming" and "Being", the research explores the indispensable connections and potential meeting points between these two fundamentally different cosmological paradigms. The Chinese cosmological thought presents a system of creation in dynamics centered around two philosophical concepts "Dao" and "Yin Yang", which emphasize the aspects of flux, relationality and holistic cosmos. While the Greek tradition—represented by Plato and Aristotle—elaborated a system of creation in statics, which postulated an eternal substance in rational order and geometric structure. This paper defines the basic features of both cosmological systems via textual analysis and philosophical comparison and attempts to present some views from contemporary quantum physics to facilitate interdisciplinary communication. The research finds that, in comparison with Greek cosmology, the Chinese cosmological system emphasizes the aspects of creation and dynamic equilibrium, while the Greek one focuses on static order and substance. This study not only enhances our understanding of Eastern and Western philosophical traditions, but also provides new perspectives for contemporary cosmological research by linking classical wisdom and modern physical sciences, and further promotes interdisciplinary communication between philosophy and science.

Keywords: Cosmology, Zhouyi, Laozi, Ancient Greek Philosophy, Comparative Philosophy.

1. Introduction

The nature, origin and structural principles of cosmos have been the primary concerns in different human philosophical traditions. Due to the cultural and cognitive historical backgrounds of various civilizations, human beings have developed different cosmological systems. This paper analyzes the cosmological systems embedded in the Chinese classics Zhouyi and Laozi in comparison with the tradition of ancient Greek natural philosophy. We find that these two different cosmological paradigms exhibit a philosophical "echo".

Zhouyi and Laozi present a system in dynamics centered around the philosophical concept "Dao" and "Yin Yang", which emphasize the aspects of flux, relationality and holistic cosmos. While the

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We find that, in comparison with Greek cosmology, the Chinese cosmological system emphasizes the aspects of creation and dynamic equilibrium, while the Greek one focuses on static order and substance. This paper not only enhances our understanding of Eastern and Western philosophical traditions, but also provides new perspectives for contemporary cosmological research by linking classical wisdom and modern physical sciences, and further promotes interdisciplinary communication between philosophy and science.

Through textual analysis and philosophical analysis, this paper presents systematically the main ideas of these two cosmological outlooks, and then introduces modern quantum physics to revive this ancient cross cultural dialogue and discuss its relevance to the study of cosmic holism.There has been long-standing scholarly interest for a comparison of Eastern and Western cosmological thought but not so systematic cross cultural studies. This research will help to appreciate the diversity of human intellect, promote intercultural communication and dialogue, and provide traditional wisdom for modern philosophy of science, which will in turn promote the development of a more inclusive global philosophical endeavor in the era of globalization. This study takes the generative cosmology of the Zhouyi and Laozi and the ontological analysis of Greek natural philosophy as its subjects. The research methods used include textual analysis and conceptual comparison with the aid of modern quantum physics. Documentary analysis method is used to collect and interpret related texts and literature. This method is well suited to trace historical and conceptual development. In addition to comparative philosophy, it helps to reveal similarities and differences between the two paradigms. The aim of this research is to explore systematically the fundamental differences and possible convergence between these two cosmological models and their contemporary relevance. Detailed textual interpretation, tabular comparison and cross disciplinary integration are then conducted to provide a comprehensive academic view.

2. Generation and evolution: the characteristics of ancient Chinese cosmology

Early Chinese cosmology was not a stagnant theory of substance but a dynamic philosophy of process which emphasizes on transformation and continuous flux. It regards the cosmos as an organic whole whose components are intrinsically connected and interactive.

2.1. Laozi: "Dao," "Non-Being" (Wu), and the sequence of generation

The Laozi provides us with a classic model of cosmic generation. In this model, “Dao” plays the role of the ultimate source, which is identified as “the root of heaven and earth” and “the mother of all things” [1]. It “stands alone without changing, revolves without ceasing”, and gives birth to all things. This is done in a sequential order: “Dao gave birth to the One; the One gave birth to the Two; the Two gave birth to the Three; the Three gave birth to all things” [1,2]. There is a cosmic logic from unity to multiplicity in this sequence.

Obviously, Small believes that the main and most generative principle in Laozi is not “qi” or “Yin Yang” but the dialectics of “Non Being” (Wu) and “Being” (You) [1]. “Non Being” is not nothingness but a kind of indeterminate and formless generative field overflowing with potentialities; “Being” is the concrete and determinate being of things. The two “emerge together

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though named differently" and jointly make possible the creative principle of Dao by the cyclical movement in which "Non Being and Being generate each other" [1]. Creativity of Dao is often personified as maternal imagery, e.g., "The world had a beginning. Which may be called the mother of the world" [1], i.e., Dao is the generative source and sustaining ground of existence. In addition, the researches of Huang Yongfeng and Li Zhikun have found that "Taiyi" (The Great One) may be a possible conceptual axis in Laozi's thinking [3]. "Taiyi" can be astronomically used for the Pole Star, and philosophically, it can denote the ultimate and formless unity that transforms and generates all things. Therefore, the theory of cosmic generation is characterized by the integration of ontology, philosophy of mind and epistemology, which is typical of the characteristically holistic philosophy of Chinese school [3].

Obviously, the generative cosmology of the Laozi is not only attested in the Laozi itself but also influenced some later Daoist thinkers. For example, when receiving the Laozi's legacy, Zhuangzi not only inherited and extended the ideas of generativity but also promoted the perspective of "the equality of all things", which strengthened the dynamic and holistic quality of early Chinese cosmology. Meanwhile, generative theory was extensively applied in some fields such as the traditional medicine and feng shui, which displayed the integrated character of theory and practice. Furthermore, the concept of "Non Being" (Wu) in generative theory has many interesting similarities with the modern quantum vacuum theory in the physics field, because both of them focus on potentiality and generativity, which provides an abundance of materials for cross disciplinary research.

2.2. Zhouyi: correlative cosmos and the interaction of Yin and Yang

Unlike the generative originality in the Laozi, the cosmology in Zhouyi focuses on correlativity. Its origin lies in the interaction and complementarity of dynamic forces Yin and Yang. "One Yin and one Yang is called the Dao" means that all cosmic phenomena are the results of interaction and dynamic balance of Yin and Yang [1]. Yin and Yang are not individual things but they are in perpetual cyclical alternation and interaction, and together they compose the harmonious totality of cosmos.

In this correlative cosmology, "Heaven" (Tian) and "Human" (Ren) form a macro microcosmic system and exhibit a deep resonant relationship. This notion of "correlation between Heaven and Human" (Tianren Ganying) naturally extends cosmological principles to human society and self cultivation and constitutes a unique worldview of the "Unity of Heaven and Humanity" [1].

The cosmology of the Zhouyi is not merely philosophical; it also had profound impacts on traditional Chinese politics, ethics, and art. For instance, in imperial society, Yin Yang theory explains social order and natural phenomena and highlights balance and harmony. This feature is particularly evident in traditional Chinese medicine, which diagnoses and cures disease through the Yin Yang and Five Phase theory. Furthermore, the symbolic numerological system of the Zhouyi provided a theoretical basis for ancient Chinese astronomy and mathematics and reflects the holistic feature of the development of Chinese scientific thought. It is also inspiring for modern system science and ecology, which also emphasize that everything in the world is interconnected—a outlook that resonates strongly with the Zhouyi's correlative cosmology and reflects its enduring significance.

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2.3. The complex presentation in excavated texts: examples from Taiyi Sheng Shui and Heng Xian

The Complex Presentation in Excavated Texts: Taiyi Sheng Shui and Heng Xian (Constancy Prior).In addition to the previously introduced ancient cosmological texts, new Warring States bamboo manuscripts further reveal the early generative cosmological presentation.Taiyi Sheng Shui (The Great One Generates Water) has a more complex generative sequence than the Laozi. Its process starts with “Taiyi” and “Water” and generates heaven, earth, spirits, Yin and Yang, etc. through the mechanism of “mutual assistance” or “reverse support” (fan fu) [4]. Furthermore, in this bamboo manuscript, Yin and Yang are not the initial sources but generated later in the process of the generative sequence [1]. Heng Xian (Constancy Prior) proposes “Heng” (Constancy) as the cosmic source and puts forward the most important concept of “self generation” (zi sheng). As Li Rui argues, this concept highlights the fact that “qi” moves by itself and generates all things and reflects a philosophical tendency that negates an external “creator” and thoroughly internalizes the generative dynamic of the cosmos [4].

Texts like Taiyi Sheng Shui and Heng Xian not only enrich the received works but also show the diversity of early Chinese cosmological thinking. They suggest that there was not one model of generative theory but many models; for example, “reverse support” focuses on interaction and feedback, and “self generation” displays immanent dynamism. This richness shows the close connection of ancient philosophers with cosmic origins and provides new evidence for the comparative philosophy. Future research on these texts can help reveal the process of mythical thinking to rational thinking in Chinese philosophy, and its parallels and differences with Greek cosmology. In addition, the discovery of these manuscripts has promoted the development of philology and methodology; these achievements have made an important contribution to the reconstruction of ancient history.

3. Order and reason: the path of Greek cosmology

In contrast to the Chinese philosophy of “Becoming”, the central concern of ancient Greek natural philosophy was to explore the eternal essence of “Being” and the order behind the phenomenal world.

3.1. From the inquiry into "arche" to rational construction

The discovery of “nature” (physis) was the central event in the rise of Greek philosophy. The early philosophers were convinced that “nothing comes from nothing”—there must be an unchanging order and a final cause beneath the flux of appearances, which could be discovered by reason [5]. Perhaps this commitment to a permanent order and final cause naturally led Greek cosmology to break with mythological accounts and to seek logical and geometric models to explain the world, which established the tradition of rationalism [5,6].

The development of Greek cosmology was closely related to the polis and the rise of scientific thinking. For example, Thales of the Milesian school believed that water was the arche, which marked the beginning of Greek thought moving from myth to reason. Subsequently, the Pythagorean school claimed that the cosmos was the embodiment of mathematical harmony and geometric structure—an idea that influenced Plato and the later Scientific Revolution [5]. Rational construction was not only seen in philosophy but also in other fields of Greek astronomy, medicine, and engineering; for example, Euclid’s geometry provided a mathematical basis for the construction of

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the cosmos. This rational tradition laid a solid foundation for the development of Western science and philosophy, which is in clear contrast with generative theory in ancient China; however, these developments also reflect the parallel paths of human beings moving toward cosmic order.

3.2. The cosmic models of Plato and aristotle

In the Timaeus, Plato presented a mathematical account of the cosmos [7]. He believed that there was a rational "Demiurge" (Dēmiourgos), who used the eternal "Forms" (ideai) as a blueprint and introduced "proportion" and "harmony" into the primitive material (chōra), thereby creating an ordered cosmos [7]. It is interesting that this model took into account early medical ideas, and hence we can infer that the cosmic body was healthy only if certain opposing elements were in balance.

Aristotle constructed a geocentric system with a hierarchical, teleological cosmos [8]. All things consist of four elements: earth, water, air, and fire; each of the four elements has its "natural place" and "natural motion" toward its natural place. To account for the motion of the heavens, Aristotle posited a fifth element, "aether" (aithēr) [8]. In this closed system, all motion is purposive—each thing strives to return to its natural place—thus maintaining the static equilibrium of the cosmos.

The cosmic models of Plato and Aristotle not only inspired much of medieval philosophy, but also served as background assumptions in modern science. For instance, the teleological cosmology of Aristotle entered Christian theology via the writings of Thomas Aquinas and became mainstream Western thought until the Renaissance. The mathematical model of Plato resounded in the astronomy of Copernicus and Kepler. Thus, the rational design of the cosmos was acknowledged by both Eastern and Western thinkers. Although the two models conflict with modern science, they reflect the Greek focus on order and reason, an obsession embedded in Western culture.

The comparison reveals that the Greek model of cosmos emphasized static structure and external causes, while China stressed dynamic process and internal generation. These differences shaped two distinct intellectual traditions in East and West.

3.3. The development of the idea of holistic unity

Later Greek schools such as Neoplatonism pushed the idea of "holistic unity" to its extreme. They held that all things are internally and organically connected, and that all existence is ultimately unified in the "One" (to Hen). Plotinus's notion of "common sensation" (sunaisthēsis), meaning the part's awareness of the whole and of other parts, bears resemblance to the modern concept of "homeostasis," both reflecting an insight into the inherent unity and self regulation of the cosmos [9].

The Neoplatonic idea of holistic unity shares certain similarities with ancient Chinese cosmology, for instance in stressing the internal correlation and unity of the cosmos. However, the Greek tradition remained centered on rational order, while China placed greater weight on generativity and change. This comparison illuminates how different civilizations conceived holism in different ways. Furthermore, Neoplatonism profoundly influenced the Renaissance and modern philosophy, for example inspiring Hegel's dialectic. The idea of holistic unity is now receiving renewed attention in contemporary ecological philosophy and systems theory, demonstrating its trans historical vitality.

4. Comparative perspective: a philosophical dialogue between Becoming and Being

From the above discussion, it is clear that the two cosmologies display a striking difference along the line of philosophical "Becoming" and "Being" (Table 1).

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Table 1. Comparison of the two cosmological paradigms

Comparison Dimension	Ancient Chinese Cosmology (Zhouyi, Laozi)	Ancient Greek Natural Philosophy (Plato, Aristotle)
Core Paradigm	Theory of Generation (Becoming): Emphasizes dynamism, process, evolution	Ontology (Being): Emphasizes eternity, substance, form
Cosmic Model	Model Organic, correlative model; things interact/resonate via "Dao," "qi"	Mechanical, hierarchical model; composed of basic elements according to geometric rules
Concept of Time	Cyclical, recurrent view of time ("Returning is the motion of the Dao")	Linear tending towards eternity, or static view of time
Epistemic Path	Intuition, embodied realization, symbolic-numerology, dialectical thinking	Reason, logic, deduction, mathematical methods
Ultimate Reality	"Dao" or "Taiyi," formless and nameless, source of generation & natural law	"Forms" or "Prime Mover," eternal and unchanging substantial entity

Li Rui's research has found that when Chinese thought about cosmic origins, they had already confronted problems similar to Kant's "antinomies" (e.g., is the world beginning principle, is generation "action" or "non action") [4]. Different from Kant who tried to solve the problem by limiting the boundaries of reason, the Chinese philosophy resolved the binary oppositions through concepts such as "Dao" and "Taiyi" displaying a unique wisdom of "mysterious unity"(xuan tong) [4], which is consistent with its generative orientation.

The dialogue between Becoming and Being is not only historical philosophical issues, but also modern science and cultural studies. For example, process philosophy such as Whitehead emphasizes on becoming and change; analytic philosophy is more similar to the Greek ontological tradition. Understanding the difference can help us make sense of contemporary scientific paradigms such as classical mechanics and quantum mechanics and help us understand contemporary scientific paradigms such as classical mechanics and quantum mechanics, classical physics and modern ecology, which highlights generativity and interaction. Furthermore, in the context of globalization, this dialogue not only helps us learn from each other from different civilizations, providing intellectual sources for addressing global problems such as climate change. Future research can extend to the application of these two paradigms in ethics and political philosophy, and how they influence the development of modern technology.

5. Modern implications: the philosophical significance of quantum physics

Discoveries in modern physics, particularly in modern cosmology, provide new opportunities to reexamine ancient cosmologies. Although methods used in ancient and modern physics are profoundly different, philosophical implications contained in modern quantum theory resonate deeply with ancient thought—particularly Chinese generative theory (Table 2).

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Table 2. Dialogue between quantum concepts and ancient philosophy

Quantum Physics	Core Characteristics	Philosophical Resonance with Ancient Thought
Quantum Entanglement [8, 10]	on-locality, Holism: Superdistant correlation between entangled particles	Zhouyi / Laozi: Holistic correlative thinking of "all things are one" / "unity of heaven and humanity"
Quantum Vacuum	Not empty void, but a field full of quantum fluctuations and potentiality	Laozi: "Non-Being" (Wu) as the source of "Being" (You); "All things in the world are born from Being, and Being is born from Non-Being"
Wave-Particle	Duality Micro-entities possess both wave and particle properties, challenging classical binary categories	Zhouyi: Yin and Yang as opposing yet unified, interdependent and transforming
Uncertainty Principle	Reveals the inseparability of the observer and the observed system	Chinese Philosophy: Emphasizes mutual penetration and resonance between subject and object, not absolute separation

Quantum entanglement will have increasingly important roles in contemporary cosmology. Some theories suggest that it may be the weave of spacetime itself [11,12]. Although the entanglement discovered in modern physics cannot directly support ancient thought, the deep structure of the cosmos it reveals—non local, holistically correlated, dynamically evolving—resonates strongly in a philosophical sense with the spirit of the Chinese generative worldview. This provides new opportunities for cross disciplinary dialogue: using the language of modern quantum physics to re activate wisdom about holism, correlativity, generativity, and generative interaction in ancient thought, so that it can have new life in a contemporary context.

The philosophical significance of quantum physics not only provides more resources for cosmological discussion, but also promotes revolution in philosophy of science. For example, non locality in quantum mechanics shakes basis of causality as ancient Chinese correlative thinking; generativity in quantum field theory has similar resonance with “Wu” in Laozi. It is not that ancient thinking predicted modern science, but that there is continuity in human exploration of cosmos. Future research can extend resonance to integrate specific scientific theories, like cosmology based on dark energy or black hole physics, into discussion about generativity in ancient cosmologies.

1. Introduction. By systematically comparing cosmology in Zhouyi, Laozi and ancient Greek philosophy, this paper has clarified what are the deep differences between “Becoming” and “Being” paradigms. The Chinese view is based on “life” (sheng), building a dynamic view that is about mutual containment and unceasing generativity. The Greek view is based on “completion” or “form” (cheng), pursuing a static model based on eternal laws.

2. The Chinese Approach. This paper has elaborated that the ancient Chinese cosmology is based on a dynamic vision about mutual containment and unceasing generativity. It builds on “life” (sheng) as the basis of understanding universe.

3. The Greek Approach. In contrast, the Greek approach is based on “completion” or “form” (cheng). It pursues a static model based on eternal laws.

4. Comparative Analysis. This paper has introduced quantum physics to use the current scientific revolution to shake modern bias based on classical mechanics (the mechanistic, reductionist, objectivist worldview). It invites the ancient Chinese cosmology that emphasizes correlation and generation to show its foresight and contemporary significance.

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6. Conclusion

By the comparative analysis conducted in this paper, ancient Chinese cosmology holds the view that universe is generative and in dynamic equilibrium, while Greek cosmology holds the view that universe is in Being and is a rationally ordered whole. The conclusion reached in this paper is that the two paradigms are philosophically complementary and provide a pluralistic perspective for modern cosmological research.

The research presented in this paper has made many valuable references for future research. The impact can be mainly found in three aspects: history of philosophy, comparative philosophy and philosophy of science. It also promotes cross cultural understanding and disciplinary integration. Future research can focus more on the application of specific cosmological concepts in contemporary science and cross cultural practice. For example, generative theory can be further studied to reflect on AI ethics, or ontological thinking can be explored to inspire more cosmological modeling to advance a more comprehensive human understanding of the cosmos.

Cosmology is not just abstract speculation but a living system in social practice. Future studies can broaden their scope and investigate the concrete practices and social functions of the two cosmological views in question within their respective civilizational histories. Only in this way can we appreciate the diversity of human thought and life from a wider angle.

The value of cross cultural dialogue established in this paper does not lie in determining which is better, but in finding more holistic and ecological intellectual resources—through mutual interpretation and learning—that can help us respond to contemporary global challenges.

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