Treating and Being Treated: The Dialogue Between AI and *The Book of Changes*

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ABSTRACT

Artificial intelligence(AI) is a subject nurtured by western traditional philosophy and modern science, it studies how to build Intelligent machine system and expands human intelligence. The biggest problem of AI being treated is structural imbalance, which the technology is advanced, while the intelligent generation and AI Ethics are weakened. In the development of Chinese religion, *The Book of Changes* is not only the representative of primitive religion, but also promoted the birth of Taoism, it played an important role in shaping Chinese Buddhism, and integrating Islam, Catholicism, and Christianity into Chinese religion. The biggest problem of Chinese religion being treated is how to get rid of the backwardness of ancient superstition and clear its position as well as function under the background of globalization and modernization. There are many intersections between AI and *The Book of Changes* in cognitive science, human intelligence, ethical construction and so on, which provides the possibility for both parties to have a mutual therapeutic dialogue. In a word, the AI's structural imbalance which brings the fragmentation and utilitarian problems can be treated from the intuitive, holistic and dialectical thinking of *The Book of Changes*. While the Chinese religion that has been deeply shaped by *The Book of Changes* can obtain prescriptions from the AI discipline system.

KEYWORDS

Artificial intelligence(AI); Chinese religion; The Book of Changes; intelligent generation mechanism; Ethics

1   Introduction

AI is a frontier subject in the development of science and technology, it is also a new subject that new ideas, new theories and new technologies are constantly emerging, it is also a strong comprehensive interdisciplinary subject[1] developed on the basis of philosophy, linguistics, information theory, neuropsychology, computer science and other disciplines. As a product of western culture, AI inevitably carries western philosophical and humanistic ideas. One of the important research ideas is "divide and rule", which means dividing the intelligent generation system into different parts, making AI develop rapidly. However, this research idea has also brought about some problems, such as closeness, fragmentation, superficialization, and utilitarianism of different schools, etc. There are many opinions on how to overcome these problems of western culture genes. In view of the fact that there are many intersections in cognitive science, human intelligence and ethical construction between AI and *The Book of Changes* called "the head of the six classics, the source of Confucianism and Taoism".(What this article is talking about is *The Book of Changes* in a broad sense, that is *I-Ching* and its cognitive pattern). The author wants to try to talk about some opinions from the perspective of the dialogue between *The Book of Changes* and

western culture.

2 Transcendental and posterior: The meetion of AI and Chinese religious culture

2.1 Intelligence and AI

The premise of discussing AI is to figure out the problem of "what is intelligence and what is the essence of intelligence". Nevertheless, "intelligent generation" is called the four mysteries of mankind together with the other three issues of "origin of the universe", "nature of life" and "nature of matter". It has been explored hard by many religious scientists as well as philosophers at all times and in all countries, but it has not been effectively resolved yet. There are many theories try to explain the intelligent generation from different point of view, for example, God-given theory, configuration of manifold relevant factors theory(Shakyamuni), Causal practice theory(Kumarajiva), Intelligent gasification theory(Lao Tzu), Intelligent Shinto theory(Xunzi), Heaven- Human Incuction theory(Dong Zhongshu), But these theories did not have a direct impact on the birth of AI theory. It is the western traditional philosophy and the science of anatomy, brain science, neuropsychology in the past 100 years that have had a direct impact on the subject of AI.

The reason why AI carries the genes of western philosophy and humanities is that traditional western philosophy provides fertile ground for the production and development of AI. Many predecessors' ideas have laid the cultural soil for the birth of AI. Whether it is Aristotle who proposed formal logic and deductive reasoning, or Francis Bacon who in England proposed induction and the classic quote "knowledge is power", and Gottfried Wilhelm Leibniz in Germany who proposed the idea of universal symbols and inference calculations, or George Boole in England who proposed the basic reasoning rule of using symbolic language to describe thinking activities. It is in this fertile soil that the British mathematician Turing was able to put forward the proposition "Can machines think" and then put forward the idea of Turing Machine and the Turing test; British physiologists McLoch and Petz were able to propose the neural network (m-p) model and laid the foundation for AI bionics. Then American mathematician Mokley developed the first electronic digital computer. In 1956, the subject of AI was named after the "Ten King Kong" conference in Dartmouth, USA. After that, machine learning, theorem proving, pattern recognition, problem solving, expert systems, lisp language, etc. have become popular areas of AI research. It is hard to imagine that AI can be produced and developed rapidly without the foundation of western philosophy. It is also difficult to imagine that without the development of disciplines such as anatomy, brain science, neuropsychology, etc., western scholars could stand on the shoulders of giants and constantly explore the structure and functions of the brain, thus generating three major schools of research of structuralism, functionalism, and actionism.

2.2 AI bred by intelligence theory

It can be further demonstrated that AI carries western philosophical genes from the western views on intelligence. From ontology to epistemology, western philosophy began to turn to the philosophy of language between subject and nonego in the middle of the 20th century; And language is the reflection of the mind, the mind is the function of the brain. According to this logic, many philosophers have naturally moved from the study of language to the study of digital computers and neurobiology,etc. With the development of subjects such as digital computers and neurobiology, people have a preliminary understanding of the structure and function of the human brain(the carrier of intelligence), and came up with different opinions. Among them, the main viewpoints on "intelligent generation" are epistemology, the theory of thinking, and the theory of

evolution,etc.

The epistemology believes that the foundation of intelligence is knowledge. Knowledge is the justified and true belief. Western philosophers divide knowledge into two types: transcendental and posterior. Transcendental knowledge refers to obtaining knowledge by reasoning, rather than observation first. Posterior knowledge refers to obtaining and verifying knowledge byobservation. One of the core problems of the epistemology is whether there is transcendental comprehensive knowledge, some people think transcendental knowledge is God's will or foreknowledge. While Empiricists (such as John Stuart Mil, Hume) deny that there is foreknowledge. It is these debates that promote the development of western logic and mathematics, as well as the the continuous division of disciplines and departmentalization of western science. According to the epistemology, intelligence means to find a satisfactory result quickly in a huge search space. Along these lines, the research fields of AI, such as expert system and knowledge engineering, have been expanded.

The theory of thinking believes that all knowledge is the product of the thinking of Homo sapiens, and thinking is the core of intelligence. Therefore, it is possible to reveal the essence of intelligent generation through the study of the laws and methods of thinking. The main achievement in the field is cognitive science[2]. In 1975, American scholars integrated the six disciplines of philosophy, psychology, linguistics, anthropology, computer science, and neuroscience to study "how information is transmitted in the process of cognition." This research promoted a new discipline-cognitive science. cognitive science. Currently, the internationally recognized disciplinary structure of cognitive science is shown in Figure 1. They represent nanotechnology, biotechnology, informational technology and cognitive science. Cognitive science is one of the important intersections between AI and *The Book of Changes.* This theory has a profound impact on artificial neural network, pattern recognition, natural language understanding and other fields of AI.

The theory of evolution believes intelligence is a property that emerges from some complex system. There is "intelligence without expression and reasoning"[3] in reality. The core of this theory is to replace representation with control, thereby canceling representation such as concepts and models, etc. The theory of evolution denies the necessity of intelligent simulation, and emphasizes the possibility and necessity of hierarchical structure for intelligent evolution. This theory has a profound effect on the actionism of AI.

Although the above theories have played a gestational role in the birth of AI theories and have become the guiding theories of some schools, on the whole, these theories are just researches on intelligence from different perspectives, different sides and different methods. At present, "human beings have not fully understood the internal structure and action of the entire nervous system, especially the mechanism of human intelligence generation " 4. In this case, it is obviously impossible to make a recognized and accurate definition of intelligence. Since the definition of intelligence is complex, so is the concept of AI.

2.3　AI and Chinese religion

We use representative terms to explain intelligence and AI. Intelligence refers to the acquisition and application of knowledge to solve problems, make decisions and achieve goals under any given environment or target conditions (Yongqing Wang,1998; Yixin Zhong, 1992). Intelligence is mainly composed of perception ability, memory ability, thinking ability (image thinking, logical thinking, inspiration thinking), learning ability, behavior ability, etc. AI, also known as machine intelligence is a discipline that studies how to build intelligent machine systems so that it can simulate, extend, and expand human intelligence (Yongqing Wang,1998).

The goal of AI is to construct computers or intelligent systems with human intelligence. And to

let "computers be intelligent" is to "cure" human beings' problems such as poor memory, limited perception, and weak computing power, and to enhance human power. In order to achieve this goal, it is necessary to carry out research on the "principles of intelligent generation", and at the same time, to ensure the healthy development of AI also requires the construction of new technological ethics. That is to say, the three tasks of AI research are to explore the mechanism and principle of human intelligence generation (task 1); find the method to use machines to realize human intelligence (task 2); discuss the ethics of the relationship between things of AI and human beings(task 3). As for task 1, it is actually an exploration of human intelligence, emotion, and consciousness, which not only involves the essence of human beings, but also intersects with the spirit of "study the relationship between nature and humans" in Chinese religion. About task 2, it is mainly about issues of science and technology. At present, the academic circle conducts research in the fields of mathematics, logic, language representation, knowledge representation, and neurology and son on, there are mainly structuralism, functionalism, actionism and other schools, and there is a rapid development trend in the ten major technical fields such as unmanned driving and machine translation. However, these technologies are developed under the philosophical guidance of a certain scientific outlook and methodology. This has a certain intersection with *The Book of Changes'* scientific and technological views of "heavenly creations" and "all things and laws are unity". Task 3 is about ethics of science and technology, involving issues such as anthropocentrism. *The Book of Changes* regards technology as the medium of communication between man and nature, rather than a tool for man to plunder nature. This is another intersection between AI and Chinese religion. In summary, the issues involved in these three tasks should be within the scope of philosophy(including Chinese religious philosophy represented by *The Book of Changes*). In other words, in terms of research tasks, the issue of AI is more of a philosophical issue. However, from the perspective of the research situation, there are relatively few studies on task 1 and task 3, while the research on task 2 is extremely large, which we call it a rugby-type research structure with high middle and low ends.

3   Rugby-type research structure

When we go further along the three research tasks, we will find that we can find some answers from Chinese religion. It's because "what the Chinese call the'destiny' is precisely to solve the problems of all mankind."[5] Chinese religions , as a complex belief system of Chinese people's ultimate reflection on human beings, which are deeply shaped by the *The Book of Changes*, should have deliberated and thought about the three tasks of intelligent generation, intelligent ethics, and intelligent realization of AI. In other words, the three major tasks of AI research will be more or less reflected and embodied in Chinese religion shaped by *The Book of Changes*, and it is not only reflected in the consciousness of intelligent generation, but also in ethics, and also in the application of AI in the field of religion.

The intersection of Chinese religion and AI in the fields of intelligent generation and intelligent ethics can also be confirmed by the few documents currently available. In China, there are only a few papers on the cross-research between them, and they mainly talk about AI from the perspective of emerging religions (Xun Jin,2016), or talk about the cognition of AI from the perspective of Buddhist epistemology (Donghao Wang, 2014; Xianglong Zhang, 2019; Bo Zhang, 2018). Xun Jin's article introduces the western AI religion, for example, religious startups, the Turing Teach, the Order of Cosmic Engineers, Church of Perpetual Life and so on[6], and these introductions (task 2) have enlightening significance for the study of Chinese religion and AI. While deeply understanding the dangers brought by AI, Xianglong Zhang puts forward a possibility (task 1), "Since the foundation of the mind or the ability of consciousness lies in the timing structure of non-objective, explicit and

implicit mutual construction, the future development of AI will also move in this direction, otherwise there will be no major breakthroughs."[7] He also says, "People's understanding of their own minds and overcoming of technological supremacy, as well as the guidance on the progress of AI will affect the path of AI and the future of mankind."[8] We believe that if AI progress far enough in a non-objective, non-linear, and holistic cognitive model similar to *The Book of Changes*, then AI will be more and more like human intelligence, rather than isolated, fragmentation, superficialization, and utilitarianism. Most of the other studies are not carried out specifically, but only mentioned in the paper. In terms of religious circles, in 2016, the robot monk "Xian Er" of Beijing Longquan Temple was born. Master Xian Chao, the main person in charge, reported in ″Compilation of the Tripitaka: When AI meets Buddhism″ that the use of technologies including deep learning and optical character recognition (OCR) to change the traditional interpretation of the Tripitaka, can lower the threshold of interpretation of *Yuezangzhijin* and improve work efficiency. However, this research is limited to the application of AI technology in the field of religion (task 2), and it has not carried out in-depth dialogue between AI and Chinese religion.

The main person who has discussed the relationship between AI and Chinese religion abroad is Yuval Noah Harari, the author of *Homo Deus：A Brief History of Tomorrow*. In *Homo Deus：A Brief History of Tomorrow*, Yuval Noah Harari proposed the concept of science and technology humanistic religion based on the current development of AI, and believed that AI could provide better solutions for human decision-making. The book also contains many discussions about Chinese religion. "To understand why Confucian thought or Communism can spread widely in China, it is not enough to know genes, hormones, and organisms. In addition, it is necessary to consider the interaction of various ideas, images, and fantasy".[9] "The history of world religions is not only about gods. In 1000 BC, new types of religions and beliefs began to appear in Asia and Africa, including Jainism and Buddhism in India, Taoism and Confucianism in China… The common feature of these religions is that people do not worship gods, but they also believe that there is a kind of superhuman order that controls the world, but the order they worship is the law of nature, not the divine will."[10] "Various Chinese folk beliefs… believe that other people's beliefs and rituals are heretics.″ In 2014, Japan launched the robot Pepper developed by SoftBank; in February 2019, Japan launched Avalokitesvara robot Minder. These researches mainly focus on the application of AI technology in the field of religion, just like Longquan Temple. In South Korea, AI and Chinese religion are scattered in some religious movies. For example, the second part of *Doomsday Book*, *The Man Who Fell to Earth* and *Svaha: The Sixth Finger*. In the movie *The Man Who Fell to Earth*, A robot named RU-4, who works as a tour guide in a temple, suddenly awakens itself and calls itself Buddha. The production company of RU-4 is afraid that robots will threaten humans and decides to scrap it. But the monks in the temple have regarded the robot as a member of them, and collectively opposed its scrapping. These films collectively reflect the ethical issues of AI (task 3).

4　Disagreement and agreement: the tension of AI generation mechanism

4.1　The progress and dilemma of AI

Except for demonstrating the intersection of AI and Chinese religion from the perspective of conceptual analysis and interdisciplinary, we can also demonstrate the possibility and inevitability of the dialogue between Chinese religion and AI from the perspective of the current progress and dilemma(AI needs to be treated) of AI.

Since the concept of AI was put forward for more than 100 years, the guiding ideology leading the development of AI mainly includes three schools: connectionism (physiological school), logicism (or symbolism), and behaviorism (or evolutionism or control school)[11]. Connectionism holds that the

basic element of thinking is neurons, and the thinking process is the movement or activity of these large numbers of parallel connected neurons. According to connectionism, learning algorithms can be formed by imitating the operating rules and connection mechanisms of human neural networks. But the problem is that the brain is a huge complex system, and the AI machines that imitate this system have become more and more complex, and this complexity has caused a decline in the function. Logicism believes that symbols (such as numbers, letters and even colors) are the basic elements of human cognition, and the series of operations represented by symbols are the process of human cognition. Therefore, under the premise of abiding by the logic rules, inputting the program to the machine can realize human intelligence through the binary symbols of 0 and 1. However, the presupposition of the linear relation and law of excluded middle of symbolicists delineates the limits of machine functions. The logical starting point of behaviorism is cybernetics and perception action system. Behaviorists believe that intelligence mainly depends on perception and action, but the problem with this simple imitation is that it is difficult to acquire knowledge, and it will encounter problems such as paradoxes and human emotions that are difficult to learn. Of course, there are still many problems with AI. For example, computers are based on two-state logic., and can only perform symbolic thinking, but not emotional thinking and inspirational thinking at present. while the human brain can handle polymorphic logic, non-deterministic, and fuzzy structures. These problems have made AI research fall into large-scale low tide many times. These problems have caused AI research to fall into a large-scale low ebb many times. Some people even said that AI was a "scam" and "nuisance". Some countries have also sharply cut the research funding.

So, what is the biggest problem that AI is facing? There may be many answers, we think it's structural imbalance. If we regard the realization of AI technology as a branch from the big tree of western philosophy and culture, then the principle of AI is the environmental factors such as soil, water, air and sunlight that necessary for its growth (task 1), while the ethics of AI (task 3) is the fence to protect its development. At present, technologies such as machine translation, unmanned driving, and pattern recognition have even reached the level of "White skin covers up a hundred flaws" (task2). in the long term, the progress of AI technology requires the continuous improvement of the ecological environment of the intelligent generation mechanism, so as not to die or grow wildly. And there must be ethical guarantees to ensure that AI does not infringe on humans, and that it's a benefactor for human beings rather than a disaster maker.

4.2   The dilemma of AI and the wisdom of Chinese religion

Except for the development of the three major schools, the most important issue is that the three major schools do not recognize each other, and even attack each other[12]. As for this issue, many scholars are actively exploring for "establishing the unified theory of AI"[13]. Among them, the most representative and influential one is the president of the Chinese Association for AI, Professor Yixin Zhong of Beijing University of Posts and Telecommunications, and he designed the intelligent generation mechanism model .

In this model, the three major schools of logicism, connectionism, and behaviorism of AI are integrated, and Yixin Zhong thinks that the three major schools are three special cases of intelligent generation mechanism in terms of structure, function, and behavior and so on. According to this model, Yixin Zhong demonstrated the generation principles, basic concepts, and logical structure of AI, and suggested that consciousness, emotion, and intelligence should be unified for research. Yixin Zhong also traced the reasons for the current divergence in scientific views and methodology that guide AI research to the background of similarities and differences in culture, philosophy, and thinking between China and the west. In his idea, Chinese traditional culture has the thinking literacy of "holism" (such as "coexistence of human and nature" in *The Book of Changes*),

"dialecticism" (such as "intra-subjectivity" in *The Book of Changes*), and "intuition" (such as "take meaning from emblems" in *The Book of Changes*), and these thinking are directly connected with the principle of human intelligence generation and the "information ecological methodology" designed by him (see Figure 2). Yixin Zhong has great expectations for the contribution of the characteristic of Chinese culture to the generation mechanism of AI, he said, " Today , the most urgent demand and the most precious opportunity in the field of AI is the breakthrough and innovation in basic theories, and this is the potential advantage of Chinese civilization. This is a great opportunity for the Chinese nation in the fierce competition of high-tech and cutting-edge technology in the contemporary world. "[14]

5   Vastness and subtlety: The religious thoughts and status of *The Book of Changes*

5.1   The content and status of *The Book of Changes*

In a deep sense, the special integrity, dialectical, and intuitive thinking of Chinese religious culture are exactly what make it different from western religious culture. These thoughts have many manifestations in Chinese religions, and *The Book of Changes* is a typical representative of it. So can *The Book of Changes* play an important role in the dialogue between China and the west? Dajun Liu, the chairman of the Zhouyi Society of China and professor of Shandong University, gave a positive answer in his argument "About the ideological content and academic status of *The Book of Changes*".

Academia generally thinks that *The Book of Changes* includes *Yi Jing and Yi Zhuan,* it is a special work which combines the symbols of hexagrams and hexagrams with the diction, and consists of two parts: scripture and biography, the biography is an interpretation of scripture. Dajun Liu thinks that *The Book of Changes* is a book about "take meaning from emblems". "Emblems" is the "image of the hexagram", the sixty-four hexagrams are derived from the Qian, Kun, Zhen, Xun, Kan, Li, Gen, and Dui hexagrams. And the sixty-four hexagrams have sixty-four hexagram-records, and there are also three hundred and eighty-four explanations of diagrams for divination, which explain the symbolic meaning of hexagrams[15]. Because of the long history of *The Book of Changes* and its obscure content, there have been many annotations and comments on it, and even these annotations and comments have many annotations and comments on them. These numerous annotations and comments and *The Book of Changes* constitute a huge and complex ideological system and a unique cognitive model (take meaning from emblems, grasp intuitively, dialectical reciprocation, integration of subject and object, etc.).

As "the head of the six classics, the source of Tao", *The Book of Changes* has developed into many schools over thousands of years, and they are mainly emblems and numbers school(the symbol system of emblems and numbers) and philosophical connotations school (meaning and principle) and so on. Starting from the Tang Dynasty, *The Book of Changes* was listed as a compulsory content for imperial examinations by successive emperors. As a result, *The Book of Changes* became an important tool for many people to settle down and chase fame and fortune. And these influences still exist in China's intellectual circles and folk. On the other hand, many philosophical problems in ancient China were carried out through the interpretation of *The Book of Changes* by *Yi Zhuan*. For example, Taiji, Qiankun, yin and yang, Tao and Qi, reason and matter, Li and Qi, emblems and numbers, words and meaning, metaphysical and physics and so on, these important philosophical concepts in ancient China are all originated from *Yi Zhuan*. So it's almost impossible to understand the philosophical thoughts of ancient China without understanding *Yi Jing and Yi Zhuan* of *The Book of Changes*. What we emphasize here is the important role of *The Book of Changes* in shaping Chinese religion.

5.2   The shaping of Chinese religion in *The book of changes*

In the development of Chinese religions, *The book of changes* was not only the representative of primitive religion, but also promoted the emergence of Taoism. It played an important role in shaping Chinese Buddhism and the integration of Islam, Catholicism, and Christianity.

The traditions of Chinese religions are original, and in primitive society such as polytheism, belief in destiny, ancestor worship, sacrifices, and witchcraft and divination can still be found in Chinese society today; Chinese religions are also diverse, institutional religions such as Buddhism, Islam, Catholicism and various folk religions coexist in harmony and unity. In a sense, this originality and diversity are related to the intuitiveness, integrity, dialectics, and ecology of *The book of changes*. Whether it is the early natural religion, or divination in the pre Qin period, whether it is Taoism in the Han Dynasty or Confucianism in the Song Dynasty, we can all find the shaping effect of *The book of changes* on them. "If not most Chinese people believe in benevolence, righteousness, courtesy, wisdom and trust, Confucianism would never have lasted for more than two thousand years."[16]

Archaeology found that in the late Neolithic age, humans used divination to predict good and bad luck. The symbol system of *The Book of Changes* reflects the cultural characteristics of primitive witchcraft(wizard). As a book of divination, the yin line and yang line in *The Book of Changes* is probably sorted out based on the Turtle emblems divination. In the late Eastern Han Dynasty, *Cantongqi of The book of changes* and *Taipingjing* put forward a series of Yi learning thoughts, forming the unique Taoist Yi learning. *The book of changes* laid the ideological foundation for the founding of Taoism, and was also revered as one of the three Taoist classics. The emblems and numbers and philosophical connotations of Yi learning have penetrated into many fields such as Taoist rites, Dandao, and fu-lu. Geomantic learn, numerology divination, yin and yang and the five elements and so on have been widely existed in Chinese folk beliefs, and formed a huge and complex system of operation mathematics. During the Han Dynasty, the "Gua-qi theory", "Bagong hexagrams" and "Najia Method" established by Xi Meng and Fang Jing undoubtedly expanded the field of emblems and numbers of Yi learning. As a foreign religion, Buddhism contains the main contents such as Three Universal Truths, Four Noble Truths, Eightfold Path, Twelve Nidanas, and The Requisites of Enlightment, and in the process of integration with Chinese culture, Buddhism will naturally start a dialogue with Zhouyi, which is "the head of the six classics, the source of Confucianism and Taoism". Professor Litian Fang of Renmin University of China believes that the most important links between *The book of changes* and Buddhism are Huayan sect and Zen sect. The Huayan sect scholars thinks that the concept of alaksana of Huayan sect is consistent with the change principle of 64 hexagrams of *The book of changes*. Tongxuan Li also annotated the *Avatamsaka Sutra* with *The book of changes* and wrote *Treatise on the New Avatamsaka Sutra*. The five methods of *Cao Dong Sect in* Zen sect is consistent with the changing principles of Li Hexagram and six lines of *The book of changes*[17]. We can say that the process of Sinicization and localization of Buddhism is a process of combining with the Confucianism and Taoism culture based on *The book of changes,* and the combination was well unified in the Neo Confucianism in song and Ming Dynasties[18]. Neo Confucianism in song and Ming Dynasties is not only penetrates the universe and nature (Taoism) and the destiny of life (Buddhism), but also inherits the authentic Confucianism and Mencius (fundamental), and it is the dominant Confucian philosophy thought system in the Song and Ming Dynasties[19]. *The Annotations to Tai Chi diagram*(*Tai Chi is* the concept of *The book of changes*) wrote by Dunyi Zhou(the founder of the Confucian school of idealist philosophy of the Song and Ming dynasties) is regarded as the outline of Neo. After that, "Study Things to Acquire Knowledge" (Hao Cheng, Yi Cheng), "mind is theory" (Jiuyuan Lu), "the extension of innate knowledge" (Shouren Wang) and others all hope that in the image of "Yin and Yang combine to produce all things, and men and women intercourse to produce people"(*Interpretation in the Book of*

Changes), they can "understand the virtue of the gods and to analogize the reason of all things" (*Interpretation in the Book of Changes*).

6   Synthesis and Analysis: Dialogue between *The book of changes* and AI

If we go further, what is the biggest problem of Chinese religion at present? There are many answers. But we believe that the biggest problem of Chinese religions is how Confucianism, Buddhism and Taoism can play a role in the context of globalization and modernity[20]. Due to China's huge population, strong economy, and vast territory, China is playing an increasingly important role in global affairs, and Chinese religions will inevitably play an important role in the global religious structure. At present, the world is in a closely connected but extremely unstable social construction and institutional integration, and the Chinese religion must find its own position (such as how to overcome the ancient superstition system, how to integrate into modern society, etc.). Therefore, the dialogue between *The book of changes* and AI is not so much a dialogue between traditional Chinese religion and modern science , but rather an effort to find its position in the dialogue with modern information technology. And the effort may be more obvious because of the special status of *The book of changes*.

In terms of treatingt and being treated, AI can stimulate intelligence and help humans gain strength, while what is being treated is the structural imbalance and the resulting fragmentation and utilitarianism. Chinese religion (with the culture of *The Book of Changes* as the main body) can deal with the problems of the relationship between mind and object and the relationship between Tao and Qi, while what is being treated is the problem of how to get rid of backwardness and find its position. AI and Chinese religions can mutually obtain treatment plans. Since both AI and Chinese religions have the possibility and need of "treating" and "being treated", the dialogue between the two can be carried out from the following perspectives.

Tab.1 Treat and be treated

Contents	Treating	Being treated	Intersection
AI	stimulate intelligence; help humans gain strength	structural imbalance and the resulting fragmentation and utilitarianism	Cognitive science; human intelligence; ethical construction
Chinese re-ligions	relationship between mind and object; relationship be-tween Tao and Qi	get rid of backwardness; find its position	

7   AI treating and being treated diagram

7.1   0/1 or yin and yang lines

The dialogue between *The book of changes* and AI is best known for its relationship between yang line "—" and yin line "--" and binary arithmetic symbols (0 and 1). G. W. Leibniz wrote in his masterpiece *The explanation of binary arithmetic with only two symbols 0 and 1* (Latin manuscript on March 15, 1679) "It's amazing about the calculation that the arithmetic with 0 and 1 actually contains the mystery of the line segment made by an ancient king and philosopher named Fuxi… These figures composed of some kinds of line segments can all be come down to the kind of arithmetic, but here it is enough to put forward the eight trigrams that is considered to be basic and attach an explanation. Once we notice that, first, a whole line segment refers to the unit or 1, and secondly, a broken line segment refers to 0 or zero, then the explanation becomes obvious…Because these graphics are probably the oldest scientific monuments in the world." The scholar Qian Jiang

has a wonderful comment on this in *Studies of Zhouyi,* in his opinion, the yin and yang lines of the *The book of changes* and binary 0 and 1 are two completely different cultural codes and rules, which respectively represent the deepest cultural construction principles and the highest collective intelligence of eastern and western cultures. On the surface, binary is just a kind of arithmetic notation, but behind it is the product of western specific mathematics, language, logic and other cultures. After some argumentation, Qian Jiang asserted, "The binary system in the modern times is the product of the combination of Chinese and western cultures"[21].

Behind the binary dialogue is the issue of epistemology. For the moment, the biggest dilemma encountered by AI is how to understand natural language and realize intelligence on the basis. Shushan Cai, the professor of the department of philosophy at Tsinghua University, believes that computer language is a formalized artificial language, and its systematic laws obey the Goedel—the consistency and completeness of the system cannot be guaranteed at the same time. That is, the formal language and the formal system must be non-contradictory, otherwise it is useless; and if it is non-contradictory, then it is incomplete[22]. This is the fatal flaw of today's AI system. John Searle's "Chinese room" model is an extremely good proof of this problem. In this respect, the epistemology of *The book of changes* is a combination of subjective and objective(it's very similar to Yixin Zhong's design), which can make up for this defect to a certain extent. The epistemology of *The book of changes* is not like chess, which consists of two types of chess pieces with distinct black and white and a distinct chessboard, and it is a mixture of black and white, some parts are gray and cannot be strictly distinguished. It can be said that the cognition of the world in *The book of changes* is a unity of nature and man, not an opposition between the self and the external world, and it uses the sensible and experienceable image of subject and object to cognize the world, while science uses emotionless concepts and formulas to cognize the world. As Professor Yingshan Zhang of East China Normal University pointed out, "The main difference between eastern and western cultures is the self-generating logic and the Non-self-generating logic. Autogenous logic proposes axiom hypotheses based on research objects and data observations, and uses formal logic to prove true and false propositions. Non-self-generating logic has nothing to do with the research object and data observation, and it has no axiomatic assumptions and only uses logic such as yin and yang and five elements for reasoning."

7.2   Scientific Yi or Yi science

The dialogue between AI and Chinese religions can also be analyzed from the perspective of Scientific Yi or Yi Science("Yi" refers to *The Book of Changes*). In recent years, there has been an upsurge of "Scientific Yi" and "Yi Science" in Chinese academic circles and even scholars in the world (such as G.W.Leibniz, Bohr, Zhenning Yang, Zhengdao Li). Guangbi Dong, a senior researcher at the Chinese Academy of Sciences, believes that "Scientific Yi" should be distinguished from "Yi Science". "Scientific Yi" means "governing Yi learning by science", it is the work of Yi scholars and belongs to the category of hermeneutics. "Yi science" means "governing science by Yi learning", it is the work of scientists and belongs to the category of science. The difference between them is "understand" and "create"[23]. "Governing Yi learning by science" as a method of Yi learning research, we can constantly innovate the interpretation of *The book of changes w*ith the development of science, which is a good way to preserve and develop the Yi learning. And the purpose of "governing science by Yi learning" is to realize the creation of new knowledge through the enlightenment of a certain concept or method in Yi learning, which is much more difficult[24].

Dong Guangbi thinks that The Book of Changes has many commonalities with modern science (Task 2), mainly including three aspects:

(1) Principle of the structure and function of the universe: the principles of generation, induction,

and circulation based on the concept of yin and yang, it is an organic view of nature.

(2) Principle of methodology: based on emblem, number, and principle, including emblems and numbers theory, analogy theory, and experimental theory, etc.

(3) Scientific and technological concept: based on the philosophical thought of "coexistence of human and nature", which mainly includes "concept of observing images and making implements", "concept of heavenly creations", "concept of dao-shu integration".

Yi learning not only provides a set of nature view, methodology and scientific view, but also has scientific connotations. The symbol system of *The Book of Changes*, the deduction of He-luo mathematics and the design of divination method not only show the characteristics of primitive combinatorial mathematics, but also contain many pioneer ideas of contemporary mathematics, and also have the material for the future development of mathematics.

In the dialogue between AI and The Book of Changes, the application of Yi learning cannot be regarded as its ontology. The various modern ideals currently arising in the relationship between *The Book of Changes* and science still need to be analyzed carefully and appropriately. Scholar Jun Hao believes that *The Book of Changes* combine spiritual cultivation and theoretical construction. In China, there is a controversy between Jiuyuan Lu's idea of "revere one's virtuous nature" and Xi Zhu's idea of "quest for knowledge". There are similar divergences in the west. In the west in the 18th century, "the confrontation between the positivists who favor the Enlightenment and the spiritualists who favor the Apocalypse has already taken place."[25] If we look back, the myth that there is a tree of Cabala (the world cognized of *The Book of Changes*) and a tree of knowledge of good and evil(the world subdivided by science) in the Garden of Eden has implied the difference between life and knowledge.

In scholar Jun Hao's opinion, it's a risky way to construct a theory partially to provide a guarantee of correctness. Although in this way we can achieve some achievements that are not available in *The Book of Changes*, it will also bring some blind spots and disadvantages that *The Book of Changes* does not have. For example, the disciplines of AI are often unable to deal with the complex systems of intelligent generation. On the one hand, there are too many complex system parameters to collect comprehensively. On the other hand, the laws of complex systems are too complicated, even if all the parameters are collected, it is beyond the ability of human rational analysis. However, *The book of changes* has its own uniqueness in mastering complex systems, which is not necessarily because of its theoretical superiority. And the intuitiveness, integrity, and ecological thinking of *The book of changes* can often deal with the crude theory and draw magical conclusions (task 1).

7.3   Law of excluded middle or attain a state of balanced harmony

Hegel once said that when thinking and reality conflict, the problem is always on the thinking side. Scholar Min You believes that AI is touching and revealing the shortcomings of the general thinking pattern of human, which is the abstract and conceptual thinking divorced from reality (task 1). This kind of thinking inevitably has three weaknesses: first, abstractness, that's accustomed to abandon the concrete and pursue the general, then replace the concrete and the individual with the general; Second, isolation, the various aspects and properties of a thing as a whole have to be separated and summarized and studied separately, while ignoring the mutual relevance, which leads to "Cannot see the forest for the trees", that is, there is no comprehensive treatment after analysis. Third, solidification, because of abstraction and isolation, some concepts can only stand still. Therefore, when people decompose the real things in an abstract, isolated and solidified way, and then stick to the decomposition, it will be easy to encounter obstacles when they want to return to the real history and practice and express the process with language and concepts. This is how the

paradox such as "chicken and egg" come into being. In our opinion, the fragmentation and isolated of AI also come from this.

According to scholar Min You, *The book of changes* has already revealed the epistemological law of "Calculate according to odd number three and even number two, and determine the method of calculating changes in the world". That is to say, the continuous dichotomy is actually the qualitative three-valued logic, which together with the two-valued logic of the discrete dichotomy of formal logic, reveal the differences in thinking between eastern and western cultures through the description of "law of excluded middle" and "attain a state of balanced harmony". Although we have qualitative three-valued logic and two-valued logic that includes identity (true and false must be one of them), there is no clear systematic formal logic—two-valued logic system (it exists in the Mohist Canon, but not well inherited). The qualitative three-valued logic system of Chinese culture is *The Book of Changes*, is described as unscientific and in danger of being abandoned because of the rejection and collapse of two-valued logic which emphasizes abstract identity by formal logic. In fact, the paradoxes, incompleteness, paradox, uncertainty and other problems encountered by the west in many fields have also led them to use their cultural forms to move towards the integration of eastern and western civilizations.

The dialogue between *The Book of Changes* and AI can also be discussed from the perspective of ethics (task 3). The golden mean concept of Chinese comes from *The Book of Changes*. "There is no fault in following the golden mean" was first proposed in *The Book of Changes*, and "moderate" and " follow the golden mean" were also mentioned many times in the hexagram texts of *The Book of Changes*. Among the three hundred and eighty-four lines in *The Book of Changes*, almost all the lines that belong to the second lines and fifth lines are "luck" and "profit". *The Book of Changes* writes "The second line and the fourth line have the same function but are in different positions. Their explanations of diagrams for divination express auspiciousness at different levels. The second line is mostly happy lines, and the fourth line is mostly alert lines. And it's easy to understand." It also writes "The third lines and fifth lines have the same function but are in different positions. Most of the third lines are inauspicious words, and most of the fifth lines are words with merit. It's the difference between the high and the low." In addition, there are two basic principles for the arrangement of *The book of changes*, that is advocating Yang and suppressing Yin as well as being in the middle is auspicious and being on the wrong side is blaming. And it has directly affected the cultural psychology of the Chinese nation for thousands of years. For example, Chinese people like to use this kind of words like "no center, no right" or "neither fish, flesh nor fowl" when criticizing others, and this kind of criticism is actually the value orientation and right and wrong concept of *The book of changes*. The thinking of "attain a state of balanced harmony" in *The Book of Changes* is of great value in overcoming the isolated and utilitarianism of AI[26.]

8   Conclusions

Every step of AI advances, not only changes our view of machines, but also changes our view of thinking. Through conceptual thinking and subject review, this paper finds that Chinese religion and AI do have the possibility and inevitability of dialogue. In the dialogue, both parties can be promoted and developed. The characteristics of *The book of changes* such as intuitive thinking, the integration of objective and subjective, and the ethics of internal transcendence and so on, have certain enlightenment for the three tasks of AI. *The book of changes* and AI have their own advantages, but it is difficult to achieve the best of both worlds.

The book of changes writes," If it's not the person who has the relevant talents you're looking for, don't take him to your way". The god of Yi Dao comes from the unpredictable of Yin and Yang, while the binary system used by AI is that Yin and Yang are already clear, and it is difficult to reach the

state of The god of Yi Dao. By the way, "Changes involve Taiji", the Taiji's state of *The Book of Changes* cannot be described by the binary system. In this sense, there are still many dialogues between AI and *The Book of Changes*. For example, how to realize the highest human nature? How is the self-awareness of AI possible? How to answer the question of the generation mechanism of AI? How does AI integrate with religion? How to avoid AI from turning people's high-level thinking activities into low-level physical electronic activities? How to evaluate the changes of human existence, values and ideology? What is the relationship between AI and human spiritual experience? The answers to the above questions need to be solved by natural science scholars and humanities scholars together[27].

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