

EASTM 27 (2007): 13-62

Four Elements as *Ti* and Five Phases as *Yong*: The Historical Development from Shao Yong's *Huangji jingshi* to Matteo Ricci's *Qiankun tiyi**

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1. Introduction

In the late Ming, Jesuits transmitted western learning into China for the purpose of propagating Christian doctrines, resulting in the encounter of Aristotelian natural philosophy with the Chinese natural philosophy of *qi* 氣, or the Aristotelian-Ptolemaic worldview held by Jesuits with that of Neo-Confucianism.¹ These were two different traditions on theories of matter, Chinese literati using *yin/yang* and five phases (*wuxing* 五行), while the Jesuits followed the Aristotelian theory of four elements. In this paper, the author tries to explore the historical background against which Ricci formed a new relationship between the four elements and five phases theories.

In a paper published eleven years ago, the author found that at the end of the section *Si yuanxing lun* 四元行論 (On Four Simple Elements) in his *Qiankun tiyi* 乾坤體義 (Structure and Meanings of the Heaven and Earth), Matteo Ricci (in Chinese Li Madou 利瑪竇, 1552-1610) regarded the four elements as *ti* 體 and five phases as *yong* 用, as well as the four elements as *yuan* 源 (origin) and

* The elaboration of this paper derived from a project supported, first, by the National Science Council (NSC 92-2411-H-007-017) and later by the Boost Project at Tsing Hua University. The author would like to thank these institutions for their financial support. I am grateful to Catherine Jami, Alexei Volkov, Hans Ulrich Vogel, John Moffett, Jen Hsu, and two anonymous referees for providing useful suggestions and comments.

¹ Hsu Kuang-Tai (1996), pp. 369-392, especially pp. 382-385.

five phases as *liu* 流 (flow).² In doing so, Ricci became the first person to adopt the two Chinese analogies of *ti/yong* and *yuan/liu* to form a new relationship between the four elements and five phases theories.

In my opinion, Ricci's use of *ti/yong* and *yuan/liu* in the *Qiankun tiyi* is a form of cross-cultural borrowing or appropriation and thus raises four related and interesting questions worth further investigation:

1. From the viewpoint of the exchange between the West and China, what was the historical background against which Ricci made such a cross-cultural borrowing or appropriation of these two analogies of *ti/yong* and *yuan/liu*?
2. Did there exist already a similar Chinese tradition that allowed Ricci to make such cross-cultural borrowing or appropriation?
3. If such a tradition existed, who started that tradition? What is the historical development of the tradition relating to the two analogies of *ti/yong* and *yuan/liu*?
4. How did Ricci learn of *ti/yong* and *yuan/liu*, and how did he then further borrow or appropriate these two analogies?

Ricci was educated in Aristotelian natural philosophy at the Jesuit Roman College, learning to make arguments with adversaries.³ If a pre-existing tradition of “four-‘x’ as *ti* and five phases as *yong*” was already available in China, allowing Ricci to more easily form his “four elements as *ti* and five phases as *yong*” through cross-cultural borrowing or appropriation, the origin of this pre-existing tradition, its historical development and its historical connection with Ricci have to be elucidated.

It was by chance that the author of this paper discovered a pre-existing tradition of “four-‘x’ as *ti* and five phases as *yong*” starting with Shao Yong 邵雍 (1011-1077), who was styled Yaofu 堯夫 and conferred the posthumous title of Kangjie 康節. In Shao Yong's *Huangji jingshi* 皇極經世 (Supreme Principles Governing the World), with a commentary by his son Shao Bowen 邵伯溫 (1057-1134), there is a crucial paragraph indicating “four forms as *ti* and five phases as *yong*”.⁴ This clue led me to undertake this research tracing back the historical connection between Shao Yong's *Huangji jingshi* (hereafter abbreviated as *HJJS*)⁵ and Ricci's *Qiankun tiyi*.

² Hsu Kuang-Tai (1997), pp. 347-380, especially p. 369; Ricci (1983-), *juan shang*, pp. 766-767.

³ Lloyd (1996), chap. 2; Hsu Kuang-Tai (2004), pp. 77-104, especially pp. 89-90.

⁴ Shao Yong (2003), *juan* 51, “*guanwu neipian zi yi*”, pp. 346-347.

⁵ Sometimes the title of this work is also called *Huangji jingshi shu* (hereafter abbreviated as *HJJS shu*). For a discussion of the editions of *HJJS* or *HJJS shu*, see Arrault (2002), pp. 43-50. In this paper the author will use Shao Yaofu's *HJJS* in the *Dao zang* 道藏 (The Collected Daoist Scriptures) and the reprint of *HJJS shu* in the *Wenyuange siku quanshu* 文淵閣四庫全書 (The Complete Library of the Four Treasuries Completed in the *Wenyuange*).

Ti/yong and *yuan/liu* form two traditional Chinese analogies, yet their meanings may not be the same as those proposed by various authors in different contexts in the past. *Yuan/liu* is easily understood, for each flow has its own origin(s). In the temporal order, origin always comes into being earlier than its flow. As for *ti/yong*, Ricci regarded the four simple elements of earth, water, air, and fire as *ti*, out of which the myriad things in the terrestrial area are composed. In contrast to the four simple elements as *ti*, he thought of the five phases as their functions (*yong*).

In this paper the author will focus on the relationship between water, fire, earth, and stone as four forms (*siti* 四體 or *sixiang* 四象) and five phases as their functions in the tradition started by Shao Yong. Western scholars often use ‘substance/function’ to translate *ti/yong*.⁶ Chen Yufu regards the Supreme Ultimate (*taiji* 太極) as substance (*benti* 本體), from which movement (*dong* 動) and quiescence (*jing* 靜),⁷ “*yin* and *yang*, *gang* [剛, unyieldingness] and *rou* [柔, yieldingness] are derived, as well as the eight entities of greater and lesser *yin*, *yang*, *gang*, *rou*” on the subsensorial level of *qi*.⁸ According to Anne D. Birdwhistell, Shao Yong’s *ti* “refers to something that has an appearance perceivable through the senses,” and *yong* is the activity that a thing exhibits.⁹ She uses the terms ‘form or appearance’ and ‘activity or function’ to translate *ti/yong*,¹⁰ and analyzes Shao Yong’s concept of forms and activities of Heaven and Earth on the sensorial level of phenomena and the subsensorial level of *qi*.¹¹ She also employs ‘image’ as synonymous with ‘form’ or ‘entity’ occasionally.¹² Thus, in this paper the author will adopt ‘substance’ for the translation of *ti* 體, ‘appearance’ or ‘image’ for *xiang* 象, ‘form’ for *xing* 形, and ‘function’ or ‘activity’ for *yong* 用. In some commentaries of *HJJS* where their meanings are complex and lack equivalent translations in English, the author will leave ‘*ti*’ or ‘*yong*’ as they are rather than translate them into English. This has also been done in the case of *li* 理.

In this paper, the author will present three important findings. First, Shao Yong is the pioneer who developed a cosmological philosophy with numerological speculations in the *HJJS* in which he replaced five phases with four forms by attributing a priority to the number ‘four’ over ‘five’. Second, Shao Yong’s legacy of emphasizing ‘four’ over ‘five’ was elaborated by his son and later commentators by applying the analogy of *ti/yong*, historical reasoning, or physiological (or physiologico-ethical) notions to the relation between the four forms and five phases. Third, while Ricci was permitted to propagate Christianity in China,

⁶ See, for example, Wyatt (1996), pp. 339-340.

⁷ Chen Yufu (1979), p. 32.

⁸ Birdwhistell (1989), p. 104.

⁹ *Ibid.*, p. 153.

¹⁰ *Ibid.*, pp. 316-317.

¹¹ *Ibid.*, p. 101.

¹² *Ibid.*, p. 104.

he also familiarized himself with the Four Books (*si shu* 四書) and Five Classics (*wu jing* 五經) and had many opportunities to discuss natural knowledge with Chinese literati. Through them he might have learned about the “four forms as *ti* and five phases as *yong*”, which he then developed into the “four elements as *ti* and five phases as *yong*” or “four elements as *yuan* and five phases as *liu*” through cross-cultural borrowing or appropriation. He became the first to establish a relationship between western and Chinese learnings by means of these two analogies of *ti/yong* and *yuan/liu*.

2. Shao Yong Challenges the Five Phases with Four Forms

Before Shao Yong, *yin/yang* and five phases theory was the received view concerning changes in the cosmos and among the myriad things. Nevertheless, largely based upon his study of the *Yijing* 易經 (Book of Changes), Shao Yong introduced a very important shift in the *HJJS*, switching from the five phases to four earthly forms—water, fire, earth, and stone.

2.1. The Received View of Yin/Yang and Five Phases Theory

The concepts of *yin/yang* and five phases developed separately at first. Laozi 老子 used *yin* and *yang* to explain changes in the universe. He believed that from Dao comes the undifferentiated *qi*; this is called “Dao produces the One” (*dao sheng yi* 道生一). Then the One is differentiated into *yin qi* and *yang qi*, i.e. “the One produces the two” (*yi sheng er* 一生二). The creation of Heaven, Earth, and human beings spring from the interaction of *yin qi* and *yang qi*; this is called “the two produces the three” (*er sheng san* 二生三). The myriad things come into being from Heaven, Earth, and human beings; thus, “the three produces the ten thousand things” (*san sheng wanwu* 三生萬物).¹³

By the end of the Warring States Period (late third century BC), *yin/yang* and five phases were connected with each other systematically in the work *Lüshi chunqiu* 呂氏春秋 (Spring and Autumn of Master Lü).¹⁴ In the Western Han dynasty, in his study of the *Yijing*, Jing Fang 京房 (77-37 BC) adopted *yin/yang* and five phases theory to explain the change of trigrams, the form of three single or divided lines of a trigram (*yaoxiang* 爻象) and fortune as well as misfortune in human affairs.¹⁵ In other words, through the connection with the trigrams of

¹³ Laozi (1993), juan 3, “dao hua 42”, pp. 168-169; *A Source Book in Chinese Philosophy*, p. 160.

¹⁴ Zhu Bokun (1991), vol. 1, p. 38; Xu Fuguan (1990), vol. 2, pp. 17-22.

¹⁵ Zhu Bokun (1991), vol. 1, pp. 153, 169.

the *Yijing* (易卦 *Yigua*) and *qi*, *yin/yang* and five phases theory was firmly related to the *Yijing*.¹⁶

Until the Northern Song period, *yin/yang* and five phases theory was still the received view. For example, Zhou Dunyi 周敦頤 (1017-1073) adopted *yin/yang* and five phases to explain the formation of the universe in *Daoxue* 道學 or Neo-Confucian *Lixue* 理學. From the Supreme Ultimate (*taiji* 太極) comes *yin* and *yang*, which then engender the five phases, from which the myriad things come into being. He expressed this received view of cosmogony and change in terms of *yin/yang* and five phases in his work *Taiji tushuo* 太極圖說 (Diagram of Supreme Ultimate Explained) in the following way:

無極而太極。太極動而生陽，動極而靜。靜而生陰，靜極復動。一動一靜，互為其根。分陰分陽，兩儀立焉。陽變陰合，而生水火木金土。

The Ultimate of Non-being (*wuji*) and yet also the Supreme Ultimate (*taiji*)! The Supreme Ultimate through movement generates *yang*. When this movement reaches its limit, it becomes quiescence. By this quiescence the Supreme Ultimate generates *yin*. When quiescence reaches its limit, movement begins again. So movement and quiescence alternate and become the root of each other, giving rise to the distinction of *yin* and *yang*, and the two forces are thus established. By the transformation of *yang* and its union with *yin*, the five phases of water, fire, wood, metal, and earth arise.¹⁷

However, as will be shown in the next subsection, Shao Yong, a contemporary of Zhou Dunyi, started a new tradition by which he challenged the received five phases theory with the number four.

2.2. Shao Yong Replaces the Five Phases with Four Forms

During the Song dynasty, Zhou Dunyi and Shao Yong were the two most conspicuous borrowers from religious Daoism.¹⁸ This was a strategy that can be

¹⁶ "... through the theory of *quaqi* (卦氣說) a philosophical system of *yin/yang* and five phases framework was built. ... The *Yijing* is thought of as an abbreviated image of the natural world and human society, the principle of change to which the movement of *yin/yang* and the mutual production and mutual conquest sequences follow, expressed by the Eight Trigrams as well as three hundred and eighty four *yao* or lines." Ibid., vol. 1, p. 174.

¹⁷ Zhou Dunyi (1992), pp. 6-8.

¹⁸ Fung Yulan (1952), vol. 2, p. 434.

traced back to Chen Tuan 陳搏 (ca. 906-989).¹⁹ In the *Taiji tushuo*, Zhou Dunyi created an emblemology (*xiangxue* 象學) rather than numerology, “since it depicts the process of universal creation solely in terms of symbols without recourse to numbers.”²⁰ Instead, Shao Yong combined emblemology and numerology into a metaphysical system,²¹ in which he posited four forms of the Earth to replace the five phases and thus made a numerological turn from five to four.

According to Don J. Wyatt, unlike Han Confucians, Shao Yong is the first Chinese philosopher for whom number is the key to his philosophy.²² Shao Yong is different from Han numerologists in two other aspects: (1) Han numerologists employed number(s) in the systems of divination used for personal or political affairs, whereas Shao Yong intended to construct a metaphysical system; (2) unlike the arbitrary workings of Han numerologists, Shao Yong’s numerology is largely based on his studying the *Yijing*.²³

Shao Yong and the Greek philosopher Pythagoras stressed the importance of numbers, but in different situations. Instead of Milesian natural philosophers’ materialist monism, Pythagoras focused on mathematics and regarded number as the principle of the myriad things. Shao Yong emphasized the occult significance of numbers, i.e. numerology, and associated numbers with the changes in cosmology and human history.²⁴ In fact, Shao Yong’s emblemology and numerology (*xiangshu zhi xue* 象數之學) were derived from Li Zhicai 李之才 (?-1045).²⁵ In his earlier years, Shao Yong moved with his parents to Gongcheng 共城, Henan 河南. At that time, Li Zhicai, who was influenced by Chen Tuan, happened to be the leading official at Gongcheng. When Shao Yong was about thirty years old, Li Zhicai heard of his good behavior of studying hard and his filial obedience to his parents, voluntarily teaching him the Daoist *xiantian yixue* 先天易學.²⁶ For Shao Yong, *xiantian* 先天, which is used together with *houtian* 後天, has different meanings. Two of them are related and important to this paper. One is in the temporal order: That which is *xiantian* always comes into being earlier than that which is *houtian*. Another is that *xiantian* refers to the pre-phenomenal, abstract structure whose pattern the phenomenal world, called *houtian*, follows.²⁷

¹⁹ The relations between Chen Tuan and Zhou Dunyi as well as Chen Tuan and Shao Yong are shown in two diagrams in Arrault (2002), p. 85.

²⁰ Fung Yulan (1952), vol. 2, p. 452.

²¹ *Ibid.*, pp. 452-453.

²² Wyatt, (1984), p. 59.

²³ *Ibid.*, pp. 56-59.

²⁴ *Ibid.*, pp. 61-62.

²⁵ Fung Yulan (1952), vol. 2, pp. 452-453.

²⁶ Chen Yufu (1979), pp. 1, 14-15, 173; Chen Yufu (1999), p. 97. For details about the relationship between Li Zhicai and Shao Yong, see Wyatt (1996), pp. 20-22, 42-43.

²⁷ Birdwhistell (1989), pp. 84-85.

At the age of thirty-nine, Shao Yong moved to Luoyang 洛陽, where he lived till his death. He wrote several works, of which the *HJJS* is the most important. As Chan Wing-Tsit points out, there are three fundamental concepts in it: “First, there are the supreme principles governing the universe. Second, these principles can be discerned in terms of numbers. And third, the best knowledge of them is the objective, that is, viewing things from the viewpoint of things.”²⁸

Shao Yong does not differ from Han numerologists and Zhou Dunyi in the view that all things in the universe are composed of *qi*. *Qi* can be divided into two sorts: one is undifferentiated and invisible, the other is perceivable while it is formed into sensorial phenomena. Those who accepted five phases theory explained cosmic evolution in terms of *yin/yang* and five phases. What makes Shao Yong different from them is that number is the key; to him, “universal operation, or Change, is due to spirit, which gives rise to number, number to form, and form to concrete things.”²⁹ For example, the numbers of the *Yi* are related to cosmic evolution, in which Heaven and Earth were formed and also underwent a cycle, i.e., they had a beginning and an end in the growth and decline of *yin* and *yang*:

易之數，窮天地終始。或曰：天地亦有終始乎？
曰：既有消長，豈無終始？天地雖大，是亦形
器，乃二物也。

The numbers of the *Yi* exhaustively extend to the beginning and end of Heaven and Earth. Someone asked: “Do Heaven and Earth also have a beginning and end?” [Shao Yong] replied: “Since there exists ebb and flow [in *yin* and *yang*], why should Heaven and Earth not have such a cycle? Although Heaven and Earth are big, they are also containers of form, and thus constitute two objects.”³⁰

Among numbers, the number 4 is the most important. For Shao Yong, Heaven, Earth, the myriad things, and human affairs contain their own *li* 理. The best knowledge of things is objective, i.e., the observations of things (*guanwu* 觀物) is “to view them in terms of *li* (*guan zhi yi li* 觀之以理)” rather than by the heart or eyes.³¹ He “believed in a ‘natural’ tendency in the activities of nature and human beings for events and things to clump together, especially in groups

²⁸ *A Source Book in Chinese Philosophy*, p. 481.

²⁹ *Ibid.*

³⁰ Shao Yaofu (1996), juan 12 xia, “*guanwu waipian xia*”, p. 450-3; Shao Yong (1983-), juan 13, “*guanwu waipian shang*”, p. 1063.

³¹ Shao Yaofu (1996), juan 11 xia, “*guanwu pian 52*”, p. 432-1; Shao Yong (1983-), juan 12, “*guanwu pian 62*”, p. 1050. For Shao Yong, things (*wu* 物) include not only material things but also the Heaven, Earth, and human affairs. See Chen Yufu (1979), p. 18.

of two and four.”³² 4 is the most important, and it was by this number that he classified all natural and artificial phenomenal things:³³

Evidently under the influence of the *Book of Changes* in which the Great Ultimate engenders the four forms of major and minor cosmic forces *yin* and *yang*, he used the number 4 as the basis of classification of all phenomena. Thus, there are the four heavenly bodies (sun, moon, stars, and the zodiacal space), the four earthly substances (water, fire, earth, and stone), the four kinds of creatures (animals, birds, grass, and plants), the four sense organs (eye, ear, nose, and mouth), the four ways of transforming the world (by truth, virtue, work, and effort), the four kinds of rulers, the four kinds of Mandate of Heaven, and so forth.³⁴

Shao Yong’s cosmology was influenced by Buddhism—every cycle went through four ever-recurring sequences or *kalpas* (*jie* 劫): formation (*cheng* 成), existence (*zhu* 住), destruction (*huai* 壞), and non-existence (*kong* 空).³⁵ According to Chen Yufu 陳郁夫, Shao Yong espoused a view that had never appeared in earlier Confucian works, and that he might have been influenced by the Buddhist work *Jushe lun* 俱舍論.³⁶ Fung Yulan points out that Shao Yong was not directly influenced by the *Ju she lun*, but by the famous Chan 禪 Buddhist Zongmi 宗密 (780-841). Zongmi wrote *Yuanren lun* 原人論 (On the Theory of Human Life), a comparative study of human life as perceived by Confucianism, Daoism, and Buddhism. When he talked about the four ever-recurring *kalpas*, he not only mentioned *Jushe lun*, but also compared it with Confucianism and Daoism. Thus, it had a great influence on *daoxuejia* 道學家 (scholars studying the Way), especially Shao Yong.³⁷ Although Shao Yong took a Buddhist view of the four ever-recurring *kalpas*, nevertheless, he used the theory of *guaqi* to explain what happened inside a cycle in terms of the sixty-four *gua* or hexagrams in the *Yijing* in relation to the growth and decline of *yin* and *yang*. A cycle begins from *fugua* 復卦 and ends at *kungua* 坤卦.³⁸

³² Birdwhistell (1989), p. 73.

³³ Wyatt (1984), p. 61; Yu Dunkang (2006), p. 262.

³⁴ *A Source Book in Chinese Philosophy*, p. 481.

³⁵ Wyatt (1984), p. 66; Fung Yulan (1952), vol. 2, p. 474; Chan Wing-Tsit comments that “the idea that one world succeeds another is evidently Buddhist-influenced, for Buddhism conceives existence in terms of an infinite series of worlds, whereas the Chinese idea of cycles means rise and fall within the history of this world.” *A Source Book of Chinese Philosophy*, p. 487.

³⁶ Chen Yufu (1979), p. 17; Chen Yufu (1999), p. 97.

³⁷ Feng Youlan (1993), vol. 2, pp. 793-795.

³⁸ *Ibid.*, pp. 840, 848-849.

A cosmic period, which is the time from the beginning to the end of the universe, can be described in terms of four different durations: cycle (*yuan* 元), epoch (*hui* 會), revolution (*yun* 運), and generation (*shi* 世). One generation is 30 years, one revolution has 12 generations, one epoch has 30 revolutions, and one cycle has 12 epochs. Thus, one epoch is 10,800 years and one cycle is 129,600 years. In each cycle, “the beginning of the Heaven” (*kai tien* 開天) happens in the first epoch (*zi hui* 子會), between year 1 and year 10,800. “The appearance of the Earth” (*pi di* 闢地) appears in the next epoch (*chou hui* 丑會), between the years 10,801 and 21,600. In the third epoch (*yin hui* 寅會), between the years 21,601 and 32,400, comes “the generation of human beings” (*sheng ren* 生人). Shao Yong also catalogued Chinese history from Tang Yao 唐堯 to his time into a table of cosmological chronology in order to manifest phases of order and disorder in the world.³⁹

In the cosmology of Heaven and Earth, Shao Yong used his idea of four forms to challenge the five phases. In the theoretical aspects of reality, Shao Yong used forms (or images) and numbers to systematize the human experience.⁴⁰ In his theoretical order of forms (or images) and numbers, the four earthly forms—water, fire, earth, and stone—conflicted with the five phases.

In Shao Yong’s thought, everything comes from Dao or *taiji*, from which emerge the two major forces of *yin qi* and *yang qi*, by which Heaven and Earth are formed in the cosmic evolution. The process of the formation of Heaven and Earth can be expressed by reference to the movement (*dong* 動) and quiescence (*jing* 靜) of *qi* in the forms of *yin* and *yang*, *gang* (剛 unyieldingness) and *rou* (柔 yieldingness) in the *Yijing*:⁴¹

天生于動者也，地生于靜者也。一動一靜交，而天地之道盡之矣。動之始則陽生焉，動之極則陰生焉。一陰一陽交，而天之用盡之矣。靜之始則柔生焉，靜之極則剛生焉。一柔一剛交，而地之用盡之矣。

Heaven is produced from movement and Earth from quiescence. Through the alternating play of movement and quiescence, the course of Heaven and Earth is completely actualized. At the first appearance of movement, *yang* is produced. As movement reaches its limit, *yin* is produced. The interaction of *yin* and *yang* fully develops the functions of Heaven. At the first appearance of quiescence, yieldingness is produced. When this quiescence reaches its limit, unyieldingness

³⁹ Fung Yulan (1952), vol. 2, pp. 468-469, 474-476; Gao Huaimin (1997), chap. 3.

⁴⁰ Wyatt (1984), p. 66.

⁴¹ Birdwhistell (1989), p. 103; *A Source Book in Chinese Philosophy*, p. 482.

is produced. The interaction of yieldingness and unyieldingness fully develops the functions of Earth.⁴²

After his introduction of the full development of the functions of Heaven and Earth, Shao Yong moved to the four heavenly images and four earthly forms in terms of four kinds of differentiations of *yin/yang*, *dong/jing*, and *gang/rou*:

動之大者，謂之太陽；動之小者，謂之少陽；靜之大者，謂之太陰；靜之小者，謂之少陰。太陽為日，太陰為月，少陽為星，少陰為辰。日月星辰交，而天之體盡之矣。靜之大者，謂之太柔；靜之小者，謂之少柔；動之大者，謂之太剛；動之小者，謂之少剛。太柔為水，太剛為火，少柔為土，少剛為石。水火土石交，而地之體盡之矣。

Movement in its major phase is called greater *yang*; in its minor phase it is called lesser *yang*. Quiescence in its major phase is called greater *yin*; in its minor phase it is called lesser *yin*. The greater *yang* constitutes the sun, the greater *yin* the moon, the lesser *yang* the stars, the lesser *yin* the zodiacal constellations. When sun, moon, stars, and zodiacal constellations intermingle, the forms of Heaven are completed. Quiescence in its major phase is called greater yieldingness; in its minor phase it is called lesser yieldingness; movement in its major phase is called greater unyieldingness; in its minor phase it is called lesser unyieldingness. The greater yieldingness constitutes the water, the greater unyieldingness the fire, the lesser yieldingness the earth, and the lesser unyieldingness the stone. When water, fire, earth, and stone intermingle, the forms of the Earth are completed.⁴³

Although Shao Yong seemed not have coined the term *siti* 四體 in the above quotation, it implies that sun, moon, stars, and zodiacal constellations are the four heavenly images, while water, fire, earth, and stone are the four earthly forms.⁴⁴ According to Tang Junyi, this quotation demonstrates a crucial shift, i.e., his substitution of the Han Confucian view of the five phases theory with the four earthly forms.⁴⁵ In fact, in the “*guanwu waipian*” 觀物外篇 (Outer Chapters of Observing Things), which was recorded by his students, Shao Yong men-

⁴² Shao Yaofu (1996), juan 11 shang, “*guanwu pian 41*”, p. 420-3; Shao Yong (1983-) juan 11, “*guanwu pian 51*”, p. 1031.

⁴³ Shao Yaofu (1996), juan 11 shang, “*guanwu pian 41*”, p. 420-3; Shao Yong (1983-), juan 11, “*guanwu pian 51*,” pp. 1031-1032.

⁴⁴ Tang Mingbang (1998), p. 162; *A Source Book in Chinese Philosophy*, p. 481.

⁴⁵ Tang Junyi (1990), p. 35; Chen Yufu (1979), p. 29.

tioned that the number of the forms of the Earth is four (*di zhi tishu si* 地之體數四; *di tishu si* 地體數四).⁴⁶

Shao Yong explained the changes of Heaven into sun, moon, stars, and zodiacal constellations and the transformations of Earth into water, fire, earth, and stone in the following way: The change of heat and cold or day and night comes from the four heavenly images—sun, moon, stars, and zodiacal constellations, and those of rain, wind, dew, and thunder from the four earthly forms—water, fire, earth, and stone. They complete the changes of Heaven and Earth:

日為暑，月為寒，星為晝，辰為夜。暑寒晝夜交，天之變盡之矣。

水為雨，火為風，土為露，石為雷。雨風露雷交，而地之化盡之矣。

The sun constitutes heat, the moon cold, the stars daylight, and the zodiacal constellations the night. The interaction of heat, cold, daylight, and night gives full development to the transformations of Heaven.

Water constitutes rain, fire wind, earth dew, and stone thunder. The interaction of rain, wind, dew, and thunder gives full development to the changes of Earth.⁴⁷

In addition to pointing out the four earthly forms, in the following two paragraphs of the “Outer Chapters of Observing Things”, Shao Yong excluded metal and wood from the four earthly forms, for he believed metal and wood come from them. And the (melted) metal and the (ignited) wood follow fire, if they are exposed to fire:

五行之木，萬物之類也；五行之金，出乎石也。故水火土石，不及金木，金木生其間也。

Wood, which is one of five phases, is a category of the myriad things. Metal, which is also one of five phases, comes from stone. Therefore, water, fire, earth, and stone [which are the four forms of the Earth] do not include metal and wood, which come from them.⁴⁸

金火相守則流，火木相得則然，從其類也。

⁴⁶ Shao Yaofu (1996), juan 12 shang, “guanwu waipian”, pp. 433-1, 433-2; Shao Yong (1983-), juan 13, “guanwu waipian shang”, pp. 1052-1053.

⁴⁷ Shao Yaofu (1996), juan 11 shang, “guanwu pian 41”, pp. 420-3, 421-1; Shao Yong (1983-), juan 11, “guanwu pian 51”, p. 1032.

⁴⁸ Shao Yong (1983-), juan 14, “guanwu waipian xia”, p. 1079; Yu Ben (1565), juan 3, “guanwu waipian 3”, p. 47a.

When metal and fire are holding each other, metal flows.
 When fire and wood are getting each other, wood burns. This
 is because they follow the category [of fire].⁴⁹

It is worth noting that metal and wood are included in the five phases but not in the four forms of the Earth. Thus, in contrast to the received view, there is no doubt that Shao Yong created a new tradition preferring the number four over the five, and thus gave rise to the problem of incompatibility between the four forms and the five phases. Later, his son Shao Bowen elaborated this and applied new interpretations on the relation between the four forms and five phases.

3. Shao Bowen's Crucial Commentary

Shao Yong did not marry until he was forty-five years old. Bowen, his elder son, was born when he was forty-seven.⁵⁰ Bowen was well known, for he was well acquainted with many of Shao Yong's friends and attended many activities with them, which were recorded in the *Henan Shaoshi wenjian qianlu* 河南邵氏聞見前錄 (Former Record of Things Heard and Seen by Mr. Shao of Henan).⁵¹ In 1077, when Shao Yong died at sixty-seven years old, he left his unpublished work *HJJS* to the twenty-one-year-old Bowen, who added his commentary to it. According to Chen Yufu, although Bowen was not very smart, his commentary was very useful for later scholars in comprehending the content of the *HJJS*.⁵² For example, Bowen greatly simplified a very complicated table in which his father had squeezed Chinese history with its many details into a cosmic period.⁵³

After quotation 43 of Shao Yong's text in the *HJJS*, there follows a key paragraph of Shao Bowen's crucial commentary in which he elaborated on Shao Yong's challenge of the five phases theory with the four earthly forms of water, fire, earth, and stone:

或曰：《皇極經世》捨金、木、水、火、土而用水、火、土、石，何也？（邵伯溫）曰：日月星辰，天之四象也；水火土石，地之四體也；金木水火土者，五行也。四象四體先天也，五行後天也。先天，後天之所自出也，水火土石，

⁴⁹ Shao Yaofu (1996), juan 12 shang, "guanwu waipian", p. 442-3; Yu Ben (1565), juan 3, "guanwu waipian 3," p. 49a.

⁵⁰ Cf. Wyatt (1996), p. xi. Chen Yufu thought that while Bowen was born, Shao Yong was forty-five years old. See Chen Yufu (1979), p. 2; Chen Yufu (1999), p. 90.

⁵¹ Shao Bowen (1970).

⁵² Chen Yufu (1999), p. 90; Chen Yufu (1979), p. 32.

⁵³ Feng Youlan (1993), vol. 2, pp. 846-847; Fung Yulan (1952), vol. 2, pp. 471-472; Chen Yufu (1979), pp. 79-80.

五行之所自出也。水火土石，本體也。金木水火土，致用也。以其致用，故謂之五行，行乎天地之間者也。水火土石，蓋五行在其間矣。金出於石，而木生於土。有石而後有金，有土然後有木。金者，從革而後成；木者，植物之一類也。是豈捨五行而不用哉？五行在其間者，此之謂也。《皇極經世》用水火土石，以其本體也。《洪範》用金木水火土，以其致用也。皆有所主，其歸則一。

Someone asked: “Why does the *HJJS* discard [the five phases of] metal, wood, water, fire, and earth, and instead use water, fire, earth, and stone?” [Shao Bowen] replied: “Sun, moon, stars, and the zodiacal constellations are the four heavenly images. Water, fire, earth, and stone are the four earthly forms. Metal, wood, water, fire, and earth are the five phases. The four images and four forms are *xiantian*. The five phases are *houtian*. *Xiantian* is what *houtian* emerges from. Water, fire, earth, and stone are what the five phases emerge from. Water, fire, earth, and stone are substances. Metal, wood, water, fire, and earth are their extended functions. Since they are extended functions [of the four substances], they are called the five phases, and they act as phases in Heaven and on Earth. They are contained in water, fire, earth, and stone. Metal comes from stone and wood grows from the earth. Metal is only after there is stone, and wood is only after there is earth. Metal comes from stone which is changed and completed. Wood is one category of plants. How are thus the five phases discarded and not used? This is what is meant by the five phases being contained in them [i.e. the four substances]. The *HJJS* uses water, fire, earth, and stone, because it stresses substances, whereas the *Hongfan* uses metal, wood, water, fire, and earth, for it emphasizes their extended functions. Each work has its own point, but all come from One [i.e. the Dao or *taiji*].”⁵⁴

In the above quotation, Shao Bowen relegates the traditional five phases theory to a secondary role. He made clear that “sun, moon, stars, and the zodiacal constellations are the four heavenly images. Water, fire, earth, and stone are the four earthly forms.” In my opinion, Shao Bowen was the first person to give Shao Yong’s texts a new interpretation of which two significant aspects should be highlighted:

First, Shao Bowen is the first person to use the analogy of *ti/yong* to describe the relation between the four forms and the five phases. Although Shao Yong

⁵⁴ *Xingli daquan* 性理大全 (Great Collection on Nature and Principle), juan 9, “*HJJS shu 3*”, “*guanwu neipian zhi yi*”, p. 167.

regarded water, fire, earth, and stone as the four earthly forms, he seemed not to think of the five phases as their functions. This was claimed, however, by Shao Bowen when he declared that water, fire, earth, and stone are substances (*benti* 本體), whereas the five phases explicitly became their extended functions (*zhi-yong* 致用).

With regard to Shao Yong's view of *xiantian* and *houtian*, either in terms of temporal order or the relation between the pre-phenomenal, abstract structure, and the phenomenal world, Shao Bowen made clear that the four earthly forms (or substances) constitute *xiantian* and the five phases *houtian*. Since *xiantian* is what *houtian* emerges from, thus, the four earthly forms (or substances) are *xiantian* from which the five phases emerge. If we compare the four forms (or substances) with the five phases, it is not very hard to find out that metal and wood are not included in the four forms, but they come from them. Shao Bowen connected Shao Yong's view of *xiantian* and *houtian* with the analogy of *ti/yong*, by which he excluded metal and wood from the four earthly substances and made clear that metal comes from stone and wood grows from the earth.

Second, Shao Bowen started to use historical evidence to account for why the five phases are extended functions of the four earthly substances. According to Shao Yong, "the beginning of Heaven" happened in the first epoch, followed by "the appearance of Earth" in the second epoch, and "the creation of human beings" in the third epoch. Thus, "the appearance of Earth" came much earlier than the creation of human beings, let alone the five phases, which were the basic stuff for people's daily life as recorded in the *Hongfan* 洪範 (The Great Plan) chapter in the *Shangshu* 尚書 (Book of Documents).

In the *Hongfan* chapter, metal, wood, water, fire, and earth were recorded as produced after "the creation of human beings", obviously later than either "the beginning of Heaven" or "the appearance of Earth". Therefore, they were things *houtian* rather than being regarded as things *xiantian*. Here Shao Bowen used historical evidence to infer that metal, wood, water, fire, and earth appeared much later than the four forms (or substances) of the Earth, which were already there in the second epoch. Thus, he was the first who started to use the *Hongfan* chapter as historical evidence, showing that the five phases came into existence much later than the four earthly forms. In this way he drew an analogy between the notion of *xiantian* and *houtian* and the concept of *ti/yong* and their relationship to the four forms and five phases.

4. Song Scholars' Responses

What were the reactions of Song scholars to Shao Yong's key texts and Shao Bowen's commentary? According to an outline of the *HJJS shu*, "after Shao Yong, Wang Shi 王澐 wrote the *Yixue*, Zhu Bi 祝泌 completed the *HJJS jie*

qishu jue, and Zhang Xingcheng 張行成 finished the *HJJS suoyin*.⁵⁵ Consequently, this section will deal with the reactions of Wang Shi, Zhu Bi, and Zhang Xingcheng. In addition, we will not omit Zhu Xi, the great synthesizer of Neo-Confucianism, for he reacted to both Shao Yong's view of the four earthly forms and to Bowen's commentary.

4.1. Wang Shi's Compromise Reaction

Wang Shi was active during the Southern Song period (1127-1279) and in his old age became very interested in Shao Yong's interpretation of the *Yijing*.⁵⁶ He wrote a work called *Yixue* 易學 (The Learning of *Yijing*) in which he followed Shao Yong's view of the development from *taiji* to *yin/yang* and from *yin/yang* to the four forms from which the Eight Trigrams arose. Wang Shi thought that Shao Yong had not violated the intention of the ancient sages:

或問：「康節先生衍四象數，有諸乎？」曰：「為此說者，不知先生者也。易有太極，是生兩儀，兩儀生四象，四象生八卦。聖人既以天一，地二，天三，地四，天五，地六，天七，地八，天九，地十，備兩儀數而衍之。降此而衍四象，以自異於聖人，豈康節之意乎？」

Someone asked, "Kangjie worked out the numeration of the four forms, didn't he?" [Wang Shi] replied, "Those who made this statement did not know him. In the *Yijing*, there is the Supreme Ultimate, from which came the two forces (*li-angyi*), and the two forces generated the four forms, from which came the Eight Trigrams. According to the sages, Heaven is one, Earth two, Heaven three, Earth four, Heaven five, Earth six, Heaven seven, Earth eight, Heaven nine, Earth ten; they derived it from the numeration of the two forces, and descending from it they derived the four forms. How could it have been the intention of Kangjie to hold an opinion different to the sages?"⁵⁷

According to Wang Shi, in Shao Yong's work, sun, moon, stars, and the zodiacal constellations came from Heaven, and water, fire, earth, and stone came from Earth. Both are of a pattern of one generating four. Thus, strictly speaking, both "sun, moon, stars and the zodiacal constellations came together as Heaven" and

⁵⁵ *Qinding siku quanshu zongmu* 欽定四庫全書總目 (A Comprehensive List of the Contents of the Complete Library of the Four Treasuries Done by Imperial Order), juan 108, zibu 18, "shulei 1", "HJJS shu 12 juan", p. 1422.

⁵⁶ Wang Shi (1983-), "yixue xu", p. 668.

⁵⁷ *Ibid.*, "lun Kangjie xiansheng yan shu", p. 682.

“water, fire, earth and stone came together as Earth” are one bringing forth four, which together become five. And “the combination of them becomes two times five which is ten”, exactly matching the big number of Heaven and Earth.⁵⁸ Here he tried to make a compromise between ‘four’ and ‘five’.

As for the four forms of the Earth, Wang Shi thought Shao Yong had no intention of emphasizing them, for the name of four forms (or images) was simply used for convenience. In reality, Heaven has four images and Earth has four appearances, and taken together these images and appearances should thus have eight forms (*baxiang* 八象):

惟其以二四為數，... 在物則為月星辰水火土石。世人但見日月星辰為四象...，故因名之曰所衍者四象數也。不知日月星辰，所謂在天成象；水火土石，所謂在地成形。若以在天者為四象，則在地者當為四形。若形象一名，則合天與地當為八象，亦不可為四象也。康節之意，豈如是乎？愚故曰：『為此說者，不知先生者也。』

With regard to his [i.e. Kangjie's] taking two and four as numbers, ... in the case of things these are sun, moon, stars, and the zodiacal constellations as well as water, fire, earth, and stone. People, however, only perceive sun, moon, stars, and the zodiacal constellations as the four images, ... and this is why they say that what has been worked out by him are the numeration of the four forms. They are not aware that sun, moon, stars, and the zodiacal constellations constitute the so-called four images in Heaven, whereas water, fire, earth, and stone constitute the so-called four appearances on Earth. If there are four images in Heaven, then there should be four appearances on Earth. If images and appearances are combined in one name, then by summing up the [four] images of Heaven and the [four] appearances of the Earth the result can only be eight forms (*baxiang*), and not four forms (*sixiang*). How could this have been Kangjie's intention [i.e. to speak of only four forms]? This is why I said, “those who made the [above-mentioned] statements did not know him.”⁵⁹

In brief, Wang Shi tried to make a compromise between ‘four’ and ‘five’. He thought Shao Yong had no intention to emphasize the four forms and that his use of the name of four forms was simply for convenience.

⁵⁸ Ibid.

⁵⁹ Ibid.

4.2. Two New Contributions in Zhu Bi's Commentary

In his old age Zhu Bi called himself the “old man who observes things”, *guanwu laoren* 觀物老人. He was very interested in numerological secrets and the “Chapters of Observing Things” of the *HJJS shu*, on which he wrote two works: the *Guanwu pian jie* 觀物篇解 (Interpretations of Chapters of Observing Things) and the *HJJS jie qishu jue* 皇極經世解起數訣 (A Rhymed Formula Explaining the Numerical Secrets of the *HJJS*).⁶⁰ In the *Guanwu pian jie*, he made two new contributions to the learning of the *HJJS*: first, he interpreted the relative meaning of *ti/yong*; second, he started to establish an analogy between *ti/yong* and physiological phenomena.

Although Shao Bowen connected Shao Yong's view of *xiantian* and *houtian* with an analogy of *ti/yong*, he focused on the relation between water, fire, earth, and stone as substances and the five phases as their extended functions. Zhu Bi's view of *xiantian* and *houtian* is relative, as is the relation between substances and their functions. Zhu Bi made progress on this aspect.

Concerning the *Guanwu neipian* 觀物內篇 (Inner Chapters of Observing Things), Zhu Bi not only recognized Shao Yong's idea that sun, moon, stars, and the zodiacal constellations are the four heavenly forms, and water, fire, earth, and stone are the four earthly forms, he also reflected on the relative meaning of *ti/yong* in the *HJJS*:

自太極之判，以陰陽剛柔為天地之用，乃體之用也。自陰陽剛柔分太少，生為八卦，為天地之體，乃用之體也。今曰日月星辰交，而天之體盡；水火土石交，而地之體盡。

From the viewpoint of the Supreme Ultimate, the functions of Heaven and Earth [were fully developed by the movement and quiescence or *dong/jing* of *qi*] in the form of *yin/yang* and *gang/rou*; they are the functions of *ti* [i.e. *taiji*]. From the viewpoint of the differentiation of greater and lesser in *yin/yang* and *gang/rou*, [the four forms, and thereafter] the Eight Trigrams are created, which are the *ti* of Heaven and Earth; they are the *ti* [of the form of Heaven and Earth, which are] the functions [of the differentiation of greater and lesser in *yin/yang* and *gang/rou*]. Today it is said that when sun, moon, stars, and the zodiacal constellations intermingle, the form of Heaven is completed; when water, fire, earth, and stone intermingle, the form of Earth is completed.⁶¹

⁶⁰ Zhu Bi (1983-a); Zhu Bi (1983-b).

⁶¹ Zhu Bi (1983-a), juan 5, “HJJS 11”, “wanwu pian 51”, pp. 141-142.

Taiji is *benti*, from which came the movement and quiescence (*dong/jing*) of *qi* in the form of *yin/yang* and *gang/rou*, which provides full development to the functions of Heaven and Earth. Thus, the functions of Heaven and Earth are the function of *taiji* (*ti zhi yong* 體之用). The differentiation of greater and lesser in *yin/yang* and *gang/rou* is regarded as the *ti* of Heaven and Earth, or the *ti* enabling full development of the functions of Heaven and Earth (*yong zhi ti* 用之體).

Once Zhu Bi had made clear the meaning of *ti/yong* in relation to the notions of *taiji*, *yin/yang*, *gang/rou*, and the differentiation of greater and lesser in *yin/yang*, *gang/rou*, and the four forms, he then argued for a physiological analogy between the four forms on the one hand and the five phases mentioned in the *Hongfan* on the other. Zhu Bi used womb, embryo, and baby to make a physiological argument connecting the four forms with the five phases, especially regarding the relations between earth and wood as well as stone and metal:

水火土石交，則水有四位...，火有四位...，土有四位...，石有四位...，而為十六矣，非地之體盡於此乎？〈洪範〉以水火木金土五行為造化之用。此於五行，有石土而無金木者。木為土之子，有土而無木，母孕子胎也。石者金之胞，有石而無金，子藏母腹也。

When water, fire, earth, and stone intermingle, then water has four orientations ..., fire has four orientations ..., earth has four orientations ..., stone has four orientations ..., together they have sixteen orientations. Is it not that thus the form of the Earth is completed by this? [In the *Hongfan*] water, fire, wood, metal, and earth, i.e. the five phases, are functions of the creational process. If we compare [the four forms] with the five phases, the former has stone and earth, but not metal and wood. Wood is the son of earth. Though it happens that there is no wood, there is [always] earth. [Wood] is like the embryo of a pregnant woman. Stone is the womb of metal. Though it happens that there is no metal, there is [always] stone. [Metal] is like a baby hiding in the belly of a woman.⁶²

In brief, Zhu Bi not only highlighted the implication of the relative meanings of *ti/yong* but also extended the analogy of *ti/yong* relating to the four forms and five phases to the physiological pattern of womb, embryo, and baby in order to explain the relation between earth and wood and between stone and metal.

⁶² Ibid., p. 142.

4.3. Zhang Xingcheng's Further Development

Zhang Xingcheng was advanced in the learning of *Yijing* and wrote several books about it, two of which were the *HJJS suoyin* 皇極經世索隱 (Searches into the Hidden Meanings of the *HJJS*) and *HJJS guanwu waipian yanyi* 皇極經世觀物外篇衍義 (Developing the Meanings of the Outer Chapters of Observing Things in the *HJJS*). According to an outline given in the *HJJS suoyin*, “Xingcheng worked very hard on the learning of Shao Yong; he thought that Bowen’s interpretations had not caught the subtle meaning of the numeration of forms (*xiangshu* 象數), which he intended to uncover; thus he called it [*HJJS*] *suoyin*.”⁶³ In other words, he was trying to elaborate the subtle meanings of *HJJS shu*, which he thought were not revealed in Shao Bowen’s interpretations. In the following we will take a closer look at one example from each of his two works to see how he elaborated Shao Yong’s notions of the four forms and five phases.

Based on Shao Bowen’s views of *xiantian* and *houtian* and his analogies between *ti/yong* and the four forms and five phases, and by dealing with the change arising from the interactions of the four heavenly images and the four earthly forms, Zhang Xingcheng tried to make a further division between *yi ti yong yong* 以體用用 and *yi yong yong ti* 以用用體 in his *HJJS suoyin* in order to reveal the subtle meanings of the *HJJS shu*. *Yi ti yong yong* is to make *ti* to *yong* (*yi ti wei yong* 以體為用). The four forms are used as functions of what is *xiantian*. But while the four forms appear, the Supreme Ultimate remains hidden. *Yi yong yong ti* is to make *yong* to *yong* (*yi yong wei yong* 以用為用). The five phases are used for the purpose of the phenomenal world, which is *houtian*. They are functions of the four earthly forms, and whatever the change of the five phases, their origin is in the four forms:

此言天地之體既立，復因體起用而生變化也。
《經世》言四象，不取五行者，何也？先天因用成體而用，體天用地也。後天因體起用而用，用地用物也。以用用體，用在體外，如人之用器也。以體用用，用在體內，如器之用物也。是故先天用四象者，五也，一在四外，以一包四。天以太極用四象，四象見而太極隱，故以體為用也。後天用五行者，九也，五在四內，以四包五，地以四象用五行，五行變而四象居，故以用為用也。

This means that after the substance (*ti*) of Heaven and Earth have been established, changes are produced by giving rise to

⁶³ *Qinding siku quanshu zongmu*, juan 108, “zibu 18”, “shulei 1”, “HJJS suoyin 2 juan”, p. 1423.

the functions (*yong*) on the basis of substance (*ti*). What is the reason that the [*Huangji*] *jingshi* chooses the four forms, and not the five phases? In *xiantian* function is provided by completing substance on the basis of function; this is substantialized Heaven and functionalised Earth. In *houtian*, function is provided by giving rise to function on the basis of substance; this is functionalised Earth and functionalised [myriad] things. When substance is put to use by function, function is on the outside of substance, resembling people using a vessel. When function is put to use by substance, function is inside of substance, like the putting to use of things by a vessel. For this reason, Heaven's putting to use of the four forms means five, as one is on the outside of four, or the four are embraced by the one. Heaven is putting to use the four forms through [the action of] the Supreme Ultimate; the four forms appear whereas the Supreme Ultimate remains hidden; thus substance is made to become function. When *houtian* is putting to use the five phases, this means nine, as the five [phases] are on the inside of the four [forms], or the five are embraced by the four. Earth is putting to use the five phases through [the action of] the four forms; the five phases change, but the four forms stay [constant]; thus function is made to become function.⁶⁴

Concerning the quotations 48 and 49, Zhang Xingcheng gave his commentary on each of them in the *HJJS guanwu waipian yanyi*. Referring to quotation 48, he stated that the five phases (metal, wood, water, fire, and earth) and the *liufu* 六府 (metal, wood, water, fire, earth, and grain) are for the purpose of daily life:

水火土石所以共為地也。五行取其日用，故去石而言金木。金能從革，木能曲直，而石則無變，故也。若六府又言穀，則草類之養人者，亦得自名於一用也。

Water, fire, earth, and stone are that by which together Earth is formed, whereas in the case of the five phases the focus is on daily use. For this reason stone was dropped, and metal and wood are mentioned. This is due to metal being able to yield or bend and wood to grow either straight or crooked, while stone remaining unchanged. That the "six storehouses" also added grain has to do with the fact that those among the grasses that feed people obtained their name just from this one use[fulness].⁶⁵

⁶⁴ Zhang Xingcheng (1983-a), juan shang, "guanwu neipian zhi 1", p. 6.

⁶⁵ Zhang Xingcheng (1983-b), juan 5, "guanwu waipian zhong zhi zhong", p. 134.

As for his commentary on quotation 49, Zhang Xingcheng drew an analogy between the mutual production and mutual conquest sequences of the five phases and the physiologico-ethical relations between wife and husband as well as mother and child:

火剋金，故相守，則金流；木生火，故相得，則木然。金流則夫剛而婦順；木然則子盛而母衰。

Fire conquers metal. The reason is that when holding each other, metal flows. Wood brings forth fire. The reason is that when getting each other, wood burns. When metal flows, this is [like] the husband unyielding and the wife obeying. When wood burns, this is [like] the child prospering and the mother growing weaker.⁶⁶

4.4. Zhu Xi's View of Shao Yong's Four Forms and His Negative Reaction to Shao Bowen's Commentary

Zhu Xi, who advocated the *yin/yang* and five phases theory, commented on the four earthly forms in the *HJJS* and reacted to Shao Bowen's interpretations negatively.

4.4.1. Zhu Xi's Notion of the Four Forms and Five Phases Both Coming from the One (*li* or *taiji*)

Zhu Xi sided with the received view as he basically accepted the ideas of *taiji*, *yin/yang* and five phases theory. He followed Zhou Dunyi's view of generation and change—from *taiji* as the One comes *yin* and *yang*, then the five phases, followed by the myriad things. "From the beginning to the end, [Zhou Dunyi's] *Tungshu* 通書 (Explanatory Text [on the Book of Changes]) aims for the explanation of *taiji*. From one to two, from two to five."⁶⁷

In the *Zhuzi yulei* 朱子語類 (Classified Conversations of Master Zhu), there is a chapter on Shao Yong's works, which reflects Zhu Xi's knowledge of Shao Yong's *HJJS*. As Zhu Xi pointed out, "*HJJS* is the essential part of the learning of Kangjie."⁶⁸ In his view, the difference between the *Yijing* and the *HJJS* is: "*Yijing* is concerned with divination (*bu shi* 卜筮), and *HJJS* is about the steps of inference, one to two, two to four, four to eight, eight to sixteen,

⁶⁶ Ibid., p. 126.

⁶⁷ Zhu Xi (1999), juan 94, "Zhouzi zhi shu", "Tongshu", p. 2389.

⁶⁸ Ibid., juan 100, "Shaozi zhi shu", p. 2553.

sixteen to thirty two, from which comes even more subtle differentiation.”⁶⁹ The method Shao Yong adopted is called by Zhu Xi “the numeration of the double.”⁷⁰

Zhu Xi also was aware that the notion “*taiji* engendered *yin* and *yang*, and from *yin* and *yang* emerged the four forms” is the essence of Shao Yong’s study of the *Yijing*:

某看康節《易》了，都看別人底不得。他說「太極生兩儀，兩儀生四象」，又都無玄妙，只是從來更無人識。

Once one has read Kangjie’s study of *Yi*, then one would not be interested in any other work. [In fact,] Shao Yong said that “the Supreme Ultimate engenders *liangyi* [i.e. *yin* and *yang*], from which the four forms emerge.” This contains nothing occult, except that hitherto nobody had recognized this.⁷¹

Nevertheless, Zhu Xi believed that the myriad things arise only from *yin* and *yang*, rather than from the four forms as in Shao Yong’s view:

問：「先生說邵堯夫看天下物皆成四片，如此，則聖人看天下物皆成兩片也。」曰：「也是如此，只是陰陽而已。」

[Someone] asked: “The Master said that Shao Yaofu saw all the myriad things in the world in terms of four categories. The sages, however, saw them in terms of two categories.” [Zhu Xi] replied: “I also see it only like this; it is only *yin* and *yang*.”⁷²

Why was Zhu Xi so confident? Since he considered all processes in terms of *yin* and *yang*, he thought Shao Yong put the number four on everything he saw and, moreover, established a very neat relation between number and *li* 理:

康節其初想只是看得「太極生兩儀，兩儀生四象」。心只管在那上面轉，久之理透，想得一舉眼便成四片。其法，四之外又有四焉。... 蓋理在數內，數又在理內。康節是他見得一箇盛衰消長之理，故能知之。... 然自有《易》以來，只有康節說一箇物事如此齊整。

⁶⁹ Ibid., p. 2547.

⁷⁰ Ibid., p. 2546.

⁷¹ Ibid., p. 2545.

⁷² Ibid., p. 2547.

At first Kangjie only thought that “from *taiji* comes the *liangyi* [two forces, i.e. *yin* and *yang*], from which emerge the four forms.” But concentrating on it for a long time, then he figured it out and saw everything in terms of four categories. By [using] his method, from four he got another four. ... For *li* is implied in the number, and the number is also implied in *li*. For Kangjie perceived it in terms of one *li* characterized by flourishing and decline and growing and decreasing, and hence was able to know it. ... However, since the appearance of the *Yi[jing]*, Kangjie is the only person who explained the [change of] things and affairs in terms of such a neat [number].⁷³

However, Zhu Xi regarded both the four forms and the five phases as coming from one *li* or *taiji*. In the *Zhuzi yulei*, one of his disciples paid attention to the different ways the myriad things were originally engendered by the *taiji* in the *Diagram of Supreme Ultimate* and the *Yijing*, and the different emphasis in the *Ximing* 西銘 (Western Inscription) written by Zhang Zai 張載 (1020-1077) and the *Hongfan* chapter of the *Shangshu*. Instead of answering the question about the differences, Zhu Xi rather focused on the similarities, stressing that all came from one *li*:

問：『太極圖自一而二，自二而五，即推至於萬物。易則自一而二，自二而四，自四而八，自八而十六，自十六而三十二，自三十二而六十四，然後萬物之理備。〈西銘〉則止言陰陽，〈洪範〉則止言五行，或略或詳皆不同，何也？』曰：『理一也，人所見有詳略耳，然道理亦未始不相值也。』

[Someone] asked: “In the *Diagram of Supreme Ultimate* one becomes two, two becomes five, which is then extended to the myriad things. According to the *Yijing*, only after one has become two, two four, four eight, eight sixteen, sixteen thirty-two, and thirty-two sixty-four is the *li* of the myriad things complete. The *Ximing*, however, only speaks of [changes coming from] *yin* and *yang*, and the *Hongfan* only of the five phases. What is the reason that some are very general and some quite detailed?” [Zhu Xi] replied: “*Li* is One. People may have perceived this in a [more] general or [more] detailed way, but there has never been disagreement in the *daoli* (“principle of the way”).”⁷⁴

⁷³ Ibid., p. 2546.

⁷⁴ Ibid., juan 94, “Zhouzi zhi shu,” p. 2386.

4.4.2. Zhu Xi's Use of Physiological Analogy to prioritize the Five Phases over the Four Forms

While Zhu Xi supported the theory of *yin/yang* and five phases as well as the notion of the four forms, in a discussion between him and his disciple Nuan 暖 he employed a physiological analogy to give priority to the five phases over the *siti* or *sixiang* in the temporal order: “From *taiji* comes the *liangyi* [two forces, i.e. *yin* and *yang*], from which emerge the four forms” is compared to mothers giving birth to their children. Thus, *yin/yang* and the five phases represent the state of pregnancy. As the five phases are like embryos in their mothers' wombs, and the four forms are analogous to the children born later from their mothers' wombs, this analogy implies that the five phases came into being earlier than the four forms:

暖問太極、兩儀、五行。曰：「兩儀即陰陽，陰陽是氣，五行是質。『立天之道，曰陰與陽；立地之道，曰柔與剛』，亦是質。又如人，魂是氣，體魄是質。」暖云：「『太極生兩儀，兩儀生四象』，此如母生子，子在母外之義。若兩儀五行，是子在母內。」曰：「是如此。陰陽、五行、萬物各有一太極。」

Nuan asked about the Supreme Ultimate (*taiji*), the two forces (*liangyi*), and the five phases. [Zhu Xi] replied: “*Liangyi* are *yin* and *yang*, *yin* and *yang* are *qi*, and the five phases are matter (*zhi*). It has been said that, “the way of forming Heaven is *yin* and *yang*, that of Earth is *rou* (yieldingness) and *gang* (unyieldingness).” The [latter] are also matter. Again we can take man as an example, whose spiritual soul (*hun*) is *qi*, while his bodily soul (*po*) is matter.” Nuan stated, “the notion that ‘*taiji* generated the *liangyi* (two forces), from which emerged the four forms,’ is like a mother having given birth to a child, in the meaning of being now outside of his mother. In the case of *liangyi* and the five phases, however, the child is [still like an embryo] within the mother’s [womb].” [Zhu Xi] replied: “You are right. *Yin* and *yang*, the five phases and the myriad things, each one has one [and the same] *taiji*.”⁷⁵

⁷⁵ Ibid., pp. 2377-2378.

4.4.3. Zhu Xi's Negative Attitude toward Shao Bowen

Zhu Xi was born four years before the death of Shao Bowen. It seems that they never met. In the *Zhuzi yulei*, Zhu Xi did not hide his negative attitude toward Bowen's commentary on the *HJJS shu*.

In a conversation between Zhu Xi and his disciple Shuqi 叔器, both showed themselves familiar with Shao Yong's view of the four earthly forms. Shuqi started by asking whether stone is metal. Eventually, he directed his question to Bowen's commentary and asked his master Zhu Xi about his own view of Bowen's commentary on the *HJJS shu*:

叔器問：「經世書『水火土石』，石只是金否？」曰：「它分天地間物事皆是四：如日月星辰，水火土石，雨風露雷，皆是相配。」又問：「金生水，如石中出水，是否？」曰：「金是堅凝之物，到這裏堅實後，自拶得水出來。」又問：「伯溫解經世書如何？」曰：「他也只是說將去，那裏面曲折精微，也未必曉得。康節當時只說與王某，不曾說與伯溫。模樣也知得那伯溫不是好人。」

Shuqi asked: "The [*Huangji jingshi shu*] speaks of 'water, fire, earth, and stone'. Is stone only metal?" [Zhu Xi] replied: "It divides all the myriad things in Heaven and on Earth into four, such as sun, moon, stars, and the zodiacal constellations; water, fire, earth, and stone; rain, wind, dew, and thunder; they all are mutually matching." Then [Shuqi] asked again: "Does metal generate water, like water coming forth from stone?" [Zhu Xi] replied: "Metal is a congealed thing. When it reaches a solidified state, water has been pressed out of it by itself." [Shuqi] asked again: "What about Bowen's comment on the [*Huangji jingshi shu*]" [Zhu Xi] replied: "He simply spoke his opinion, but may not have comprehended its deep and subtle meanings. At that time Kangjie was only speaking with Mr. Wang, but not with Bowen. Judged from his manners, one may easily know that Bowen is not a good person."⁷⁶

In the last exchange of questions and answers, two aspects of Zhu Xi's view of Shao Bowen's commentary can be stressed: First, in Zhu Xi's opinion, Shao Yong wanted to pass his *HJJS shu* to Mr. Wang rather than to Bowen, and Bo-

⁷⁶ Ibid., juan 100, "Shaozi zhi shu", p. 2547. It is worth noting that Zhu Xi did not always hold a negative attitude toward Shao Bowen. In a conversation between Zhu Xi and his disciples when Shao Bowen was accused of having recorded falsely, Zhu Xi was on Bowen's side. Ibid., juan 1, "Li qi shang", "Taiji tiandi shang", p. 10.

wen's commentary on the *HJJS shu* is superficial, for Bowen was not capable of comprehending its deep and subtle meanings. Second, Zhu Xi attacked Shao Bowen personally by criticizing his manners and by saying that he did not look like a good person.

As Chen Yufu points out, Shao Bowen's commentary was very useful for later scholars in comprehending the contents of *HJJS shu*. However, since Zhu Xi was only born four years before the death of Shao Bowen and thus appears never to have met him, his judgment of Bowen's personality is unfounded.

In sum, by and large, Song scholars reacted to Shao Yong's texts and Shao Bowen's commentary in two different ways. On the one hand, Wang Shi and Zhu Xi tried to make compromises between 'four' and 'five'. On the other hand, Zhu Bi and Zhang Xingcheng stressed the four forms as substances and the five phases as their functions. On the basis of Shao Bowen's commentaries, they further elaborated on the difference between the four forms and the five phases. In the next section, we will examine the reactions of Ming scholars.

5. Ming Scholars' Responses

It was mentioned earlier that water, fire, earth, and stone were regarded as the four earthly forms, and that the five phases became their functions. During the Ming dynasty, these views were spread through the *Xingli daquan shu* 性理大全書 (Great Collection on Nature and Principle) composed by Hu Guang 胡廣 (1370-1418),⁷⁷ and the reactions of Zhu Yinlao 朱隱老 and Huang Ji 黃畿 in their commentaries.

5.1. Zhu Yinlao's Commentary

We know very little about Zhu Yinlao. According to a record found in his *HJJS shu shuo* 皇極經世書說 (Commentary on *HJJS shu*), he was the father of Zhu Shan 朱善 who lived in the Hongwu reign-period (1368-1398). Zhu Yinlao flourished in the Yuan-Ming transition period. He was convinced that former scholars were unable to grasp the subtle meanings of Shao Yong's *HJJS shu*. His focus was especially on the *yili* 義理 (principles of righteousness).⁷⁸

⁷⁷ Sometimes the title of this work is also called *Xingli daquan*. For example, the edition used in this paper is *Xingli daquan* (1981).

⁷⁸ *Qinding siku quanshu zongmu*, juan 110, "shushu lei zongmo 1", "shu xue", "zibu 20", "HJJS shu zhuan", p. 2272; *HJJS shu shuo*, vol. 57, p. 204.

Although we don't know when he published the *HJJS shu shuo*, it is clear that it was known in the Hongwu reign-period.⁷⁹ Unfortunately, he seems not to have made commentaries as elaborate as those by Shao Bowen, such as the one on the key paragraph cited in section three of this paper. Nevertheless, in his commentary to quotations 48 and 49 of the "Outer Chapters of Observing Things", he expressed his own view on the relation between the four earthly forms and the five phases.

In his commentary to quotation 48, he provides his interpretation of why metal and wood are excluded from the four forms of the Earth:

地之四象，東南則水，西北則石。水石之間，有土有火。火其氣也，而藏於石。土其體也，而際於水。水火土石，其初本一，分而為二。其中本二，分而為四。四象之中，無金與木。... 若夫氣藏於石，則有火；質藏於石，則有金。質言金，氣言火，其歸不同，而皆出於石，此四象之所以無金木也。

As to the four earthly forms, water is in the southeast and stone in the northwest. Between water and stone there are earth and fire. Fire is the *qi* of it [i.e. of the Earth] and is hidden in stone. Earth is the substance of it [i.e. of the Earth] and borders on water. Water, fire, earth, and stone originated from the One [i.e. the Supreme Ultimate (*taiji*)], and then differentiated into Two [i.e. the two forces (*liangyi*) of *yin* and *yang*], which later differentiated into Four. There is no metal and wood within the four forms. ... Thus, in the case of *qi* hidden in stone, there is fire; in the case of matter hidden in stone, there is metal. In the case of matter, one speaks of metal, [but] in the case of *qi*, one speaks of fire. Although they both come out of stone, they do not belong to the same [origin]. That is why there is no metal and wood within the four forms.⁸⁰

As for his commentary to quotation 49, he used both *ti/yong* and physiologico-ethical analogies in a similar way as former authors. He stressed that the four forms are the substances of the Earth, while the five phases are its functions. It is worth noting that he made a physiologico-ethical analogy in which a couple as well as mother and child are used to explain that 'fire conquers metal' and 'fire comes from wood' respectively. In his opinion, the former could be analogous to the relation of a couple, i.e. a husband conquering the wife, and the latter as mother giving birth to her child:

⁷⁹ The *HJJS shu shuo* held in the National Library, Taipei, is a revised edition, which was based on an edition of the Hongwu reign-period.

⁸⁰ Zhu Yinlao (1995), vol. 57, xia pian, juan 4, "guanwu waipian," p. 131.

地之四象有水火土石而已，無金與木。此忽以金木言之，蓋金生於石，木生於土。四象其體，五行其用也。以用言之，金與火相守則流，然不流，則無以成鎔冶之功；木與火相得則然，然不然，則無以成烹飪之功。其流也，有以見夫婦之相剋；其然也，有以見母子之相生。生剋不同，其類一也。

It is only water, fire, earth, and stone that are the four forms of the Earth, but not metal and wood. That metal and wood are nonetheless discussed here is because metal emerges from stone and wood from earth. The four forms are [the Earth's] substances, and the five phases are its functions. From the viewpoint of function, when metal and fire are holding each other, metal flows. If it does not flow, then it cannot fulfil its service in smelting. When fire and wood are getting each other, wood burns. If it does not burn, then it cannot fulfil its service in cooking. In the case of metal becoming fluid, this is analogous to the conquest of the wife by the husband. In the case of wood burning, this is analogous to the giving birth of the child by the mother. Although they differ with respect to conquest and production, their category is the same.⁸¹

The four earthly forms clearly refer to water, fire, earth, and stone, but do not include metal and wood, which originate from them. However, once the functions of the Earth are mentioned, metal and wood appear explicitly, and with them the five phases: metal, wood, water, fire, and earth.

5.2. Hu Guang's Contribution

In contrast to Zhu Yinlao, Hu Guang did not make any commentaries on the *HJJS shu*. His contribution consisted mainly of having spread Shao Yong's *HJJS* and Shao Bowen's commentary while being an official at court. By order of emperor Chengzu 成祖 (r. 1403-1425), Hu led a group of scholars to compose the *Xingli daquan shu*, a task which was completed in the thirteenth year of the Yongle reign-period (1415).

In the *Xingli daquan shu*, seven chapters (*juan*) were dedicated to the *HJJS shu*. Hu Guang not only included the *Guanwu neipian* and *Guanwu waipian*, but also appended Shao Bowen's interpretations, the *Shao Bowen jie* 邵伯溫解. Since the *Xingli daquan shu* is a collection of selected Neo-Confucian works dealing with the "principles of righteousness (*yili*) for civil service examination

⁸¹ Ibid.

purposes, everyone who prepared himself to take part in state examinations had to consult it. Thus, it contributed substantially to the spread of Shao Yong's *HJJS shu* and Shao Bowen's commentary in the Ming period. Most importantly, it transmitted the contents of two interpretations held by Shao Bowen, which were introduced at the end of section 3 of this paper. Moreover, it contains the conversation between Zhu Xi and his disciple Shuqi, excluding the last sentence.⁸²

5.3. Huang Ji's Commentary

Huang Ji 黃畿, also called Yuezhou xiansheng 粵洲先生, was the father of Huang Zuo 黃佐 (1489-1566). Because Huang Ji did not succeed in the civil service examination, he decided to return to the countryside to take care of his parents and to concentrate on *Yijing* studies. He worked out his commentaries on the *HJJS shu* in the *HJJS shu zhuan* 皇極經世書傳 (Commentary on *HJJS shu*).

Huang Ji commented on the same two quotations 48 and 49 from the "Outer Chapters of Observing Things" as Zhu Yinlao did. In his commentary to quotation 48, Huang largely followed Zhu's commentary.⁸³ As for his commentary of quotation 49, unlike Zhu, who used both the *ti/yong* and physiologico-ethical analogies in his commentary, Huang simply claimed that metal and wood come from stone and earth respectively, stressing that water, fire, earth, and stone are regarded as the four substances of the Earth and the five phases as its functions:

地之四象，水火土石。然金生於石，木生於土。四象其體，五行其用也。金火鎔冶則流，火木烹飪則然。

The four forms of the Earth are water, fire, earth, and stone. Metal, however, emerges from stone, and wood grows from earth. The four forms are [the Earth's] substance, the five phases its functions. Metal becomes fluid, when used with fire for smelting. Wood burns, when used with fire for cooking.⁸⁴

To put it briefly, from the early to the mid-Ming period, the reactions of Zhu Yinlao, Hu Guang, and Huang Ji to Shao Yong's *HJJS shu* and Shao Bowen's

⁸² *Xingli daquan*, juan 13, "HJJS shu 7", p. 242. For the complete conversation, see quotation 76 of this paper.

⁸³ Huang Ji (1995), juan 8, "guanwu waipian xia", "yi hui jing yun shengwu yongshu 8", p. 452.

⁸⁴ *Ibid.*

interpretations consistently stressed that water, fire, earth, and stone are the four substances of the Earth and the five phases its functions.

6. Ricci's Knowledge of Chinese Classics and Five Phases Theory

In 1583, Ricci followed Michele Ruggieri (in Chinese Luo Mingjian 羅明堅, 1543-1607) to Zhaoqing 肇慶 to propagate Christianity. At first, they built a Buddhist temple and dressed like Buddhists. In August 1589, Ricci moved to Shaozhou 韶州, where he met Qu Rukui 瞿汝夔 (1549-1612) and realized that Confucians received more respect than Buddhists from Chinese officials. Then he accepted Qu Rukui's suggestion to change into, and dressed like, a Confucian. He began to study the Chinese classics and converse with literati, from whom he might have learned the five phases theory.

Ricci had hired Chinese tutor(s) to teach him the Four Books and the Six Classics,⁸⁵ for being a foreigner, Ricci could not comprehend them by himself. According to Li Zhi 李贄 (1527-1602), who met him in 1600 at Beijing, Ricci could speak Chinese, use Chinese characters to write, and follow Chinese rituals. He pointed out that Ricci had hired someone who understood the profound meaning of the Four Books and the commentaries to the Six Classics to teach him their meaning.⁸⁶

Equipped with knowledge of the Four Books, Ricci started to translate them into Latin at the end of 1591. He was not the first to attempt to translate them. Ruggieri had tried, but had not succeeded.⁸⁷ On December 10, 1593, Ricci wrote a letter to Father Claude Acquaviva in which he mentioned that he was working on the translation of the Four Books into Latin with short notes. At that time, he had finished three of them and was working on the fourth.⁸⁸ A year later, he reported in a letter that he was close to finishing the Latin draft.⁸⁹ In another letter dated August 14, 1599, he reported that his translation of the Four Books into Latin had been accomplished five years previously.⁹⁰

⁸⁵ Ricci (1986), vol. 3, p. 209. There were originally Six Classics (*liujing* 六經), but the loss of the classic of *Yuejing* 樂經 (Book of Music) sometime before the Han Dynasty left only Five Classics, namely, the *Shijing* 詩經 (Book of Odes), *Shangshu* (Book of Documents), *Yijing* (Classic of Changes), *Lijing* 禮經 (Book of Rites), and *Chunqiu* 春秋 (Spring and Autumn Annals).

⁸⁶ Li Zhi (1974), juan 1, p. 92.

⁸⁷ Lundbaek (1979); D'Arelli (1994).

⁸⁸ Ricci (1986), vol. 3, pp. 135, 143.

⁸⁹ *Ibid.*, p. 135.

⁹⁰ *Ibid.*, vol. 4, p. 258.

Ricci was also active in studying the Classics. In a very long letter written in Nanchang and dated November 4, 1595, Ricci described that state examinations focused on the Four Books and Six Classics. Each candidate had to choose one of the Six Classics as his special field in the civil service examination.⁹¹ It is worth noting that the five phases was first recorded in the *Shangshu* and was often mentioned in the commentaries to the *Yijing*.

After his failure to obtain permission to stay in Nanjing in June of 1595, Ricci remained in Nanchang 南昌 for the next three years. Qu Rukui introduced Ricci to many members of the elite in Nanchang. One of them was his teacher Zhang Huang 章潢 (1527-1608), the head of Bailudong shuyuan 白鹿洞書院, a very famous academy of classical learning near Lushan Mountain 廬山.

Zhang Huang followed the learnings of Wang Yangming 王陽明 (1472-1528). As a literatus, he was familiar with the Chinese classics and their commentaries, but at the same time was relatively open to western learning. In his work *Tushu bian* 圖書編 (Collection of Diagrams and [Commentaries to] Books), published posthumously in 1613, one can find Ricci's influence. Ricci had made a world-map, the *Yudi shanhai quantu* 輿地山海全圖 (Map of World Geography), published first in Zhouqing 肇慶 by Wang Pan 王泮, and later reproduced in Nanchang. In the *Tushu bian*, there are two diagrams, the *Haotian hunyuan tu* 昊天渾元圖 (Abbreviated Diagrams of the World) and the *Jiu chong tian tu* 九重天圖 (Diagram of Cosmos with Nine Celestial Spheres),⁹² which reflect Ricci's five continents on Earth and nine-spheres-universe respectively, the latter similar to that in his *Qiankun tiyi* (Structure and Meanings of the Heaven and Earth).

Zhan Huang also wrote remarks on, and referred to, Shao Yong's *HJJS* in his *Tushu bian*. It contains the *HJJS xiantian shu tu* 皇極經世先天數圖 (Diagram concerning the pre-phenomenal numeration in the *HJJS*), from which many other diagrams were derived.⁹³ It also deals with Shao Yong's study of the *Yijing*.⁹⁴ In addition, Zhang did not omit the theory of the five phases. In this, he seems to follow Wang Tingxiang's view:

以金木為水火土三者之所生而有矣，近世王子衡又祖其說，以為天一生水等語，乃緯書之辭，儒者不當援以入經。

There is the notion that metal and wood come from water, fire and earth. In recent generations, Wang Ziheng followed this view, saying that "Heaven which was assigned number one generated water, etc. Because these are, however, state-

⁹¹ Ricci (1986), vol. 3, p. 209.

⁹² Zhang Huang (1983-), juan 16, pp. 32-33.

⁹³ *Ibid.*, juan 8, "HJJS zhun lun", pp. 257-259.

⁹⁴ *Ibid.*, juan 8, "HJJS zhun lun", pp. 269-270.

ments from the apocrypha, Confucians should not take them up and import them into the classics.”⁹⁵

Wang Tingxiang 王廷相 (1474-1544) was styled Ziheng 子衡. He was an expert in using historical evidence to continue the tradition created by Shao Yong against the five phases theory. In Zhang Huang’s opinion, Wang made many critiques of the five phases theory that were extremely clear and correct.⁹⁶

Ricci apparently took notice of the five phases theory while staying in Nanchang. Zhang Huang offered him many opportunities to discuss with him or his disciples.⁹⁷ During his communications with them, Ricci, on the one hand, began to understand their views about religion and natural philosophy. On the other hand, he may have gathered different commentaries to improve his knowledge of the five phases theory. In a letter to Father Claudio Acquaviva dated November 4, 1595, Ricci wrote about the five phases as follows:

As they do not know what the air is, where we say that there is air, they affirm that there is void. By adding metal and wood, and subtracting air, they count five elements: metal, wood, fire, water, and earth. Still worse, they make out that these elements are engendered the one by the other, and it may be imagined with how little foundation they teach it, but as it is a doctrine handed down from their ancient sages, no one dares to attack it.⁹⁸

In addition, Ricci’s teaching of natural philosophy provided him with many opportunities to exchange his views about the five phases and the four elements with Chinese literati. In a letter written on May 10, 1605, from Beijing to his father, Ricci mentioned that he taught one to three classes each weekday, either on natural knowledge for Chinese literati or on Chinese for young Jesuits.⁹⁹ Let us now ask, when he introduced western concepts, such as the four elements, could Chinese literati simply accept it without proffering their own view of the five phases? If they reacted, there would have been discussions in Nanchang and later in Nanjing between him and Chinese literati about the five phases and the four elements. From his teaching of natural philosophy to Chinese literati in Nan-

⁹⁵ Ibid., juan 22, vol. 969, p. 347.

⁹⁶ Ibid., p. 348.

⁹⁷ Ricci (1986), vol. 3, p. 211.

⁹⁸ See Bernard (1973), p. 48. This was originally published as *L’apport scientifique du père Matthieu Ricci à la Chine* by H. Vetch in Beijing. The Chinese translation in *Li Madou quanji* is relatively short: “They believe stars move in the heaven which is void. They know five phases, into which they include metal and wood, but nothing about air.” See Ricci (1986), vol. 3, p. 209.

⁹⁹ Ricci (1986), vol. 4, p. 283.

jing, Ricci left the following information about his discussions on the five phases and four elements:

With no other foundation for their belief than antiquity, Chinese scholars taught that there were five different elements. None of them doubted this or ever thought of questioning it. These elements were: metal, wood, fire, water, and earth, and what is stranger still, they taught that these elements were derived from one another. They knew nothing about the air, as such, because they could not see it. To them, the space occupied by air was merely a void. ... Father Matthew ... told them that they were four elements, no more or no less, possessed of contradictory qualities, and he taught them where each element was found. They have no objections with reference to the three inferior elements but they found it difficult to believe that fire, found beneath the sky, should occupy a large portion of the elementary earth. ... Father Matthew wrote a commentary on this subject in Chinese, in which he did away with their five elements, as such, and established the four, to which he assigned locations, and of which he showed illustrations. This commentary was received with great interest. They had numerous copies of it made, which were everywhere accepted with the same high praise as his other writings.¹⁰⁰

In order to persuade Chinese literati, Ricci wrote a small work, the *Sixing lunlüe* 四行論略 (A Sketch on Four Elements Theory), published in 1599 and 1601.¹⁰¹ Unfortunately it seems lost. Part of it appeared in the *Wanguo kunyu quantu* 萬國坤輿全圖 (Map of Whole World with Ten-thousand Countries), which was published in 1602,¹⁰² but was also included in the *Liangyi xuanlan tu* 兩儀玄覽圖 (Map of the World), which was published in 1603 as a reproduced copy of the *Wanguo kunyu quantu*.¹⁰³ We do not know whether the quotation in the above two maps is a part or all of it. What we do know is that the quotation contains nothing explicitly against the five phases theory.

If one compares the *Sixing lunlüe* passages quoted in the above-mentioned maps with the *Si yuaxing lun* in the *Qiankun tiyi*, it is not hard to find that their wordings are very similar, but also that the latter contains more details and many arguments against the five phases theory. Since Ricci was familiar with the Aris-

¹⁰⁰ Ricci (1953), p. 327.

¹⁰¹ See Bernard (1945), pp. 319-320. Pasquale D'Elia, in Chinese 德禮賢, regarded it as the *Si yuaxing lun*, which later became a section of the *Qiankun tiyi*. See *Fonti Ricciane*, pp. cxxviii, 51-52 (note 3), 165, 285.

¹⁰² "*Sixing lunlüe* says that" See Ricci (2001), p. 228; Huang Shijian and Gong Yingyan (2004), p. 31.

¹⁰³ Huang Shijian and Gong Yingyan (2004), p. 34.

totelian four elements theory and trained in the western rhetorical art of refutation and counter-arguments, once he had knowledge of the existing critique of five phases theory from his contact with Chinese literati, he would make arguments against the five phases theory. We do not know whether Ricci discussed the *HJJS shu* with Zhang Huang. There also seems to be no evidence to prove that Ricci had read it, though it was of no great relevance to his challenging of the five phases theory. According to Li Zhi, Ricci had read all the Chinese classics, not omitting any of them.¹⁰⁴ However, in my opinion, there is no way Ricci could have read all of them. At least, Ricci must have been quite familiar with the Four Books, the Five Classics, and some other works such as the *Xingli daquan*, and thus with arguments related to the challenge of the five phases theory in the commentaries, all of which helped him to collect arguments against the five phases theory, as will be discussed in the next section.

7. Ricci's Challenge to the Five Phases with the Four Elements

Ricci had never accepted the Chinese traditional view of *qi*, *yin/yang*, and five phases theory. At the same time, he never seemed to have written anything about the notion of the four forms of the Earth. Nevertheless, Ricci's education helped him absorb what he had learned of the critiques of the five phases and their attempts at interrelating the four forms and five phases, and by means of rhetorical and scholastic methods he may have reshaped the structure of these arguments in such a way as to challenge the five phases theory for the purpose of replacing it in the *Qianqun tiyi* with the four elements theory. At the end of the *Si yuanxing lun*, by means of cross-cultural borrowing or appropriating the analogies between *ti/yong* and *yuan/liu*, Ricci related the four elements to *ti* or *yuan* and the five phases to *yong* or *liu*.

7.1. Ricci's Criticism of the Five Phases Theory

Whatever Ricci learned was modified through the scholastic analysis in which he had been trained at Roman College. In order to substitute the five phases theory with that of the four elements, he first needed to find fault with the former. By making use of the scholastic method, he criticized the five phases theory from several different perspectives.

¹⁰⁴ Li Zhi (1974), juan 1, p. 92.

7.1.1. Questioning the Traditional Mutual Production Sequence of the Five Phases

According to the mutual production sequence of the five phases, each phase comes from another. For instance, fire is brought forth by wood, wood by water, and so forth. Trained in Aristotelian four elements theory, Ricci could not accept the mutual production of the five phases as proposed by later Confucians:

後儒言水而木，木而火，火而土，土而金，夫乃曰：木由水生，火由木生，土由火生，金由土生，水由金生耳。此說誠難順之。

Later Confucians claimed that [the mutual production sequence of the five phases is] water, wood, fire, earth, and metal. Thus, it was said that wood comes from water, fire from wood, earthy [ashes] from fire, metal from earth [underground], and water [i.e. the melt] from metal. It is really hard to follow this theory.¹⁰⁵

Ricci adduced several arguments against the mutual production theory of the five phases, first of all by basing himself on empirical evidence. In the high Ming period, Wang Tingxiang had already pointed out that “in the case of the natural way of wood, fire makes it become *qi*, water nourishes it, and earth offers it a living place.”¹⁰⁶ Based on daily life experience, Ricci claimed that a growing tree needs not only to be planted into earth, but also provided with sunshine and water. Thus, wood could not come simply from water alone. By using scholastic analysis, he attacked the five phases theory for its lack of evidence:

夫木兼有火土，何獨由水生？而火土未生時，木安得自成乎？如生木時，土未生，先原樹於何地植乎？夫物相生，宜今無異於昔也。然今水無土，無太陽之火，莫能生木；木乃先有種入土後，以水淋，以太陽和，下生根，上萌芽，而長成樹。則古並如是，何無據考而殊之乎？

Wood is of fire and earth. How could it be generated by water alone? And before the existence of fire and earth, how could wood have been completed on its own? If wood were generated before the existence of earth, where should the already existing tree be planted? In the mutual production of things the present and past do not differ. Today wood cannot

¹⁰⁵ Ricci (1983-), p. 761.

¹⁰⁶ Wang Tianxiang (1989), juan 37, “za zhu”, “da lun 21 shou”, “da Yan Yuhua za lun 5 shou”, “jin mu fei zaohua zhi ben”, p. 670; *Ibid.*, juan 33, “za zhu”, “wuxing bian”, p. 599.

grow with only water, but deprived of earth and the fire of sunshine. A tree grows by first a seed being placed into the earth, then being sprinkled with water and being warmed by the sun. Downwards it will grow roots and upwards it will stretch its buds. In ancient times this happened in the same way. Why then make a difference without any evidence?¹⁰⁷

A similar argument is as follows: “If at the very beginning there were only water, but no earth, wood and metal, of what kind of matter would then have been the container storing the water?”¹⁰⁸

Second, Ricci used the Aristotelian theory of four elements to find fault with the mutual production sequence of the five phases. Let us examine the case of ‘water produces wood’ and ‘wood produces fire.’ According to the Aristotelian theory, water has the two qualities of wet and cold, fire those of dry and hot. It was contradictory, then, for Ricci that wood should receive the quality of cold from water, yet produce fire with its quality of hot, for cold and hot are contrary qualities:

又木如生火，則木性至熱；水，以吾常視，凝凍則冰，本至冷；以至冷生至熱，是理不通矣。

And if wood produces fire, then the quality of wood is extreme hotness. According to my regular observations, if water is frozen, it turns into ice; hence, its essential quality is extreme coldness. Thus, the notion that extreme coldness [water] brings forth extreme hotness [wood] is in principle unreasonable.¹⁰⁹

Thus, according to the Aristotelian theory, the mutual production sequence of the five phases does not work.

Third, Ricci criticized the correlation between the mutual production of the five phases and the numbers related to them in the commentary to the *Yijing*. It is said in the commentary that “Heaven is one which generates water, Earth is two from which comes fire, Heaven is three from which emerges wood, Earth is four which generates metal, Heaven is five which produces earth.” By adopting a scholastic approach to analyze the correlation between the mutual production of the five phases and their companion numbers related to Heaven and Earth, Ricci considered these correlations nonsense:

¹⁰⁷ Ricci (1983-), p. 761.

¹⁰⁸ Ibid., “How to store water if at the very beginning there be only water without earth, wood and metal?”

¹⁰⁹ Ibid.

今日金生水，則金四當先於水一矣；曰木生火，則木三當先於火二矣；曰土生金，則土五當先於金四矣。火二雖居土五之前，然隔三四，何以生土？木三雖居水一之後，然隔火二，何以承生於水一乎？是其序均非義矣。

If we now say that metal produces water, then [in the cause-effect sequence] metal [assigned with number] four would be prior to water [assigned with number] one. If we say that wood generates fire, then wood [assigned with number] three would be prior to fire [assigned with number] two; if we say that metal comes from earth, then earth [assigned with number] five would appear before metal [assigned with number] four. Even if fire's number two were prior to earth's number five, between these two numbers there are number three and number four. How then does fire or number two generate earth or number five? In numerical order, number three, wood, is behind number one, water, but between them there is number two, fire. How can wood thus be produced by water or number one? Thus, the numerical order of the five phases has no meaning at all.¹¹⁰

Again, by scholastic method Ricci found out that there is no correlation between the mutual production of their five phases and their assigned numbers related to Heaven and Earth in the tradition of *Yijing* learning.

7.1.2. Physiologico-Ethical Argument against the Five Phases Theory

As we have seen above, before the Jesuits came to China, Zhu Bi, Zhang Xingcheng and Zhu Yinlao used the “mother-child” or the “husband-wife” analogy to establish a relation between the four forms and five phases theories. What Ricci did was different in two ways: First, Ricci adopted a physiologico-ethical argument to criticize the contradiction inherent in the five phases theory. Second, he chose the patriarchal example of father-son relationship, one of the five ethical relationships in Confucianism, and extended it to the relation between grandfather, father, and son.

According to the mutual production order of the five phases theory, wood comes from water, and wood produces fire. However, according to the conquest order of the five phases theory, water conquers fire. By making an analogy between the relationship between water, wood, and fire on the one hand and that of between grandfather, father, and son on the other, Ricci questioned the two contradictory results obtained by these sequences:

¹¹⁰ Ibid.

水既生木，而木生火，水乃祖，火乃孫，何祖（孫）如此不像？何其祖之如此不仁，恆欲滅孫也耶？

As water brings forth wood, and wood produces fire, then, because water is the grandfather and fire the grandson, how come that grandfather and grandson are so dissimilar to each other? Why is the grandfather [usually supposed to be benevolent to his grandson] so heartless to his grandson and always wants to destroy him?¹¹¹

In my opinion, the above quotation implies two sophisticatedly designed arguments in the encounter between Aristotelian natural philosophy and Neo-Confucianism (including the five phases theory and Confucian ethics). Based on Aristotelian natural philosophy Ricci used the scholastic method of analysis to build up the following two arguments against Neo-Confucianism.

First, let us start with the questions why grandfather (as water) and grandson (as fire) are so dissimilar to each other. According to Aristotelian natural philosophy, nature has its own guiding principle or inner purpose, which will be reproduced from one generation to the next. The female contributes the matter, whereas the male provides the living principle.¹¹² Thus, in the generation of offspring, the male plays the dominant role. The guiding principle passes the grandfather's form (or face) to the father, and the father to the son. Therefore, grandfather and grandson should resemble each other to some extent. However, in Ricci's interpretation of the five phases theory the grandfather is water with its qualities of coldness and wetness, and the grandson is fire with its qualities of hotness and dryness. Hence, in Ricci's view, they possess completely opposing qualities, and in no way share similar qualities or forms.

Second, why does the grandfather "always want to destroy his grandson?" According to Confucian ethics, the grandfather is supposed to be benevolent (*ren*) to his grandson, hence, for Ricci, one can not understand why the grandfather (water) would always want to destroy his grandson (fire). As we have seen above, grandfather and grandson possess completely opposing qualities. Just like water conquers fire, not only does the grandfather (as water) not behave benevolently to his grandson as he should, he also always wants to conquer his grandson.

¹¹¹ Ibid.

¹¹² Aristotle (1984), *On the Generation of Animals*, book 1, chap. 21, 729b1ff, pp. 1132ff.

7.2. Ricci's Use of the Four Elements Theory to Replace the Five Phases Theory

As mentioned above, after Shao Yong, many Chinese literati excluded metal and wood from the four forms of the Earth. So did Ricci. In the section *Si yuanxing lun*, Ricci borrowed the Chinese term “phase” (*xing* 行) to introduce three of the four Aristotelian elements, i.e. water, fire, and earth, as primary phases or simple elements (*yuanxing* 元行). Since many things are not composed simply of metal or wood, they cannot be regarded as simple elements according to Aristotelian natural philosophy:

所謂行者，乃萬象之所出，則行為元行，乃至純也，宜無相雜，無相有矣。故謂水、火、土為行，則可。如以金、木為元行，則不知何義矣。試觀萬物之成，多不以金、木焉，如人蟲鳥獸諸類是也，則金、木不得為萬物之達行也。

The so-called phase is that from which the myriad phenomena come; hence these phases are primary phases [simple element], for they are of utmost purity, not being mixed with anything, nor sharing in each other. Thus it is admissible to speak of water, fire, and earth as [primary] phases. But what reason would there be to regard metal and wood as primary phases? If one, for instance, examines the composition of the myriad things, such as human beings, insects, birds, and animals, then one will readily see that most of them are not composed of metal and wood. Thus, metal and wood clearly do not constitute [primary] elements of the myriad things.¹¹³

Naturally, Ricci intended also to introduce the fourth Aristotelian element, air, with which he wanted to replace the traditional notion of *qi* 氣. Thus, in the *Qiankun tiyi* he presented a very different interpretation of this character in order to challenge the Chinese literati's traditional view.

First, Ricci disagreed with the Confucian tradition connecting *qi* and morality. Since Ricci had translated the Four Books into Latin, including the book of Mencius (*Mengzi* 孟子), he knew that Mencius had claimed that a gentleman could improve his morality through “nourishing *qi*” (*yangqi* 養氣). Perhaps, in order not to confuse air with *qi*, Ricci pointed out that air is a simple element, which differs from the *qi* mentioned by Mencius.¹¹⁴

¹¹³ Ricci (1983-), p. 761.

¹¹⁴ Ibid., p. 764, “Jin suowei qizhe yu Mengzi dui zhi zhi qi bu tong” 今所謂氣者於孟子對志之氣不同 (Now on the so-called air as being different from Mencius' *qi* of will).

Second, Ricci opposed the five phases theory derived from *yin/yang*, and planned to replace it with the four elements theory. Since Chinese literati thought that Heaven is empty, Ricci wanted to persuade them to accept the Aristotelian four elements theory, especially the inclusion of air. He enumerated several examples to prove the existence of air:¹¹⁵

(1) As boats can float on water, birds can fly, for they rely on air;¹¹⁶ (2) both human and beasts are alive, but for this they need to breathe air;¹¹⁷ (3) the collision of things creates sound, which proves the existence of air;¹¹⁸ (4) Ricci also mentioned Huang Mianzhai 黃勉齋, Zhu Xi's disciple and son-in-law. According to Ricci, Huang Mianzhai was a plenist. He thought that there is no empty space between Heaven and Earth. In fact, we are surrounded by air. In cold weather, a person taking off his clothes will immediately feel surrounded by cold air. In a room with two opposite doors, if one moves one of them, it will cause movement in the other.¹¹⁹

Without guidance from Chinese literati, Ricci could not have known what Huang Mianzhai had written, let alone referred to his ideas. Therefore, the interaction between Ricci and Chinese literati offered him opportunities to draw evidence not only in favor of the four elements but also against the five phases theories.

7.3. "Four Elements as *Ti* or *Yuan*, Five Phases as *Yong* or *Liu*"

Eventually, it is worth noting that by using two traditional analogies, *ti/yong* and *yuan/liu*, Ricci made a creative borrowing or appropriation in dealing with the relationship between four elements and five phases theories. Ricci was the first western literatus to endeavour to investigate whether the four elements or the five phases came first into being. According to Ricci, there is a temporal order among the four elements, human beings, and five phases: First came the four elements, then human beings, while the five phases came last.

Ricci was, of course, familiar with the Holy Scriptures. The Bible contains an account of the creation in the opening chapters of Genesis, in which the firmament separates water in the terrestrial area from waters in the celestial area. In the *Qiankun tiyi*, Ricci made clear that the four elements were created by God at the very beginning of creation.¹²⁰ It was only on the sixth day that God created man. Thus, the four elements came into being earlier than men.

¹¹⁵ Ibid., p. 763.

¹¹⁶ Ibid.

¹¹⁷ Ibid., pp. 763-764.

¹¹⁸ Ibid., p. 764.

¹¹⁹ Ibid.

¹²⁰ Ibid., p. 762.

Ricci had knowledge also of the *Shangshu* (Book of Documents). After the creation of human beings, countries, and regions began to develop their own histories. The *Shangshu* records the histories of Yao 堯 and Shun 舜, as well as of the Xia, Shang, and Zhou dynasties. During the reign of the legendary rulers Yao and Shun there was a huge flood which Gun 鯀 was assigned to deal with. The *Hongfan* chapter informs us that Gun failed because of his misuse of metal, wood, water, fire, and earth.¹²¹ Shun exiled Gun and replaced him with his son Yu 禹, who succeeded in solving the problem. Thus Shun invited him to make plans for the country. In the first paragraph of the *Dayu mo* 大禹謨 (The Counsels of the Great Yu) chapter, Yu is mentioned as saying that a good ruler should concern himself with the people's livelihood by controlling the *liufu* (six storehouses)—water, fire, metal, wood, earth, and grain—for they are basic stuff for daily life.¹²² Before Ricci, both Zhang Xingcheng and Wang Tingxiang already thought that the five phases and *liufu* are related to the stuff used for daily life. Wang Tingxiang investigated the earliest mention of *liufu* in the *Yugong* 禹貢 (Tribute of Yu) chapter and of the five phases in the *Hongfan* chapter of the *Shangshu*, for they were necessary materials for the livelihood of the people.¹²³

For Ricci, the *Shangshu* offered him some literary evidence suggesting that the five phases or the *liufu* came into being later than man, not to mention the four elements. It is not surprising that he reached the following conclusion:

吾觀古唐虞開物，大禹陳謨特以與穀列之為六府。只云其切於民生者，未嘗謂水火金木土為元行質，萬物之本也。

I [read in the *Shangshu*] about the inception of things by Yao and Shun, and noted that only in the “Counsels of the Great Yu” is grain put together [with the five phases] to become the *liufu* (six storehouses). But it is only said that they are crucial for the people's livelihood, and nowhere are metal, wood, water, fire, and earth called primary phases and origin of the myriad things.¹²⁴

This is somewhat consistent with the tradition started by Shao Yong in which water, fire, earth, and stone are considered to be the four forms (or substances) and the five phases their functions. From the analysis in the last section, I believe that Ricci did indeed learn from the traditional view of “the four forms as *ti* and

¹²¹ “Then Jizi 箕子 said, I heard in the past in order to block the flood, Gun muddled wildly the five phases.” See *Shangshu zhengyi* 尚書正義 (Commentary and Subcommentary to the Book of Documents), juan 12, “Hongfan di liu”, p. 187.

¹²² Ibid., juan 4, “Dayu mo di 3”, p. 135.

¹²³ Wang Tianxiang (1989), juan 33, “za zhu”, “bian 12 shou”, “wuxing bian”, p. 597.

¹²⁴ Ricci (1983-), p. 761.

five phases as *yong*". He not only borrowed or appropriated it, but also transferred it into "the four elements as *ti* and the five phases or *liufu* as *yong*", as expressed by a Chinese literatus:

吾意貴邦所談四元行，是乃五行、六府之體焉。我古唐虞謂五行、六府，是乃四體之用焉。世儒欲混之，而不分體用，真不可矣。

In my opinion, the four elements of which [the people of] your countries speak are simply the substances of the five phases or six storehouses. The so-called five phases or six storehouses of which Yao and Shun spoke in antiquity are simply the functions of these substances. Nowadays Confucians want to mix [the four elements with the five phases] and do not differentiate between substances and functions, does it really work?¹²⁵

Yuan/liu is another often used analogy, indicating that each river or flow has its own origin. Furthermore, by means of analogical reasoning on origin and flow, Ricci transferred the formula "four elements as *ti* and five phases as *yong*" into "four elements as *yuan* and five phases as *liu*". Thus, the five phases become the extended functions of the four elements:

茲行也，溯其原，則四之以立體；別其流，則五之以達用。

As for the *xing* [elements or phases], if one traces back their origin, then they were divided into the four [elements] to establish the substances; if one differentiates their flow, then they were divided into the five [phases] to become their extended functions.¹²⁶

In the *Taixi shuifa* 泰西水法 (Western Techniques of Hydraulics), published in 1612, Sabbatius de Ursis (in Chinese Xiong Sanba 熊三拔, 1575-1620) echoed Ricci's idea by claiming that earth, water, air, and fire are simple elements, out of which the myriad things are composed.¹²⁷

¹²⁵ Ibid., p. 764.

¹²⁶ Ibid., pp. 766-767.

¹²⁷ "When the Creator made Heaven, Earth and the myriad thing, this resembles a great craftsman building a palace, ... the Creator is omnipotent and created things from nothing. At first, he created the four elements: first is earth, second is water, third is air, fourth is fire. Then the myriad things were composed of these four elements." See De Ursis (1965), juan 5, "shuifa huo wen", p. 1a.

8. Conclusion

In the late Ming, in the encounter of Aristotelian natural philosophy with the Chinese natural philosophy of *qi*, or the Aristotelian-Ptolemaic worldview held by Jesuits with that of Neo-Confucianism, a competition arose between theories of the four elements and the five phases. Not only Ricci reflected on the relationship between these two concepts, but this was also discussed by Xiong Mingyu 熊明遇 (1579-1649)¹²⁸ and Fang Yizhi 方以智 (1611-1671).

In the section of *sixing wuxing shuo* 五行五行說 (Views on the Four and Five Phases) of *Wuli xiaoshi* 物理小識 (Notes on the Principles of Things), Fang Yizhi raised the question as follows:

問：中國言五行，太西言四行，將何決耶？愚者曰：豈惟異域，邵子嘗言水火土石，而畧金木矣。地藏水火，分柔土剛土，為土石也。朱隱老曰：四為體，五為用。金石同體，言金而石隱矣。

[Someone] asked: “Chinese [literati] stress the five phases, while western [Jesuits] emphasize the four phases [i.e., the four elements]. How to determine which one is correct?” The Fool said: “Not only people from different territory [hold such views, but formerly] Master Shao also spoke of water, fire, earth, and stone, by omitting metal and wood. Water and fire are contained in the Earth, and earth can be divided into soft earth and hard earth, that means earth and stone.” Zhu Yinlao said that “the four [earthly forms] are the substances, and the five [phases] are the functions. Metal and stone share the same substance; when speaking of metal, this implies that [it is] hidden in stone.”¹²⁹

Fang Yizhi, who called himself ‘the Fool’ (*Yuzhe* 愚者), was a Ming loyalist. In the above quotation, he indicates that Shao Yong started the tradition of the four forms of the Earth by excluding metal and wood, and that Zhu Yinlao stressed that “the four [earthly forms] are the substances, and the five [phases] are the functions.” In other words, the formula “the four [forms] are substances, and the five [phases] functions” has its own history, which can be traced back to Shao Yong. Thus, after having uncovered the alternative tradition started by Shao Yong and its historical connection to Ricci, I would like now to highlight several historically significant aspects of this paper:

First, according to Chen Yufu, contrasting with Buddhism, Shao Yong developed a very special metaphysics for Confucianism by means of the pre-

¹²⁸ Hsu Kuang-Tai (1999).

¹²⁹ Fang Yizhi (1983-), juan 1, “tian lei”, “sixing wuxing suo”, p. 759.

phenomenal diagrams of the *Yijing* (先天易圖 *xiantian Yi tu*).¹³⁰ In my opinion, a very special aspect of his pioneering metaphysics is his emphasis on the number 4. In doing so, in the *HJJS*, he made a very important numerological turn, from five to four, and initiated the tradition of the four forms of the Earth to replace the five phases. This prepared the ground for a tradition that allowed Ricci's borrowing or appropriation in the early seventeenth century.

Second, there were two kinds of analogical patterns used for dealing with the relation between the four forms and the five phases. One is *ti/yong*, the other is physiological (or physiologico-ethical). Shao Bowen was the first to use the analogy of *ti/yong* to establish a relationship between the four forms and five phases. He also connected the notions of *xiantian* and *houtian* with the analogy of *ti/yong* relating to the four forms and five phases. Later Zhu Bi and Zhang Xingcheng highlighted the relative meanings of *ti/yong*. Zhu Bi began to use a physiological analogy to connect the differentiation between *xiantian* and *houtian* with the relation between the four forms and five phases.

Third, when relating the four forms with the five phases, Shao Bowen was also the first to start to look for historical evidence from the Five Classics, especially from the *Hongfan* chapter, claiming that the five phases appeared much later than the four forms of the Earth. By using evidence from the *Shangshu* implicitly, Zhang Xingcheng also came to the conclusion that the four forms came first. Only when the ancients dropped stone from them and added metal and wood did they arrive at the five phases. Later, because of its usefulness, they added grain to the five phases to form the *liufu* or six storehouses. In the mid Ming period, Wang Tingxiang pointed out explicitly that the earliest mention of the five phases occurred in the *Hongfan* and of the *liufu* in the *Yugong* (Tribute of Yu) chapter.

Fourth, with the Jesuits' transmission of Aristotelian natural philosophy, resulting in an encounter of the Jesuit view of air with the Neo-Confucian view of *qi*, the theory of the four elements became an alternative explanatory pattern in contrast to that of the five phases. Ricci's focus, however, was the difference between the four elements and five phases rather than that between the four forms and five phases. Due to Shao Yong's establishment of a tradition against the five phases theory, through instruction by Chinese tutor(s), discussions between Ricci and Zhang Huang or his disciples, and Ricci's teaching natural philosophy to Chinese literati, Ricci not only knew of the five phases as recorded in the *Shangshu* and in *Yijing* studies, but also of critical arguments against the five phases and the relationship between the four forms and five phases. By means of scholastic analysis, Ricci found evidence in favour of the four elements, against the five phases theories, and made use of his cross-cultural borrowing and appropriation to back up his arguments.

Fifth, in the transmission of western learning in the late Ming, Ricci was the first western literatus to initiate an ideological rhetoric comprising western learn-

¹³⁰ Chen Yufu (1979), pp. 168-169.

ing and Chinese learning in terms of two traditional Chinese analogies: *ti/yong* and *yuan/liu*.

As a matter of fact, Ricci was a pioneer, since, before it was claimed, from the Ming-Qing transition, that western learning had its source in China (*xixue zhongyuan* 西學中源) and, in the late Qing period, that Chinese learning was considered as *ti* and western learning as *yong* (中體西用 *zhong ti xi yong*), and on the basis of the legacy of Shao Yong, from which Ricci made his cross-cultural borrowing and appropriation of the “four forms as *ti* and five phases as *yong*”, he transferred this pattern into the formula “four elements as *ti* and five phases as *yong*”. He was also the first to postulate the notion of western [learning of the four elements as] *ti* and Chinese [learning of the five phases as] *yong* (*xi ti zhong yong* 西[方四行為]體、中[國五行為]用). Moreover, shifting from the analogy of *ti/yong* to the analogy of *yuan/liu*, he made the claim of western [learning of the four elements as] *yuan* and Chinese [learning of the five phases as] *liu* (*xi yuan zhong liu* 西[方四行為]源、中[國五行為]流).

By regarding the “western four elements as *ti* and the Chinese five phases as *yong*” or the “western four elements as *yuan* and the Chinese five phases as *liu*”, Ricci was the first to start a new interpretative conflict between western learning and Chinese learning in the early seventeenth century. It should be stressed here that prior to any declaration of *xixue zhongyuan*, Ricci had already brought to the fore the problem of *yuan/liu* and its hierarchical relation to western learning and Chinese learning. Contrary to the later popular view of *xixue zhongyuan*, however, Ricci stressed the formula “western [learning of the four elements as] *yuan* and Chinese [learning of the five phases as] *liu*”, i.e. *xi yuan zhong liu*. As a matter of fact, he might have triggered the first shot in the ideological battle on which came first: *xixue zhongyuan* or *xi yuan zhong liu*.

Abbreviations

<i>HJJS</i>	Shao Yong, <i>Huangji jingshi</i> 皇極經世
<i>HJJS guanwu waipian yanyi</i>	Zhang Xingcheng, <i>Huangji jingshi guanwu waipian yanyi</i> 觀物外篇衍義
<i>HJJS jie qishu jue</i>	Zhu Bi, <i>Huangji jingshi jie qishu jue</i> 解起數訣
<i>HJJS shu</i>	Shao Yong, <i>Huangji jingshi shu</i> 書
<i>HJJS shu shuo</i>	Zhu Yinlao, <i>Huangji jingshi shu shuo</i> 書說
<i>HJJS shu zhuan</i>	Huang Ji, <i>Huangji jingshi shu zhuan</i> 書傳
<i>HJJS suoyin</i>	Zhuang Xingcheng, <i>Huangji jingshi suoyin</i> 索隱
<i>WSKQS</i>	<i>Wenyuange siku quanshu</i> 文淵閣四庫全書

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