

How Physical Laws Were Understood in Mid-19th Century East Asia: A Comparative Study of Choe Han-gi and Nishi Amane

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Abstract

This article analyzes the work of two Neo-Confucianists, Choe Han-gi (1803–1877) and Nishi Amane (1829–1897), who endeavored to construct the metaphysical ground of modern scientific knowledge in Korea and Japan during the mid-19th century. The influx of Western scientific knowledge into East Asia triggered a reinterpretation of Neo-Confucianism, which had been the main body of traditional knowledge. Nishi and Choe designed the philosophical underpinning that allowed acceptance of modern Western scientific knowledge. This involved division of the *ri* (理, principle) of Neo-Confucianism into two different concepts, the laws of the physical world and those of the human world. Choe's and Nishi's concepts of the laws of the physical world were clearly similar to the laws of nature of modern Western science. Although Nishi and Choe found a way to reinterpret Neo-Confucianism and to construct the metaphysical ground for acceptance of modern Western science, by dividing *ri*, the significance is that they tried to reconnect the laws of the physical world with those of the human world. This study will attempt to demonstrate various prototypes for the metaphysical ground of modern scientific knowledge existed in mid-19th century East Asia.

Key words: Nishi Amane, Choe Han-gi, the laws of the physical world, the laws of the human world, Neo-Confucianism

1. Introduction

The Opium War (1840) was the historical turning point that drastically caused a vast change in East Asia. After the war, Western influences began to impact East Asian thinking in many fields, including politics, economics, culture, science, and philosophy. At the same time, East Asian countries were forced to modernize quickly in order to survive the overwhelming pressure of Western power. This article analyzes the contributions of two Neo-Confucianists, Choe Han-gi 崔漢綺 (1803–1877) and Nishi Amane 西周 (1829–1897), who endeavored to construct the metaphysical ground of modern scientific knowledge in Korea and Japan during the mid-19th century.

Maruyama Masao, the noted historian of Japanese political thought, identified the prototype of Japanese modern scientific knowledge in the thoughts of Fukuzawa Yukichi

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福澤諭吉 (1835–1901). According to Maruyama, the real value of Fukuzawa's "practical science (*jitsugaku* 実学)" was the epistemological transition from moral principles (*dōri* 道理) to physical laws (*butsurei* 物理). It was only after Fukuzawa's introduction of Western sciences as *jitsugaku* that scientific pursuit of the natural world became an enterprise that was independent of social implications. Prior to this, physical laws were closely linked to society and, indeed, were considered to be no more than a reflection of human and moral principles.

Under the staunch political system of Tokugawa Japan (1603–1867), the intellectual realm was securely Confucian. This form of Japanese Confucianism was an adaptation of the teachings of Zhu Xi 朱熹 (1130–1200). Although some Japanese scholars were venturing to learn about new schools of thought, such as the National Learning School (*Kokugaku* 国学), the Wang Yang-ming School (*Yōmeigaku* 陽明学), and Dutch Studies (*Rangaku* 蘭学), throughout the long Edo period, and until the arrival of American naval vessels in 1853, the center of Japanese intellectualism, as a whole, was Zhu Xi Confucianism. Japanese Neo-Confucianists, according to the Maruyama viewpoint, researched the natural world in order to justify the moral (human) principles of Neo-Confucianism.¹ In other words, the Edo-Confucianist studies about the natural world supplied the philosophical underpinnings for the political system of the Tokugawa family military government, as well as the moral principles established by the Tokugawa regime. For instance, the distinction between social classes could be justified by a natural order, such as the distinction between heaven and earth. Therefore, the position of the Tokugawa government as the moral leader was justified by the existence of an unchanging natural order.

At this point in history, the Japanese Neo-Confucianist view regarding the natural world was obviously different from the modern view held by Western scientists, as Maruyama pointed out. Modern Western scientists viewed laws of nature as independent of any political or moral framework and sought to identify these laws by studying the natural world itself. Maruyama highly valued Fukuzawa's thought because Fukuzawa suggested the philosophical underpinning for independently pursuing natural and human principles. "The epistemological transition from moral principles to physical laws," which Maruyama derived from Fukuzawa's thought, in other words, indicated the division between the laws of the human world and those of the physical world.

It was remarkable that both the natural and the social sciences could then pursue their respective principles, freed from the pressure to yield a common product. If human society was no longer a reflection of the invariable structure of the universe, then people would not need to accept the inevitable hierarchy of that society.

According to Maruyama, however, the division between human and natural principles, in fact, had been discussed even in the time of the early Edo scholars. Its pivotal figures, Ogyū Sorai 荻生徂徠 (1666–1728) and Dazai Shundai 太宰春台 (1680–1747), criticized the Neo-Confucianist's world-view concerning human and natural principles,

¹ Maruyama Masao 丸山眞男, "Fukuzawa ni okeru jitsugaku no tenkai: Fukuzawa Yukichi no tetsugaku kenkyū josetsu 福沢における実学の転回: 福澤諭吉の哲学研究序説 (The Conversion of Practical Science by Fukuzawa: The Prolegomena of the Research on the Philosophy by Fukuzawa Yukichi)," *Tōyō Bunka Kenkyū* 東洋文化研究, vol. 3 (1947).

and Nishi Amane played an important role in dividing the two principles.² Those who intended to eliminate the metaphysical outlook of Neo-Confucianism undertook a reinterpretation of the main concept of Confucianism, *ri* (理, principle). Maruyama insisted that the Edo scholars had attempted to conceptualize two kinds of *ri*, *butsurei* (物理, the laws of the physical world) and *shinri* (心理, the laws of the human world). Minamoto Ryōen also asserted that Nishi Amane greatly contributed to the introduction of rationalism to Japan, by dividing *ri* into *butsurei* and *shinri*.³ Nishi was not a scientist, and his primary concern was human society and morality,⁴ rather than natural science. Nevertheless, the philosophical reinterpretation of *ri* by Nishi encouraged the study of natural principles among Meiji intellectuals.

Japanese studies, including those by Maruyama and Minamoto, in turn, influenced Korean studies that retraced the emergence of modern scientific thought in the late Choseon 朝鮮 Dynasty (1392–1910).⁵ Questions similar to those posed by Maruyama on the history of Japanese thought were analogously posed on the history of Korean thought: Was there any movement among Korean thinkers that attempted to overcome the metaphysical nature of Neo-Confucian thought and to substitute and assimilate modern scientific thoughts?; And if there was, who were the principal contributors engaged in this task? Yi Woo-sung, who emphasizes the dynamism residing within the doctrines of Zhu Xi in the late Choseon Dynasty, was one of the historians who have asked this type of question. He stated that Choseon Thought progressed from practical science (實學) to enlightenment thinking (*Gaehwasasang* 開化思想) during the 19th century and that Choe Han-gi acted as an intermediary for this progression in thinking.⁶ Park Jong-hong endeavored to de-

² Maruyama Masao and Kato Shūichi 加藤周一, *Honyaku to nihon no kindai* 翻訳と日本の近代 (The Translation and Modernization of Japan) (Tokyo: Iwanami Shoten, 1998), p. 104.

³ See Minamoto Ryōen 源了圓, “Nishi Amane ni okeru ri no kannen no tenkai: Tokugawa jidai ni okeru gōriteki shii no hatten 西周における理の觀念の転回: 徳川時代における合理的思惟の発展 (The Conversion of the Idea of Principles in Nishi Amane: The Development of Rational Thought during the Tokugawa Period),” *Kokoro* 心, vol. 23 (1970), pp. 81–95. Albert Craig also stated that “the philosophical breakdown of *ri* into science and ethics reached its endpoints made by Nishi Amane.” Albert Craig, “Fukuzawa Yukichi: The Philosophical Foundations of Meiji Nationalism,” *Political Development in Modern Japan*, ed. by R.E. Ward (Princeton: Princeton University Press, 1968), p. 114n.

⁴ Thomas R. H. Havens, *Nishi Amane and Modern Japanese Thought* (Princeton: Princeton University Press, 1970), p. 137.

⁵ Kim Yong-ok 金容沃, *Dokki hakseol* 讀氣學說 (Theory of Reading Kī) (Seoul: Tongnamu, 2004), p. 107. Kim insisted that modern Korean studies have been strongly affected by the frameworks of Japanese historians such as Maruyama, and it seriously distorted Choe Han-gi's thought. I have also read criticisms of Maruyama's framework in Japanese studies. Inoue Atsushi stated that Maruyama's framework about modern Japanese history has excessively affected Nishi Amane studies, so it disturbed the correct comprehension of Nishi's work. Inoue Atsushi 井上厚史, “Nishi Amane to jukyō shiso: *ri* no kaishaku wo megutte 西周と儒教思想: 理の解釈をめぐって (Nishi Amane and Confucianism: about the interpretation of principle),” *Nishi Amane to nihon no kindai* 西周と日本の近代 (Nishi Amane and Japanese Modernization) (Tokyo: Perikansha, 2005), pp. 146–149.

⁶ Yi Woo-sung 李佑成, “Choe Han-gi ui gage wa yeonpyo 崔漢綺의 家系와 年表 (The Family and Choe Han-gi's Chronology),” *Yu Hong-yeol baksa hoegap ginyeom nonchong* 柳洪烈博士回甲記念論叢 (Essay for the 60th anniversary of Dr. Yu Hong-yeol), (1971). Recently, the concept of *Jitsugaku* has been a hot issue among Korean scholars. It is difficult to define the concept precisely because it should be understood in each context of Korean and Japanese studies. However, it might be defined as some tendency of anti-Neo-Confucianism and a step toward modern scientific thought. Please see Minamoto's work on the history of the concept of *Jitsugaku* in Japan. Minamoto Ryōen, *Kinsei shoki jitsugaku shiso no kenkyū* 近世初期実学思想の研究 (The Studies about

fine Choe's thought as empiricism, comparing him to John Locke (1632–1704), who was known as the first British empiricist philosopher.⁷ Since then, there have been many studies that have aimed to understand Choe Han-gi's way of thinking. For example, Heo Nam-jin stated Choe's work as “an epoch-making work toward a modern world-view,” while Kim Yong-heon illustrated that the essence of Choe's work was “the epistemological transition from moral principles (*yunri* 倫理) to physical laws (*mulri* 物理).”⁸ Although few differences emerged from different interpretations of Choe's work —whether it was interpreted as succession or separation from Neo-Confucianism⁹—many Korean studies concurred that Choe Han-gi played a leading role in the transition of thought from Confucianism to Western science¹⁰ and described the metaphysical ground of modern Western science by dividing *ri* of Neo-Confucianism into two different concepts, the laws of the physical world (*mulri* 物理) and those of the human world (*simri* 心理).

The reinterpretation of Neo-Confucianism's *ri* and its division between *butsuri* and *shinri*, which Maruyama derived from Fukuzawa's thought, also functioned as the main framework for understanding Choe's thought. Accordingly, it is certain that the division between the laws of the physical world and those of the human world was regarded as a significant step in the transition of thought from Neo-Confucianism to modern scientific thought in both 19th century Japan and Korea. However, it is my belief that this transition needs to be carefully reconsidered from the following two perspectives: First, the understanding of Choe's and Nishi's thoughts, when limited to only the division between the laws of the physical world and those of the human world, restricts our approach to a wide range of their thoughts and also distorts their ideas regarding the logical constructions of modern scientific knowledge. Second, although Choe and Nishi established *mulri* and *butsuri* by dividing the *ri* of Neo-Confucianism, we also need to establish how similar their *mulri* and *butsuri* were to the physical laws of Western science. To state the conclusion first, it is difficult to state that Choe's concept of *mulri* was the same as the physical laws of modern Western science because, in reconnecting *mulri* and *simri*, he tried to construct a

Jitsugaku at the beginning of Modern Period) (Tokyo: Sōbunsha, 1980), pp. 55–137.

⁷ Park Jong-hong 朴鐘鴻, “Choe Han-gi ui gyeongheomjui 崔漢綺의 經驗主義 (Empiricism by Choe Han-gi),” *Asea Kenkyū* 亞細亞研究, vol. 8, No. 4 (1965).

⁸ Heo Nam-jin 許南進, “Hyegang gwahak sasang ui cheolhakjeok gicho 惠岡 科學思想의 哲學的 基礎 (The Philosophical Underpinning of Choe Han-gi's Scientific thought),” *Hyegang Choe Han-gi* 惠岡 崔漢綺 (Seoul: Yemunseowon, 2005), pp. 229–270. Kim Yong-heon 金容憲, “Jujahakjeok hakmungwan ui haechae wa shilhak 朱子學的 學問觀의 解體와 實學 (The Disorganization of Neo-Confucianist Knowledge and Practical Science),” in *Hyegang Choe Han-gi*, op.cit., p. 188.

⁹ There is a similar story about the Nishi Amane studies in Japan. For example, Koyasu Nobukuni stated that the design of modern knowledge by Nishi was accomplished not by the refutation of Confucianism, but by the critical deconstruction of Confucianism. Koyasu Nobukuni 子安宣邦, “Shushigaku to kindai Nihon no keisei: Tōa Shushigaku no dōchō to ishu 朱子學と近代日本の形成: 東亜朱子學の同調と異種 (Zhu xi School of Neo-Confucianism and the formation of Early Modern Japan),” *Taiwan Journal of East Asian Studies* 臺灣東亞文明研究學刊, vol. 3, No. 1 (2006), p. 91.

¹⁰ For example, see Lee Hyeon-gu 李賢九, *Choe Han-gi ui kicheolhak gwa seoyang gwahak* 崔漢綺의 氣哲學과 西洋科學 (The Studies on Ki-Philosophy and Western Science by Choe Han-gi) (Seoul: Seonggyungwan Daehak Chulpanbu, 2000), p. 16. Ōkubo Toshiaki also stated that Nishi acted as the intermediary between Confucianism and modern knowledge in 19th century Japan. Ōkubo Toshiaki 大久保利謙, *Bakumatsu ishin no yōgaku* 幕末維新の洋学 (The Studies on Western Knowledge in the Last Tokugawa Period and Meiji Restoration) (Tokyo: Yoshikawa Kōbunkan, 1986), p. 102.

unique epistemology that was different from the epistemology of Western science.¹¹ This reconnection of *butsure* and *shinri* was also Nishi's primary goal in his pursuit of unified knowledge, although it was not a focus for Maruyama Masao or Minamoto Ryōen.

In this paper I will argue how Choe's *mulri* and Nishi's *butsure* were different from the Western physical laws and I will show what kinds of scientific knowledge Choe and Nishi tried to construct through the reconnection of *butsure* (*mulri*) and *shinri* (*simri*). In Section 2, I compare *butsure* and *mulri*, which Nishi and Choe obtained through the division of the *ri* of Neo-Confucianism. I show, in Section 3, that range of *butsure* from Nishi is not the same as the physical laws of Western science. In Section 4, I discuss how Nishi and Choe tried to reconnect *butsure* (*mulri*) with *shinri* (*simri*). Comparison of their attempts to reconnect *butsure* (*mulri*) and *shinri* (*simri*) is important, because it clearly points out the common and the different aspects of Nishi's and Choe's work. Although both tried to reconnect *butsure* (*mulri*) and *shinri* (*simri*), their methodology for reconnection differed. This difference indicates that there were diverse ideas about the metaphysical ground of modern scientific knowledge in 19th century East Asia.

2. The Division of *Ri* by Nishi Amane and Choe Han-gi

The introduction of Western scientific knowledge into Japan and Korea became more systematic from the 19th century. The encounters between Eastern and Western learning led Nishi and Choe to reinterpret the doctrine of Zhu Xi, which had previously formed the main body of the official learning of the day. As well, there was additional impetus to construct new metaphysical foundations by which Western scientific knowledge could be understood even by those trained in traditional knowledge. In their reinterpretation projects, attention focused on one of the most important concepts of the Zhu Xi doctrine, *ri*. In this section, I will explain the differentiation of this concept *ri* into two new concepts—*butsure* (*mulri*) and *shinri* (*simri*), and will then discuss the logical foundations of this conceptual division, focusing on the similarities and differences of these new concepts, as proposed by Japanese and Korean thinkers. Kuwaki Genyoku, chairman of the Philosophy Department of Tokyo Imperial University, stated retrospectively that Japanese philosophy during the first Meiji period was clearly affected by the positive empiricism of Western countries and at the same time, was derived from the reformation of Ogyū Sorai, in contrast to the metaphysics and idealism from Zhu Xi Confucianism.¹² One of the most highly regarded thinkers during this critical period in the modernization of Japan according to Kuwaki, was Nishi Amane. Nishi studied Ogyū Sorai's thought when he was young and was affected by

¹¹ Few studies compare *mulri* of Choe and modern Western science. Son Byong-uk argued that *mulri* of Choe was different from the physical principle of Western science in terms of morality. He stated that *mulri* of Choe has some relationship with moral principles. Son Byeong-uk 孫炳旭, "Hyegang Choe Han-gi cheolhak ui kihakjeok haemyeong 惠岡 崔漢綺 哲學의 氣學的 解明 (The studies on *Ki*-Scientific aspects of Choe Han-gi's philosophy)," in *Hyegang Choe Han-gi*, op.cit., p. 297.

¹² Kuwaki Genyoku 桑木嚴翼, *Meiji no tetsugakukai* 明治の哲學會 (The Philosophical Community of Meiji Period) (Tokyo: Chūō Kōronsha, 1943), pp. 86–87.

Western positivism after he studied Western knowledge in the Netherlands.¹³

After the Opium War, the Tokugawa regime faced two kinds of crises, one caused by Western imperial power and the other caused by domestic anti-*bakufu* power. The Tokugawa government needed to strengthen its military power to overcome these crises; consequently, it sent a few navy students to the Netherlands in 1862 to learn how to imitate Western military technology. Nishi Amane was among those sent to the Netherlands at the time. He stayed for two years in the house of Simon Vissering (1818–1888), a leading professor of economics at Leiden. He learned five subjects from Vissering: natural law, international law, constitutional law, economics, and statistics. Nishi was obviously the first Japanese person to come into contact with Western social science. After his return to Japan, Nishi began to construct the metaphysical ground for the introduction of Western modern knowledge. The first thing Nishi had to do was to alleviate the strong influence of Neo-Confucianism. For this reason, Nishi attempted to reinterpret *ri*, the main concept of Neo-Confucianism.

The *ri* of Neo-Confucianism, according to Maruyama, included both the laws of the human world and those of the physical world.¹⁴ It was an irrefutable principle of Neo-Confucianism that the laws of the physical world are affected by the laws of the human world and vice versa. Nishi wrote about the history of the concept of *ri* and asserted that *ri* was a hieroglyphic character originating from the regular grain on the surface of jade (*tama* 玉).¹⁵ The term, *sato* (里) was originated from making furrows by cultivating a field (*den* 田). Therefore, *ri* (理) meant to level a piece of jade grinding it. In other words, it signified a regular pattern or order of things. After undergoing many transformations, *ri* ultimately became the main concept of Confucianism. Zhu Xi, who was a Song Dynasty (960–1279) scholar, conceptualized *ri* as the rational principle that is in everything and that governs the universe. He illustrated that all things have their own *ri* and are brought into being by the union of *ri* and *ki* (氣, vital force), a psycho-physical force that forms the universe.

According to Nishi, however, the *ri* of Neo-Confucianism could underlie a number of superstitious beliefs. The fact that his predecessors did not know that there were two kinds of *ri* in the world could sometimes result in a misunderstanding of the relationship between man and nature.¹⁶ For instance, the predecessors believed that a natural phenomenon such as a solar eclipse could be controlled by the human mind.

Neo-Confucianists thought that everything had heavenly principles (*tenri* 天理)

¹³ When Nishi was young, he desired to study Sorai's works. Please see "Sorai gaku ni taisuru shikō o nobetta bun 徂徠學に對する志向を述べた文 (The Record of Eagerness to Study Sorai's thought)," *Nishi Amane zenshū* 西周全集 (Tokyo: Munetaka Shobō, 1960), vol. 1, pp. 3–4. The collected works of Nishi Amane were published in only the first volume from Nihon Hyoronsha (日本評論社) in 1945. According to Ōkubo Toshiaki, who was the editor of the works, however, Nishi's other manuscripts could not be published until 1960 because of the publisher's private reason. In 1960, Munetaka Shobō (宗高書房) started to republish the collected works of Nishi and finally they were published in four volumes until 1981. In this paper, I use the collected works of Nishi Amane, which was published from Munetaka Shobō.

¹⁴ Maruyama Masao, *Nihon seiji shisōshi kenkyū* 日本政治思想史研究 (The Study about the History of Japanese Political Thought) (Tokyo: University of Tokyo Press, 1952), p. 25.

¹⁵ "*Ri no ji no setsu* 理の字の説 (The Theory about the Letter, *Ri*)," in *Nishi Amane zenshū*, op.cit., vol. 1, pp. 598–599.

¹⁶ "*Chisetsu* 知説 (The Theory about Knowledge) I," in *Nishi Amane zenshū*, op.cit., vol. 1, pp. 452–453.

throughout natural phenomena and moral principles. Therefore, they stated that if man broke it, it was against heavenly principles. But it must be very primitive thought.¹⁷

According to Nishi, Neo-Confucianists thought that human (mental or intellectual) principles were able to affect physical principles. Such a misunderstanding about the relationship between the two principles generated superstitious beliefs. For instance, Chinese Neo-Confucianists thought that when natural disasters such as solar eclipses, droughts, and floods occurred, heaven was displaying the configuration as an admonition because the ruler's government was not proper.¹⁸ Many Japanese people also believed that a typhoon arose to capsize the Mongol warships because of the influence of prayers of the Buddhist monk Nichiren or the *kamikaze* of Ise. Nishi, however, thought that this was clearly superstition and this confusion resulted simply from the misunderstanding of Neo-Confucianists, who did not know there were two kinds of unrelated *ri*.

To resolve this type of confusion, Nishi insisted on dividing *ri* into two concepts, *butsuri* and *shinri*. In *Hyakuichi shinron* (百一新論, New Theory of the Hundred and One, 1874)¹⁹, Nishi stated:

Although we call all principles by the same word, there are two different types of principles. We must realize that they have nothing to do with each other. To identify this distinction, we can call one as *shinri* and the other as *butsuri*.²⁰

To Nishi, the division of *ri* was a crucial point with regard to the transition from the metaphysical stage of Confucianism to the positive stage of Western science and philosophy.²¹ How, then, did Nishi define *butsuri* and *shinri*?

Butsuri is an innate (*sententeki* 先天的) *ri* called *a priori*. In contrast, *shinri* is an acquired (*kōtenteki* 後天的) *ri* called *a posteriori*. After man is born by an innate *ri*, an acquired *ri* naturally develops. Thus, we say this type of process is “a necessity” or an immutable principle. *Butsuri* is just one rule, so it does not change. On the other hand, *shinri* is variable. Accordingly, we can choose one *shinri* from a number of them.²²

Nishi claimed that there was only one *butsuri* in the world, which nobody could change arbitrarily. From the vastness of the universe and the remoteness of the stars to a drop of water or a pinch of the earth, nothing can exist without conforming to physical principles. Even human principles also necessarily derived from physical principles. On

¹⁷ “Shōhaku sakki 尙白筭記,” in *Nishi Amane zenshū*, op.cit., vol. 1, p. 170.

¹⁸ Ibid., p. 170.

¹⁹ *Hyakuichi shinron* was published in 1874, but Asō Yoshiteru stated that *Hyakuichi shinron* must have been written before the Meiji restoration, considering the terms in *Hyakuichi shinron* and information from *Nishi Amane den* 西周傳 (1898) which was written by Mori Ōgai 森鷗外. Asō Yoshiteru 麻生義輝, *Kinsei nihon tetsugakushi* 近世日本哲學史 (The History of Modern Japanese Philosophy) (Tokyo: Kondō Shoten, 1942), p. 110.

²⁰ “Hyakuichi shinron,” in *Nishi Amane zenshū*, op.cit., vol. 1, p. 277.

²¹ Nishi classified the development of knowledge by three stages, theological stage, metaphysical stage, and positive stage. He thought that Confucianism was included in the metaphysical stage and it has to be changed to the positive stage of Western science and philosophy. “Hyakugaku renkan 百學連環 (Links of All Sciences),” *Nishi Amane zenshū*, op.cit., vol. 4, p. 181.

²² “Hyakuichi shinron,” in *Nishi Amane zenshū*, op.cit., vol. 1, p. 278.

the other hand, there are many types of *shinri*, which we can call acquired *ri*. Accordingly, human principles are variable and have to be chosen according to each set of circumstances.

In Zhu Xi Confucianism, the ultimate principle, that which makes all things what they are, is called *ri*. *Ri* in man is called human nature (*sei* 性). Therefore, *ri* is the principles of the external world and, at the same time, the internal nature of man. Man can get to know his *ri* in two ways. One is by intuition, by directly grasping the *ri* within himself through meditation. The other is by active inquiry about the external world, such as *kakubutsu kyūri* (格物窮理, the investigation of things that penetrate the *ri*) or *kakubutsu chichi* (格物致知, the investigation of things and the gaining of knowledge).²³ Because human nature is the same as the principles of the external world, ethics and knowledge are unified in Zhu Xi's theory. According to Zhu Xi Confucianism, human nature is basically good because it naturally derived from heaven.²⁴ However, man is normally alienated from the internal goodness by bad or coarse *ki*. Therefore, the ethical goal of man is the return from human nature alienated by bad *ki* to human nature derived from heaven through self-cultivation. On the other hand, Nishi, who divided *ri* into *butsuri* and *shinri*, thought that *butsuri* is *a priori* and *shinri* is *aposteriori*. The *ri* of Neo-Confucianism was an innate *ri*, but Nishi separated an acquired *ri* from the innate *ri*. Therefore, we can say that Nishi found a way to criticize Neo-Confucianism by dividing *ri* into two different types.

While Nishi was constructing the metaphysical ground for accepting modern Western knowledge in Japan, Choe Han-gi also appeared to be engaged in similar issues to those of Nishi's works. Choe Han-gi wrote voluminous works about mathematics, astronomy, history, politics, and philosophy throughout his life.²⁵ The reason why he was able to write these types of books about natural science was that he was able to read Western science books translated into the Chinese language. He was clearly a man with a keen interest in Western science in mid-19th century Choseon. Although he wrote many books about natural science, the field of epistemology was one of the biggest concerns in his academic life. *Shingitong* (神氣通, Interaction of divine *ki*, 1836) and *Chucheukrok* (推測錄, Record about experience and reasoning, 1836), which he wrote in his early thirties, expressed his unique view about epistemology of things.

Choe Han-gi divided the *ri* of Neo-Confucianism into two different concepts, *mulri* (物理, the laws of the physical world) and *simri* (心理, the laws of the human world). In *Chucheukrok*, he did not employ these terms very often. Instead, he developed, in that treatise, the two new concepts, *yuhaengjiri* (流行之理, the principle that flows forth) and *chucheukjiri* (推測之理, the principle by inference), each of which corresponded to the above two terms. *Yuhaengjiri* and *chucheukjiri*, in Choe Han-gi's thought, were used

²³ See Albert M. Craig, "Science and Confucianism in Tokugawa Japan," *Changing Japanese Attitudes Toward Modernization*, ed. Marius B. Jansen (Princeton: Princeton University Press, 1965), pp. 138–139.

²⁴ Shimada Kenji 島田虔次, *Shushigaku to Yōmeigaku* 朱子学与陽明学 (The Doctrines of Zhu Xi and the Doctrines of Wang Yang-ming) (Tokyo: Iwanami Shoten, 1967), p. 61.

²⁵ Choe Nam-seon 崔南善 (1890–1957), a famous Choseon writer, said Choe Han-gi wrote about a thousand books in his life. Although it might be stretching the truth, it seems to be certain that he wrote many books throughout his life. Please see Gwon O-yeong's work about Choe Han-gi's life. Gwon O-yeong 權五榮, "Choe Han-gi ui saengae wa hakmun pyengryeok 崔漢綺의生涯와學問遍歴 (Choe Han-gi's Life and His Learning)," *Dongyang Cheolhak Yeongu* 東洋哲學研究, vol. 18 (1998), pp. 5–40.

as almost the same concepts as *butsuri* and *shinri*. Although Choe Han-gi often used the terms, *mulri* and *simri* in his treatise, Choe stated that, “The reason why I don’t call *chucheukjiri* as *simri* is that man might be obsessed with forms of *ki* (*hyeonggi* 形氣).”²⁶ It is certain that all things in the universe consist of *ki*. Even some forms, such as matter (*mul* 物) or mind (*sim* 心), consist of *ki*. Just as we call *ri* ‘human nature’ when it is in man, we can call *yuhaengjiri* as *mulri* when it is in the form of matter. Therefore, both *yuhaengjiri* and *mulri* are essentially the natural principles of *ki*. Choe, who can be said a *ki*-monist, always emphasized that all things that have their own forms fundamentally consist of *ki*. However, Nishi’s *butsuri* was a more separated concept from *shinri* than was Choe’s, because Nishi did not provide any link between matter (*mono* 物) and mind (*kokoro* 心).²⁷ How, then, did Choe define *yuhaengjiri* and *chucheukjiri*?

“Nature (*jayeon* 自然)” are *yuhaengjiri* in heaven and earth and “natural (*dangyeon* 當然)” are *chucheukjiri*. A person of learning has “nature” as a standard for studying and “natural” as the studying itself. “Nature” is in heaven, so nobody can increase or decrease it. “Natural” is in man, so everybody can study with it.²⁸

Yuhaengjiri was the order of nature. According to Choe, *ki*, which pervaded in heaven, creates things by its own force. Therefore, the principle by which *ki* flows forth and creates things is called *yuhaengjiri*. On the other hand, *chucheukjiri* was the principle speculated by human mind. As Nishi divided *ri* into two different concepts, Choe also divided it into two concepts, *yuhaengjiri* and *chucheukjiri*. We can see that Choe’s *yuhaengjiri* was similar to *butsuri* and *chucheukjiri* was similar to *shinri* in the following words:

The principle that heavenly *ki* flows forth have their own purpose in each matter, so there is no increase or decrease in the purpose. Inference (*chucheuk* 推測) by the human mind can pursue *yuhaengjiri*. However, human inference is good or bad, faithful or unfaithful depending on the person. Nevertheless, we must consider them *ri*.²⁹

Yuhaengjiri, which is also called heavenly principles, is not changeable. Man has the ability to infer *yuhaengjiri*, so the knowledge that results from human inference is *chucheukjiri*. Human inference consists of direct experience (*chu* 推) and reasoning (*cheuk* 測). Therefore, man gets *chucheukjiri* by direct experience and reasoning about things. Choe stated that everybody is born with the ability of inference. The innate ability to infer things naturally derives from the order of nature, because man is one of nature’s creations. According to Choe, when Mengzi and Zhu Xi stated that men already had all the *ri* in their minds, they were not referring to the universal truth, but just to the innate ability

²⁶ “Chucheukrok,” chap. 3, *Zeungbo Myengnamru chongseo* 增補 明南樓叢書 (Seoul: Seonggyungwan Daehakgyo Daedong Munhwa Yeonguwon, 2002), vol. 1, p. 13. In 2002, the collected works of Choe Han-gi were published in five volumes which were titled *Zeungbo Myengnamru chongseo* in 成均館大學校 大東文化研究院 Seonggyungwan Daehakgyo Daedong Munhwa Yeonguwon. *Myengnamru* 明南樓 was the name of his library. I use those volumes in this paper.

²⁷ I use *yuhaengjiri* and *chucheukjiri* in case of Choe’s *mulri* and *simri* in this paper because I want to distinguish Choe’s *mulri* and *simri* from Nishi’s ones.

²⁸ “Chucheukrok,” chap. 2, in *Zeungbo Myengnamru chongseo*, op.cit., vol. 1, p. 35. Here, the page numbers indicate the numbers from the *Chucheukrok* itself.

²⁹ “Chucheukrok,” chap. 1, in *Zeungbo Myengnamru chongseo*, op.cit., p. 1.

of inference.³⁰ In Choe's theory, therefore, after men come into contact with the external world with their innate ability of inference, they can have *chucheukjiri*. Men might achieve different *chucheukjiri* because their experience and reasoning are not the same.

In conclusion, we can say that Choe Han-gi divided the *ri* of Neo-Confucianism into two kinds of *ri*, as did Nishi Amane, and therefore, he was able to construct the metaphysical ground for pursuing the laws of the physical world and those of the human world respectively.

3. The Scope of *Butsuri* in Nishi Amane

Nishi and Choe divided *ri* into two different concepts to rectify the ambiguity of *ri* of Neo-Confucianism. The establishment of concepts of *butsuri* and *mulri* was important for the construction of the metaphysical ground for adapting the natural principles of Western science. The main subject of Neo-Confucianism was ethics, which constructed the unique theory about a sage. There were two types of sages in Chinese Confucianist history.³¹ One was the sage who civilized the world for the first time and wrote the scriptures to enlighten people. However, after the birth of Neo-Confucianism, the concept of the sage changed to mean men who embodied humanity, justice and morality. Therefore, if man embodied the mentality of a sage, anybody could be a sage.

The primacy of *butsuri* (*mulri*) as a natural law also conditioned Choe's and Nishi's attitudes to the authority of the sages. In the case of Choe and Nishi, the concept of a sage was more humane than that of Confucianism. Nishi stated, "A sage is merely a man who is about 180 centimeters tall and has two eyes, a mouth, and four limbs."³² Comparing the concept of a sage to imagined animals such as a giraffe, a Chinese phoenix and a dragon, Nishi thought that a sage was just a made-up story and there was no reason why we should overly worship a sage. Choe also criticized the adoration of the scriptures, which were regarded as simply the sage's writing. Choe stated, "The *ri* which we can read in all the scriptures is just principles by inference."³³ Choe thought that the physical world, not the scriptures, should be the main framework for pursuing knowledge. In the case of Choe, because sages were men who had sought the truth and found a portion of it, the truth, eventually, was above the sages and open to all men. Accordingly, we can say that *mulri* was the main axis in the Choe's studies. What, then, was Nishi's *butsuri*? In this section, I will focus on how Nishi's *butsuri* functioned in the metaphysical design of modern knowledge.

The article that elaborately illustrates the division between *butsuri* and *shinri* is *Hyakuichi shinron*. The term *hyakuichi* (百一, the Hundred and One) means a unity (*ichi* 一) among the various (*hyaku* 百) moral teachings. *Hyakuichi shinron* was an attempt to specify the range of a new morality for modern Japan,³⁴ centering on two issues: the separation

³⁰ Ibid., pp. 20–21.

³¹ *Shushigaku to Yōmeigaku*, op.cit., p. 20.

³² "Hyakuichi shinron," in *Nishi Amane zenshū*, op.cit., vol. 1, pp. 251–52.

³³ "Chucheukrok," chap. 2, in *Zeungbo Myengnamru chongseo*, vol. 1, op.cit., p. 23.

³⁴ Watanabe Kazuyasu 渡辺和靖, *Meiji shisōshi: jukyōteki dentō to kindai ninshikiron* 明治思想史：儒教的

of ethics from politics and the distinction between human and physical principles.

According to Nishi, everybody has the same human nature, which is unchangeable. If someone asks why it is the same, man can realize it through human feelings such as good and evil.³⁵ When someone suddenly hits us, for example, we will naturally dislike him because everybody has the same nature with regard to a dislike of violence. Even animals such as birds would show the same response against violence. By responding in the same way to good and evil, we can realize that human nature is the same in everybody. Although human principles are flexible, human nature cannot be easily changed. According to Nishi, the feelings resulting from good or evil act as the foundation of self-sufficient rights. When someone hits me, I will dislike him, because I have the self-sufficient rights to protect myself.³⁶ When someone steals my belongings, I will hate him because I have the rights of possession. Therefore, we can agree that nobody should steal another's possessions. The self-sufficient rights and the rights of possession then become the basis of law.

Furthermore, there are different types of human feelings. For example, when you help someone who has had an accident or was drowning, that person appreciates you. In addition, when someone's parents or children die, you feel sad. When someone collapses on the road, you express sympathy. These human feelings become the basis of morals.

In short, while the concept of law is rooted in the term "rights", the concept of morality is rooted in the term "goodness". Thus, law is the rehabilitation of humans, and morality leads humans to the path of virtue.³⁷

In the ideal Confucian society, virtue rested in the hands of the political leaders, and their administrative role was one of moral influence rather than the exercise of actual power.³⁸ The conformity of politics and morals, which considered elite politicians to be moral role models, however, generated distortions of morals because of governors' political purposes. For instance, immoral politicians used to take advantage of their power to spread their favorite ethical teachings into the society. Nishi's resolution of this problem was to separate politics from morality.

Although Nishi identified a range of morality from law, in *Hyakuichi shinron*, it is important that both laws and morals were based on human nature.

Both law and morals belong to the realm of *shinri* and are based on human nature, with no relation at all to physical principles. In this way, we can specify a range of morals.³⁹

According to Nishi, laws and morals belong to the realm of *shinri* and have their origins in human nature. Nishi thought that the moral principles of Neo-Confucianism were justified by natural principles. Therefore, the reason why Nishi located morality in the realm of *shinri* was in order to criticize the moral principles of Neo-Confucianism. At the same time, however, it is important to recognize that he immediately added that we also

傳統と近代認識論 (History of Meiji Thought: The tradition of Confucianism and modern epistemology) (Tokyo: Perikansha, 1978), p. 76.

³⁵ "Hyakuichi shinron," in *Nishi Amane zenshū*, op.cit., vol. 1, p. 282.

³⁶ Ibid., p. 282.

³⁷ Ibid., p. 276.

³⁸ *Nishi Amane and Modern Japanese Thought*, op.cit., p. 119.

³⁹ "Hyakuichi shinron," in *Nishi Amane zenshū*, op.cit., vol. 1, p. 288.

have to refer to *butsurei* to correctly understand morals. Nishi stated that we can distinguish moral instruction in two different ways, through experience and through abstract theory. Experience is based on human nature and is used to establish law, so it has nothing to do with physical principles. In contrast, abstract theory refers to physical principles, because human existence is one of the phenomena of the natural principles.⁴⁰ Nishi stated that morals, in a practical sense, such as etiquette, could be studied by following *shinri*, without *butsurei*. However, because man is one of nature's creations, man should see his place in the natural order. The meshing of the experience and abstract theory of moral instruction might therefore be considered as an attempt to reconnect the divided *butsurei* and *shinri*. Nishi suggested that philosophy "refers to human principles and makes clear the ways of man and nature, and at the same time establishes the methods of moral instruction. To translate this, we call it '*tetsugaku* 哲學 (philosophy)'. It has existed in the West since antiquity."⁴¹

Philosophy became a main part of Nishi's thought, allowing unification of all of the moral principles. The *Butsurei* and *shinri* that Nishi had carefully separated were to be connected again in a new way, through the methods of moral instruction. In Nishi's philosophy, what served as a medium for reconnecting *butsurei* and *shinri* was human nature. Human nature can be identified by the study of the natural principles, because it derived from the order of nature. Therefore, if the truth of human nature, which is that it is the same in everybody, is identified, it can be the basis of morals. Nishi stated that "philosophy must deal with both physical and mental principles,"⁴² thus, the main project of Nishi's philosophy was to understand human nature as the principle for connecting *butsurei* and *shinri*. In this respect, Nishi's *butsurei* could be an important means to identify human nature and to establish the basis of morals.

4. The Boundary between *Butsurei* and *Shinri*: Its Division and Unification

4.1. Nishi Amane and the Meiji Thinkers

According to *Hyakuichi shinron*, *shinri* is variable, but there is only one *butsurei* in the world. However, Nishi added that although *shinri* is variable and changeable, in the end it is should reach an invariable universality, like that of *butsurei*.⁴³

We can understand that Nishi endeavored to reinterpret the *ri* of Neo-Confucianism by the following three concepts: (1) the physical principles about matters, and the biological orders such as the birth of human beings; (2) human nature, which is revealed by the feelings of good and evil; and (3) the variable and changeable human principles.

If we consider these three concepts, (1) the physical principles about matters, and the biological orders, such as the birth of human beings, belong to *butsurei* because nobody can change this. For this reason, Nishi referred to it as 'a necessity'. (2) Human nature, which is revealed by the feeling of good and evil, is formed at the same time as human birth. And

⁴⁰ Ibid., p. 288.

⁴¹ Ibid., p. 289.

⁴² Ibid., p. 289.

⁴³ Ibid., p. 286.

(3) the variable and changeable human principles belong to *shinri*.

Even though Nishi divided *ri* of Neo-Confucianism into *butsuri* and *shinri*, he admitted *butsuri* and *shinri* are interrelated. In *Hyakugaku renkan* (百學連環, Links of All Sciences), which was written in 1870, Nishi stated:

There are a father and a son living far away each other. Nowadays, by the progress of *butsuri*, it is easy to meet each other, because there are steamships or steam locomotives. Everybody can get far away in a few days, so the son can meet his father easily every year. In this case, we can agree that *butsuri* affects *shinri*. Therefore, *butsuri* is a more important center of knowledge than *shinri*.⁴⁴

Keeping the progress of Western science in his mind, Nishi claimed that the development of *butsuri* affects *shinri*. However, he admitted that the relationship between *butsuri* and *shinri* is mutual. In other words, *shinri* also affects *butsuri*.⁴⁵ We need to be very careful with this relationship between *butsuri* and *shinri*. Although *ri* had already been changed from a united concept of Neo-Confucianism into divided concepts (*butsuri* and *shinri*) by Nishi, he admitted the interaction between *butsuri* and *shinri*. The reason that they are interrelated with each other is that human nature is derived from *butsuri* and at the same time it forms the basis of *shinri*. In other words, there was a part of human nature that was intermediate between *butsuri* and *shinri*. The aim of Nishi's philosophy was to establish new moral principles, by studying the truth of human nature. Nishi clearly thought that modern Western science was an excellent vehicle for pursuing human nature. In *Seisei hatsuun* (生性發蘊, The Relation of the Physical and the Spiritual), which was written in either 1871 or 1873, Nishi stated:

If we study from physics to chemistry and from chemistry to biology, we can understand the principle of human nature through *butsuri*. By the success of physics and chemistry, we can study anatomy and physiology. Due to the success of anatomy and physiology, we can uncover the mystery of human nature. Therefore, biology is the study of physiology and the principle of human nature at the same time.⁴⁶

The French philosopher Auguste Comte (1798–1857) is thought to have had a major influence on *Seisei hatsuun*.⁴⁷ The boundary between physiology and the principle of human nature must be somewhere within man because man is unity of a body and mind. Therefore, if the boundary can be clarified by biology, *butsuri* will be connected to *shinri*. Nishi thought that the success of biology could make the understanding of human nature possible, because biology was the knowledge to identify *shinri* by studying *butsuri*. This demonstrates that Nishi's belief in natural science was very strong; thus, he tried to construct social science on the foundation of natural science.

So, did Nishi find a principle to bridge the two *ri*? He did not find it in *Seisei hatsuun*, and that is why he did not finish that paper. Furthermore, in *Shōhaku sakki* from Meiji

⁴⁴ "Hyakugaku renkan," in *Nishi Amane zenshū*, op.cit., vol. 4, pp. 36–37.

⁴⁵ Ibid., p. 37.

⁴⁶ "Seisei hatsuun," in *Nishi Amane zenshū*, op.cit., vol. 1, p. 64.

⁴⁷ *Seisei hatsuun* was written by referring to the translations of *A Biographical History of Philosophy* (1857) and Comte's *Philosophy of the Sciences* (1853) by G. H. Lewes.

15 (1882), Nishi confessed that he had not yet found the principle that would connect the principle of human nature (*shinri*) with physiology (*butsuri*), so he decided to handle *shinri* and *butsuri* separately for a while.⁴⁸ Nishi almost gave up on his plan, according to the interpretation of Nishi's philosophy by the historian Koizumi Takashi, after reading James Mill's criticism of Comte's epistemology. Although Mill and Comte were regarded as the typical positivists in the 19th century, there was a great gap between the views of psychology. While Comte tried to understand psychology by biology, Mill recognized the identity of psychology. Nishi, who was obviously affected by Comte's positivism, on this matter, seemed to refer to Mill's theory.

Nishi realized that man was not able to see *butsuri* transcendently, without deducing it from *shinri*.⁴⁹ In the end, Nishi did not find the principle unifying *butsuri* and *shinri* and that meant the construction of his unified knowledge was not delineated.

While Nishi almost gave up on connecting *shinri* with *butsuri*, a new confusion concerning the boundary between the two *ri* in Meiji society arose. Baba Tatsui 馬場辰猪 (1850–1888), who was a lawyer in the Meiji period, insisted that he was able not only to explain political problems, such as despotism and liberalism, but also two main oppositional powers in society, by using the theory of affinity and separation in physics.⁵⁰ Sugiura Jūgō 杉浦重剛 (1855–1924), who studied natural science in England, also argued that he was able to comprehend the principles of human society with the help of the principle of energy conservation and wave theory.⁵¹ Sugiura thought that natural science could be put into practical use to understand the principles of human society. However, the strongest abuse of *ri* came from Katō Hiroyuki 加藤弘之 (1836–1916), who was the representative Meiji evolutionist. Kato pursued scientific monism by trying to explain the laws of the human world in context of the theory of evolution.⁵²

These unique opinions demonstrate the Meiji scholars' enthusiasm for modern Western science.⁵³ As Yamamuro Shinichi indicated, however, in terms of *ri* they reflected the same confusion as Neo-Confucianists, who understood the laws of the physical world through the laws of the human world.⁵⁴ Meiji thinkers such as Baba, Sugihara and Kato tried to understand the laws of the human world through the laws of the physical world. There is no doubt that all of their opinions obviously resulted from the confusion about the

⁴⁸ "Shōhaku sakki," in *Nishi Amane zenshū*, op.cit., vol. 1, p. 167.

⁴⁹ Koizumi Takashi 小泉仰, *Nishi Amane to Ōbei shisō tonon deai* 西周と欧米思想との出会い (The Meeting between Nishi Amane and Western Thought) (Tokyo: Sanrei Shobō, 1989), p. 103.

⁵⁰ Nishida Taketoshi 西田長寿 et al eds., *Baba Tatsui zenshū* 馬場辰猪全集 (Tokyo: Iwanami Shoten, 1987–88), vol. 1, pp. 77–85.

⁵¹ Meiji Kyōikushi Kenkyūkai 明治教育史研究会, ed., *Sugiura Jūgō zenshū* 杉浦重剛全集 (Ōtsu: Sugiura Jūgō Zenshū Kankōkai, 1982–83), vol. 1, p. 749.

⁵² Ogiwara Takashi 荻原隆, *Nakamura Keiu to Meiji keimō shisō* 中村敬宇と明治啓蒙思想 (Nakamura Keiu and Meiji Enlightenment Thought) (Tokyo: Waseda Daigaku Shuppanbu, 1984), p. 15.

⁵³ Although Nishi had a strong interest in natural science, he worried that the absolutism of natural science would be resulted in a loss of moral principles. Yamada Yoshinori 山田芳則, *Bakumatsu Meiji no jugaku shisō no henshin* 幕末・明治期の儒学思想の変遷 (Development of Confucianism during the Late Edo and the Meiji Periods) (Kyoto: Shibunkaku Shuppan, 1998), p. 80.

⁵⁴ Yamamuro Shinichi 山室信一, *Gakumon to chishikijin* 学問と知識人 (Learnings and Intellectuals) (Tokyo: Iwanami Shoten, 1988), p. 487.

boundary between *butsuri* and *shinri*, as did those of the Neo-Confucianists.⁵⁵

Nishi's division between *butsuri* and *shinri* clearly constructed the philosophical underpinning that allowed the adoption of Western knowledge by Meiji Japan. However, it also generated new questions regarding the boundary between *butsuri* and *shinri* and it became the most controversial topic of 20th century philosophy.

4.2. Choe Han-gi and the Epistemology of 'Interaction'

Choe Han-gi divided the *ri* of Neo-Confucianism into two concepts, *yuhaengjiri* and *chucheukjiri*. We have to ask if the concept of *yuhaengjiri* by Choe really approached the Western physical laws, which was divided from the human laws.

Choe Han-gi stated that the human mind did not have any shape but was considered to do "some activity" which was able to infer the principle of things.⁵⁶ According to Zhu Xi, minds and bodies cannot be disconnected as they were in Descartes' mind-body dualism because they both consist of *ki*.⁵⁷ Choe stated that *ki* is divine force (*sin* 神) and divine force is *ki*.⁵⁸ The divine force means an infinitive power for activity. If *ki* is the basis of the origin and change of all things in the universe, is there no difference between man and matter? There is certainly some difference. When *ki* is contained in man, it becomes the divine *ki* (*shingi* 神氣) of man. When *ki* is contained in matter, it becomes the divine *ki* of matter.⁵⁹ The difference between divine *ki* of man and matter results from only the forms such as man and matter, which contain *ki*. Although there are some differences between the forms, it is certain that all things in the universe consisted of divine *ki*. *Ki* is different from matter (*mul* 物) of modern Western science because it has vital force inside itself.⁶⁰ Choe Han-gi thought the human mind and body also consisted of *ki*. Therefore, such *ki*-monism brings about a fundamental difference from modern Western science in terms of epistemology. There was the concept of action and reaction (*kamung* 感應) in traditional *ki*-philosophy. This term, action and reaction, meant the infinitive reaction chain of *ki*, and it was used as the basis of the theory of pulse in the history of Chinese medicine.⁶¹ Choe Han-gi used the term, interaction (*tong* 通), instead of action and reaction, and developed it into a primary

⁵⁵ Yonehara Ken stated that Nishi's *shinri* included moral principles and physical principles. According to Yonehara, if physical principles were more emphasized than moral principles, *butsuri* would control *shinri*. Yonehara Ken 米原謙, *Nihon kindai shisō to Nakae Chōmin* 日本近代思想と中江兆民 (Japanese Modern Thought and Nakae Chōmin) (Tokyo: Shinhyōron, 1986), p. 37.

⁵⁶ "Chucheukrok," chap. 2, in *Zeungbo Myeongnamru chongseo*, op.cit., vol. 1, p. 32.

⁵⁷ Yamada Keiji 山田慶兒, *Shushi no shizengaku* 朱子の自然学 (Zhu xi's Natural Philosophy) (Tokyo: Iwanami Shoten, 2000), p. 429.

⁵⁸ "Injeong 人政," chap. 5, in *Myeongnamru chongseo*, op.cit., vol. 3, p. 9.

⁵⁹ "Shingitong 神氣通," chap. 1, in *Myeongnamru chongseo*, op.cit., vol. 1, p. 8.

⁶⁰ According to Yamada Keiji, *ki* in Chinese thought is different from atoms or particles. He translated it into matter-energy. *Shūshi no shizengaku*, op.cit., p. 82. In Choe Han-gi's philosophy, *ki* is also not material and has the power of movement itself. According to Gun Jang-tae, Choe's concept of *ki* was connected to Chinese *ki*-philosophers rather than Choseon *ki*-philosophers. However, Choe developed the concept of *ki* with modernity. Please see Gun Jang-tae's work to learn about what the difference between Choe and traditional *ki* is. Gun Jang-tae 琴章泰, *Kicheolhak ui jeontong gwa Choe Han-gi ui cheolhakjeok teukseong* 氣哲學의傳統과 崔漢綺의哲學的特性 (The Tradition of Ki-Philosophy and Choe-Han-gi's Philosophical Specialty), in *Hyegang Choe Han-gi*, op.cit., pp. 197–228.

⁶¹ Yamada Keiji, *Ki no shizenō* 氣の自然像 (The View of Nature of Ki) (Tokyo: Iwanami Shoten, 2002), p. 141.

epistemological term in his thinking. Choe argued that interaction was the epistemological process of communication between the human mind and the physical world. The subject of human cognition in Choe's thought was human divine *ki*⁶², so interaction was the process by which human divine *ki* came into contact with the external world. There are diverse interactions between human divine *ki* and the external world by a body, eye, ear, foot, hand, nose, etc. According to Choe, therefore, the process of cognition can be defined as the contact between the human divine *ki* and the external world. If human divine *ki* does not get interaction with the external world, man cannot even recognize the external world. Additionally, Choe divided the process of interaction into two functions, interaction by form and quality (*hyeongjil ji tong* 形質之通) and interaction by inference (*chucheuk ji tong* 推測之通).

All creatures derived from heavens have their own characteristic form and quality. Light interacts with our eyes, sound interacts with our ears, and taste and smell interact with our mouths and noses. Therefore, this process is called interaction by form and quality.⁶³

Choe Han-gi thought that interaction by form and quality was a function of each part of the human body. Interaction by inference was the other function followed by interaction by form and quality. After man accepts information from the external world through interaction by form and quality, that information is analyzed through interaction by inference. On the one hand, interaction by form and quality is the cognitive process between the human mind and the external world through the sensory organs. On the other hand, interaction by inference is the analysis process of the human mind. These two steps of cognition comprised the epistemology of Choe's natural philosophy. The knowledge derived from interaction by form and quality and by inference, *chucheukjiri*, depends on each person because men have different experiences and reasoning.

Matter has its own *ki* and *ri*. Man also has his own *ki* and *ri*. Only *chucheukjiri* can be the matchmaker or the intermediary between matter and him. However, if the matchmaker or intermediary were familiar with him than matter, they would take care of him but alienate matter, and look at him well but have no interest in matter.⁶⁴

The sentence above suggests that human inference should approach the laws of the physical world without any subjective prejudice. If not, human inference would fall into subjective idealism. Of course, this does not mean that human inference should depend on only the laws of the physical world because in that case our inference would fall into objectivism. This thought process might be distinguished not only from the Neo-Confucian world-view, which focused on the natural world in order to justify the moral (human) principles, but also from the tendency of Meiji scholars to comprehend social principles through physical principles.⁶⁵ The cognition in Choe's philosophy was based on interac-

⁶² Choe Han-gi used *ki* and *shingi* without any difference, but he mostly used *shingi* when he expressed the subject of cognition.

⁶³ "Shingitong," chap. 1, in *Myeongnamru chongseo*, op.cit., vol. 1, p. 26.

⁶⁴ "Chucheukrok," chap. 2, in *Myeongnamru chongseo*, op.cit., vol. 1, p. 24.

⁶⁵ Son Byeong-uk thought that this relationship between *mulri* and *simri* by Choe was in the middle of

tion between *ki* and *ki* because the subject and object of cognition both consisted of *ki*.

We should be mindful that Choe used the concepts of interaction and ‘non-interaction (*bul-tong* 不通)’ to distinguish correct cognition from incorrect cognition. When the subject of cognition correctly interacts with the external world, we can call it correct cognition. I have stated that the principle of human inference depends on each person, because each has a different experience and reasoning. In other words, man can grasp better principles by human inference through correct cognition (correct interaction). How, then, can people interact correctly? In other words, how can we judge if human divine *ki* interacted properly with the external world?

Although it is said that *ki* interacted with the other *ki*, we must have experience-based evidence (*jeunghgeom* 證驗) before corroborating it. If it cannot be verified, we cannot corroborate it.⁶⁶

According to Choe, a better principle by human inference depends on correct cognition, and the correctness of human cognition is judged by experience-based evidence. Experience-based evidence involves inspecting man through matter.⁶⁷ After one’s *chucheukjiri* is compared with the *chucheukjiri* of others, if there is some difference, the one’s *chucheukjiri* should be compared to the laws of the physical world. That was the process of experience-based evidence in Choe’s philosophy. Choe added that the agreement between one’s *chucheukjiri* and other’s *chucheukjiri* is easier than the agreement between one’s *chucheukjiri* and the laws of the physical world. Because men have similar *chucheukjiri*, due to their similar organic functions for cognition, one’s *chucheukjiri* can more easily interact with the another’s *chucheukjiri* than it can with the laws of the physical world. Choe expanded the concept of interaction to human principles.

If a person does not impact other people, that person will be satisfied with his own work only and criticize the others’ works. . . If a country does not interact with foreign countries, the people of that country will be satisfied with their own country only and disregard foreign countries. If a person does not interact with people of other religions, that person will be satisfied with his own religion only and exclude the others’ religions.⁶⁸

In short, there is no interaction in any of the previous cases. We can see here that the concept of interaction was expanded from a physical term that described the relationship between human divine *ki* and the physical world, into a sociological term that described the relationship between human divine *ki* and human society.

Choe also claimed that the concept of good and evil was not *a priori*. According to Neo-Confucianism, man’s essential nature is *ri*, so man is basically good. Because man is, however, alienated from goodness by bad *ki*, man should return to the inner goodness by self-cultivation. The concepts of good and evil in Choe’s philosophy, however, were differentiated from those of Neo-Confucianism. After men establish moral principles

Western dualism and the Neo-Confucian world-view. “Hyegang Choe Han-gi cheolhak ui kihakjeok haemyeong,” in *Hyegang Choe Han-gi*, op.cit., p. 294.

⁶⁶ “Shingitong,” chap. 1, in *Myeongnamru chongseo*, op.cit., vol. 1, p. 2.

⁶⁷ “Chucheukrok,” chap. 6, in *Myeongnamru chongseo*, op.cit., vol. 1, p. 44.

⁶⁸ “Shingitong,” chap. 3, in *Myeongnamru chongseo*, op.cit., vol. 1, p. 35.

through social controversies (interaction), they should verify them again by the laws of the physical world.⁶⁹ As Nishi tried to identify the essence of *shinri* with *butsuri* in his philosophy, Choe also tried to verify right and wrong of *chucheukjiri* with *yuhaengjiri*. To attain better *chucheukjiri*, man has to interact with the physical world and approach the laws of the physical world. Therefore, if men want to get better *chucheukjiri*, they should have constant interaction. Interaction was the practical concept with which the laws of the human world were able to approach the laws of the physical world. Finally, when man's interaction is perfect, *chucheukjiri* will be equal to *yuhaengjiri*.

Choe's division between the laws of the human world and the physical world formed the philosophical underpinning that allowed adoption of Western scientific knowledge into Choseon, although it was not a practical success until the late-19th century. Nevertheless, it is important to note that Choe Han-gi also tried to unite the laws of the human world to the physical world. When Nishi tried to reconnect *butsuri* and *shinri* through Comte's philosophy, he realized that man could not reach *butsuri* transcendently, without deducing it from *shinri*. This was the reason why Nishi ceased trying to identify the essence of *shinri* with *butsuri*. Choe Han-gi, however, who fundamentally admitted that it was impossible to reach the laws of the physical world transcendently, thought that the laws of the human world would naturally reach the laws of the physical world through the expansion of human cognition (interaction). Choe's epistemology was clearly unique, even though his epistemology was intuitive and had no specific methodology.

Choe Han-gi stated that the activity of *ki* could be divided into three categories, dynamic change in a body (*ilshin unhwa* 一身運化), dynamic change in a society (*tongmin unhwa* 統民運化), and dynamic change in heaven (*daegi unhwa* 大氣運化) or in other words, man, society, and the universe. Dynamic change in heaven symbolized the category of the dynamic change of *ki* in the universe, and dynamic change in a society symbolized the category of the dynamic change of *ki* in a society. In addition, dynamic change in a body symbolized the category of the dynamic change of *ki* in a body. According to Choe, these three categories have strong relationships with one another, through the interaction of *ki*.

Dynamic change in a society is the center of *ki*-science. If dynamic change in a body is based on the dynamic change in a society, it can be properly controlled. If dynamic change in heaven controls dynamic change in a society, there cannot be any excess. If dynamic change in a body is not based on dynamic change in a society, we cannot achieve perfect virtue or the way or provide good teaching. If dynamic change in heaven does not control dynamic change in a society, we cannot find any standard about learning.⁷⁰

Choe called his own natural philosophy '*ki*-science (*kihak* 氣學)' and thought that the center of his natural philosophy had to be dynamic change in a society, because that is connected to dynamic changes in a body and in heaven. The relationship of these three categories shows the eternal interaction of *ki* and the unification of human and natural principles.

⁶⁹ Ibid., p. 34.

⁷⁰ "Kihak 氣學," chap. 2. in *Myeongnamru chongseo*, op.cit., vol. 5, p. 39.

In conclusion, the main concept of Choe's philosophy was interaction. He thought that the aim of *ki*-science was in the unification of *chucheukjiri* and *yuhaengjiri* by human active interaction.

5. Conclusion

The crisis of East Asian civilization, which resulted from Western imperialistic expansion, triggered the decline of the Neo-Confucianist world-view. Nishi Amane and Choe Han-gi, who tried to construct the metaphysical ground for modern scientific knowledge, began with the reinterpretation of *ri*, which was the main concept of Neo-Confucianism. Nishi Amane, who studied Western knowledge in the Netherlands, constructed the philosophical underpinning that introduced modern scientific knowledge into Meiji Japan. He made it possible for the Japanese to accept modern Western scientific knowledge by dividing the *ri* of Neo-Confucianism into two concepts, *butsuri* and *shinri*. Choe Han-gi, who studied Western science and technology in mid-19th century Choseon, also tried to reinterpret the *ri* of Neo-Confucianism. He also made the adoption of Western scientific knowledge possible by dividing the *ri* of Neo-Confucianism into two concepts, *yuhaengjiri* and *chucheukjiri*. Although their concepts of *butsuri* and *yuhaengjiri* functioned as the philosophical basis for accepting the physical laws promoted by modern Western science, these processes were not their final goal. Nishi and Choe also wanted to reconnect *butsuri* (*yuhaengjiri*) and *shinri* (*chucheukjiri*), which reveals that they constructed a unified knowledge system connecting natural science with human science as an ideal prototype for modern knowledge. Therefore, Choe and Nishi might be considered as thinkers who constructed a unique knowledge system by unifying Confucianism and modern Western scientific knowledge, rather than attempting to progress from Confucianism to modern Western scientific knowledge. Of course, we also have to take into account some differences between Choe and Nishi.

While Nishi Amane tried to reconnect *butsuri* and *shinri* through Comte's philosophy, Choe Han-gi tried to do the same by construction of the new epistemology based on *ki*. At the point at which Nishi admitted the impossibility to see *butsuri* transcendently, without deducing it from *shinri*, Choe thought that *chucheukjiri* could approach *yuhaengjiri* by the expansion of human cognition.

Their constructions were not successful, in the end, because the modern Western knowledge system, based on the division between the laws of the human world and the physical world, was finally institutionalized in Japan in the late 19th century and in Korea in the early 20th century. However, these designs demonstrate that there were various ways of shaping modern scientific knowledge in the mid-19th century.

Appendix

Chinese characters and English meanings of the Korean and Japanese conceptual keywords cited in the paper.

butsuri (物理, the laws of the physical world)
chucheukjiri (推測之理, the principle by inference)
daegi unhwa (大氣運化, dynamic change in heavens)
dō (道, the way)
dōri (道理, human principle)
ilshin unhwa (一身運化, dynamic change in a body)
kamung (感應, action and reaction)
ki (氣, vital force)
ri (理, principle)
rinri (倫理, moral principle)
sei (性, human nature)
shingi (神氣, divine *ki*)
shinri (心理, the laws of the human world)
shizen (自然, nature)
tenri (天理, heavenly principles)
tong (通, interaction)
tongmin unhwa (統民運化, dynamic change in a society)
tōzen (當然, natural)
yuhaengjiri (流行之理, the principle that flows forth)

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