Chapter 18. Discovering the Principles of Nature in Song China

The year is 1017. In Europe, the forgotten centuries known as the Dark Ages are beginning to draw to a close. King Canute is being crowned in London, a city of roughly thirty thousand inhabitants, after invading England with his Danish army the previous year.[1] Meanwhile, half a world away, the third emperor of China's Song dynasty, Zhenzong, is celebrating the New Year's Festival from an awe-inspiring, lavishly decorated hall on top of the Gate of Displayed Virtue, a massive construction splendidly decorated with glazed bricks, stretching more than 300 meters in length. With music playing, and top-ranking aristocrats and officials sitting in curtained boxes, Zhenzong surveys the glorious city of Kaifeng stretched out before him. As the largest city in the world at that time, the prefecture of Kaifeng contained about a million people. It was a city that never slept, with seventy-two first-class wine restaurants and countless markets specializing in garments, pearls, gold and silverware, incense, drugs, brothels, and every kind of food and drink imaginable. The walls of the capital enclosed forty-nine square kilometers of "inexhaustible vitality and prosperity, welfare and commerce, luxury and fashion, entertainment and decadence."[2] In the words of one denizen, "Here one can stay all day and never become aware when evening falls."[3]

In the time of the Song dynasty (960-1279), China was by far the most developed region in the world, with a free peasantry and highly productive agriculture, an advanced monetary economy and sophisticated industry and technology. The scale of iron production in China during this period was, in the words of one historian, "truly staggering," reaching a level of 125,000 tons a year by 1076, as compared with the 76,000 tons produced in England in 1788 "on the eve what is conventionally described as the 'industrial revolution.'" One ironworks alone employed over 3,600 workers. In virtually all aspects of technology, Chinese knowhow far exceeded the rest of the world. Woodblock printing had already been used for centuries and was now switching to moveable type. The recent discovery of gunpowder was transforming military technology with bombs, grenades and cannons. Chinese ships were larger and more seaworthy than those of any other nation and navigated on the open seas using the magnetic compass. Inland, they could rely on an extensive 50,000 kilometer canal network to move agricultural and industrial commodities. The Song economy was further boosted by bank-issued certificates of deposit known as "flying money," which were followed by the introduction of state-issued paper currency in 1024 – about eight hundred years before it became widespread in Europe.[4]

All this combined to make Song dynasty China "probably the most cosmopolitan, technologically advanced and economically powerful civilization in the world."[5]* And fueled by its economic prosperity, Song society nurtured an open spirit of intellectual investigation that prompts comparisons with the Renaissance of Europe, leading to "remarkable progress…

[1] http://en.wikipedia.org/wiki/Canute_the_Great. Accessed February 26, 2013.

[2] Kuhn, D. (2009). *The Age of Confucian Rule: The Song Transformation of China*. Cambridge, Mass: Belknap Press of Harvard University Press, 195-204.

[3] Meng Yuanlao, cited in ibid., 204.

[4] Gernet, J. (2006). *A History of Chinese Civilization*. New York: Cambridge University Press, 320-29; Ponting, C. (2001). *World History: A New Perspective*. London: Pimlico, 382-9; Abu-Lughod, J. L. (1989). *Before European Hegemony: The World System A.D. 1250-1350*. New York: Oxford University Press, 322-34.

[5] Lin, J. Y. (1995). "The Needham Puzzle: Why the Industrial Revolution Did Not Originate in China." *Economic Development and Cultural Change, 43*(2: (Jan 1995)), 269-292. It should also pointed out, however, that the Song dynasty was, for all its great achievements, far from perfect in its cultural orientation and values. For example, it was among the upper classes of the Song dynasty that foot binding first appeared, an excruciating practice that led to the increased subjugation of women for many centuries to come. See Kuhn, op. cit., 261-3.

in the realms of medicine, geography, mathematics and astronomy."[6] The mathematician Qin Jiushao began using the number zero around the same time that Arabic numerals were first appearing in Italy.[7] The great polymath Shen Kuo, among many other accomplishments, first described the magnetic needle compass using the concept of true north, formed a geological hypothesis of land formation based upon findings of inland marine fossils, and offered a hypothesis of gradual climate change after observing ancient petrified bamboos preserved underground in a region that was then too dry to support bamboo growth.[8] The same kind of critical thinking can equally be seen in the historical works of Sima Guang, whose eight-volume opus on the ancient history of China contained thirty chapters of critical notes "discussing the reasons which have guided the author through the different or contradictory traditions concerning the same event."[9]

It is therefore perhaps not too surprising that this era, which has been described as "one of the most intellectually exciting and stimulating periods in the history of humankind," also achieved such great advances in understanding humanity's place in the cosmos that it is recognized as "the golden age of Chinese philosophy."[10] As described by the eminent historian of China, Jacques Gernet, we see during this period "a desire for systematization" searching for nothing less than "a total explanation of the universe" which could achieve an "integration of man in the cosmos."[11] What is arguably the most important of all the accomplishments of the Song dynasty is that they actually did achieve a systematic and integrated explanation of the cosmos in a manner that has not been equaled either before or since, in China or anywhere else in the world. Readers of this book have been taking part in a journey, beginning with the dawn of human cognition, that traces humanity's search for meaning in the cosmos. The past few chapters have chronicled how the Western branch of this search became transfixed by a dualistic representation of the cosmos, with the source of true meaning allotted to an eternal and immutable dimension forever separate from the material world. Perhaps the greatest contribution of Chinese civilization to humanity is that, instead of seeking meaning in an alternative dimension, its thinkers focused their attention on finding the source of meaning in the natural world around them and in their own embodied perception of that world. The systematic understanding of humanity's place in the cosmos thus developed by the philosophers of the Song dynasty remains relevant and valid to this day, and offers to our current global society a pathway for integration of meaning that is ever increasingly needed.

However, unlike those other great innovations of Chinese civilization – such as the compass, paper, printing and gunpowder – the systematic approach to meaning in the cosmos achieved by the Song dynasty philosophers has gone almost completely unacknowledged, even by the Chinese themselves. Apart from small groups of sinologists cloistered in academic institutions, their contribution to human thought remains virtually unknown in the West. This chapter offers to the non-specialist reader a rare opportunity to delve into the insights and discoveries achieved by this group of philosophers, and to consider the relevance of their understanding of the cosmos to the spiritual, ethical and existential challenges facing our modern global society.

---

[6] Gernet, op. cit., 338.
[7] Ibid., 341.
[8] http://en.wikipedia.org/wiki/Shen_Kuo, accessed February 26, 2013.
[9] Gernet, op. cit., 343.
[10] Kuhn, op. cit., 120, 99.
[11] Gernet, op. cit., 344-5.

Dharma and Dao

Readers may remember from Chapter 12 that the thinkers of ancient China, in their search for harmony in the cosmos, developed two different traditions – Daoism and Confucianism – each seeking to harmonize with the Dao but emphasizing a different approach in doing so. The Daoists generally understood the Dao to be expressed in natural ways and approached harmonization through rejecting the constructs of civilization. The Confucians, on the other hand, saw the Dao as a path laid down through humanity's interactions with the natural world, and believed that the task of each person was to participate fully in the continuing progression of civilization.[12] The dialogue between these two different schools of thought continued in China through the first millennium of the common era, but it was joined and eventually transformed by a third philosophical tradition that originated entirely outside of China: Buddhism. The influence of Buddhism on Chinese thought has been described as "among the most significant events in the history of religions" and, as we shall see, is an essential ingredient in the philosophical thinking of the Song dynasty.[13] For this reason, we need to take a brief detour to see how these different systems of thought came together.

It was in the fifth century BCE, in northeastern India, that Siddhartha Gautama, a historical figure who would become known as the Buddha (or "Awakened One") lived and delivered his message.[14]* At that time, the Indian subcontinent was already under the influence of Vedic thought, as discussed above in Chapter 11. Gautama was inspired in his philosophical views by groups of wandering ascetics known as *shramanas*, who rejected much of the dogma, the rituals and the caste system of the dominant Vedic system. One thing, however, that the *shramanas* shared with their Vedic compatriots was a renunciation of the material world as a path to spiritual fulfillment. It was Gautama's genius to discover a "middle way" between the asceticism of the *shramanas* and the tangible world of the senses.[15] This embrace of two fundamentally different paths in the search for meaning put Gautama's approach in opposition to the predominant dualistic cosmology prevalent in India, one that sought ultimate meaning by transcending the material world which was seen as illusory. It was probably for this reason that, although Buddhism originated in India, it never thrived there and its influence eventually emerged in other parts of Asia.[16]*

Buddhism most likely reached China as early as the first century of the common era, and by the fourth century it had begun to flower there.[17] The Buddha's "middle way" that had been rejected by his Indian homeland found a warm welcome in Chinese culture, which had no dualistic conception of the universe to overcome. As described by the historian of Zen Buddhism, Heinrich Dumoulin, "China's acceptance of Buddhism – one of the most extraordinary and fascinating phenomena in the history of religion – was facilitated, if not actually brought about, by an extraordinary convergence of Chinese spirituality and this newly arrived religion from India. The fundamental orientation of the two ancient traditions was

[12] Chapter 12, "The Way or the Road?", pages 228-230.

[13] Dumoulin, H. (2005). *Zen Buddhism: A History* (Volume I: India and China). Bloomington, Indiana: World Wisdom, 64.

[14] The exact dates of Gautama's life are unknown and somewhat controversial, but consensus generally places it in the fifth century BCE. See http://en.wikipedia.org/wiki/Gautama_Buddha accessed February 27, 2013.

[15] Wallis, G. (2007). *Basic Teachings of the Buddha: a new translation and compilation, with a guide to reading the texts.* New York: Random House, xiv-xv.

[16] As Dumoulin puts it: "The naturalistic element in Mahayana Buddhism found more congenial possibilities for development in the spiritual climate of China than in the country of its origin, India. Where the Indians had been inhibited by their agonizing struggle for salvation, the Chinese, who desired nothing so much as to penetrate the secrets of nature, were attracted to Taoist-Buddhist naturalism." Dumoulin, op. cit., 68.

[17] Dumoulin, op. cit., 64; see also Fung, Y.-L. (1976). *A Short History of Chinese Philosophy: A Systematic Account of Chinese Thought From Its Origins to the Present Day.* New York: The Free Press, 241.

different, but a deeper, hidden affinity united them and promoted the relatively speedy integration of Buddhism into the spiritual universe of China."[18]

This "deeper affinity" between the two traditions can be sensed by focusing on one particular core concept that Buddhism brought to China from its Indian home: *dharma*. While this concept is found in both Buddhist and Vedic traditions, it is more central in the Buddhist lexicon. The Sanskrit scholar Eknath Easwaran explains that "*dharma* means the essential order of things, an integrity and harmony in the universe and the affairs of life that cannot be disturbed without courting chaos." He adds that "underlying this idea is the oneness of life… that all things are interconnected because at its deepest level creation is indivisible. This oneness bestows a basic balance on the whole of nature such that any disturbance in one place has to send ripples everywhere."[19]* If this description sounds to you similar to the cosmic harmony that the Chinese understood to infuse the universe which was discussed in Chapter 12, you wouldn't be alone. In fact, as Buddhist texts came to be translated into Chinese, the word Dao was used to translate *dharma*, and other related Daoist terms were used to translate the new Buddhist ideas.[20] Dumoulin notes that "the use of Taoist terms for Buddhist beliefs and practices not only helped in the difficult task of translation but also brought Buddhist scriptures closer to the Chinese people." The result of this was that "educated Chinese of earlier centuries felt such an inner resonance with Buddhism that they came to consider it, along with Taoism and Confucianism, as a genuine expression of Chinese religiosity."[21]

The eminent 20th century Chinese philosopher, Feng Youlan, illustrates the cultural assimilation of Buddhism and Daoism by the fourth century CE, describing how "famous scholars, who were usually Taoists, were often intimate friends of famous Buddhist monks. The scholars were usually well-versed in Buddhist sutras, and the monks in Taoist texts… When they met together, they talked in what was known at that time as *ch'ing t'an*, or 'pure conversation.' When they reached the subject of the not-not, they stopped talking and just silently understood each other with a smile."[22] This meeting of the minds with a silent smile points to a shared perspective of both Daoism and Buddhism on the nature of the conceptual consciousness that is mediated by the prefrontal cortex (pfc) – a key theme of this book. Both traditions recognized that verbalized concepts were ultimately pfc-mediated abstractions that could limit a true understanding of the dharma/Dao. In the words of sinologist A.C. Graham, Daoism and Buddhism shared one "distinctively Chinese… basic insight, that while other things move spontaneously on the course proper to them, man has separated himself from the Way by reflecting, posing alternatives, and formulating principles of action."[23]

This absorption of Buddhism into the Chinese way of life reached its zenith during the Tang dynasty (618-907) where – as noted in the previous chapter – "it formed an integral part of the civilization, society, and political system of the Chinese world."[24] However, there were elements of the Buddhist cosmology that didn't fit so well with the Chinese sensibility, and as the influence of Buddhism became more widespread, these catalyzed an ever-increasing reaction, which grew even stronger during the Song dynasty. The discordant aspects of Buddhism tended on the whole to be the more dualistic attributes that the tradition had carried with it from its homeland in India, because while Buddhism had arisen in reaction to

[18] Dumoulin, op. cit., 266.

[19] Easwaran, E. (1985). *The Bhagavad Gita* (E. Easwaran, Trans.). Tomales, CA: Nilgiri Press. For a valuable discussion of the word *dharma*, see Wallis, G. ed. (2004). *The Dhammapada*. New York: Random House, xii.

[20] Pine, R. (1987). *The Zen Teaching of Bodhidharma*. New York: North Point Press, 115.

[21] Dumoulin, op. cit., 64-5.

[22] Fung, op. cit., 212.

[23] Graham, A. C. (1989). *Disputers of the Tao: Philosophical Argument in Ancient China*. Peru, Illinois: Open Court Publishing Company, 172.

[24] Gernet, op. cit., 278.

Vedic thought, it had also implicitly absorbed some properties of the dualistic paradigm from which it had emerged. Primary among these was the concept of nirvana, a state of "supreme happiness, a haven of peace" available through prolonged meditation. Nirvana tended to be described in negative terms, such as this from an ancient Buddhist scripture: "dissolved is the body, extinct is perception; the sensations have all vanished away… the annihilation of all sensual desire."[25] Consistent with the idea of nirvana, some schools within Buddhism continued to teach the Vedic-derived notion that "the phenomenal world is not real but only an illusion."[26] Another key Buddhist idea was that once you reached an enlightened state, you could perceive the emptiness ("*shunyata*") of all things. Dumoulin describes how you might hear in some Buddhist temples "in drawn out, resounding tones endless chanting echoes through the semidark halls of 'empty, empty, empty'" – as many as seven times a day.[27]

This was an aspect of Buddhism that many Chinese people reacted against strongly. And the implications of this dualistic search for other-worldly salvation reverberated in other ways through society. Accusations arose that Buddhism caused its followers to reject their proper role within the community – something, as discussed in Chapter 14, that was fundamental to the traditional Chinese identity and sense of purpose.[28] "We hear it again and again" in that era, Dumoulin tells us: "Buddhists take an attitude toward this world that is at once incorrect and harmful: their world-negating ethic blinds them to the social virtues and thus undermines the foundations of human community."[29] Increasingly, Chinese thinkers began to see the Buddhist viewpoint as essentially nihilistic. "The Buddhists," wrote one critic at the time, "consider [life] to be extremely painful, and seek to escape from it… Even when they strive to ferry [all beings across the sea of suffering] to a future realm, they always base themselves on the idea of withdrawal from the world."[30]

"All is not emptiness!"

The Buddhist notion of *shunyata* or emptiness was probably the single most troubling aspect of this imported tradition that the philosophers of the Song dynasty felt they had to refute. The idea that the ultimate ground of reality was emptiness made no sense to a culture so steeped in the material nature of the universe that even the spirits of dead ancestors were believed to have a tangible existence.[31] "The error of the Buddhist theory," wrote one, "[is] that mountains, rivers, and the great earth are all illusory."[32] Another philosopher felt that his Confucian views were so far apart from Buddhism that "ice and glowing coals would mix better." His critique of Buddhism, which follows, states the case with delightful clarity:

> Buddhism looks upon emptiness as the highest and upon existence as an illusion. Those who wish to learn the true Tao must take good note of this. Daily we see the sun and moon revolving in the heavens, and the mountains and rivers rooted in the earth, while men and animals wander abroad the world. If ten thousand Buddhas were to appear all at once, they would not be able to destroy the world, to arrest its movements, or to bring it to nothingness. The sun has made day and the moon night, the mountains have stood firm and the rivers have flowed, men and animals have been born, since the beginning of time –

[25] *Udana* scripture, cited in Dumoulin, op. cit., 19.
[26] Kuhn, op. cit., 111.
[27] Dumoulin, op. cit., 42.
[28] Chapter 14, "The defining characteristic of humanity," pages 267-9.
[29] Dumoulin, op. cit., 277.
[30] Lu Jiuyuan, cited in Ching, J. (1976). *To Acquire Wisdom: The Way of Wang Yang-Ming*. New York: Columbia University Press, 15.
[31] See Chapter 9, "The material soul," pages 143-5.
[32] Zhang Zai, cited in Huang, S.-C. (1999). *Essentials of Neo-Confucianism: Eight Major Philosophers of the Song and Ming Periods*. Westport, CT: Greenwood Press, 65-6.

> these things have never changed, and one should rejoice that this is so. If one thing decays, another arises. My body will die, but mankind will go on. So all is not emptiness![33]

These statements, however, were more like rhetorical flourishes than a systematic refutation. The Buddhists had brought with them an elaborate explanation of the cosmos, complete with the principle of reincarnation – another Vedic concept that had hitched a ride from India. The Chinese critics lacked an equivalent systemic worldview to wield on their own behalf. Their Confucian and Taoist traditions had developed sophisticated and elaborate descriptions for how the manifest world worked, based on the complex interplay of *yin* and *yang*, but when it came to describing the ultimate ground of reality, this was simply a subject that was unnatural for the practical Chinese mind to speculate on. Now, however, if they were going to replace Buddhism with their own system of thought, they were forced to come up with their own fundamental explanation of reality, an area of philosophy known in modern parlance as ontology.

The philosophers of the Song dynasty, as one historian notes, "were not interested in metaphysics merely for its own sake. They were inevitably led to place emphatic stress on metaphysics because without establishing a convincing ontological system it would be impossible to drive away Buddhist metaphysics, which had long been the dominant force in the thought-life of the Chinese." They found themselves "engaged in the double task of attacking the nihilistic philosophy of Buddhism on the one hand and of constructing a positive, sound cosmological foundation on the other."[34] For the previous millennium, Taoist and Buddhist ideas had shared a dominant position in Chinese thought. Now, it seemed to some, there was a need to return to the grounded, socially responsible, home-grown Confucian tradition. But, in the words of one sinologist, "it was impossible for them to give up Buddhism, since it had exerted so strong an influence on them for so long. Nevertheless, the Chinese tried to return to Confucianism – by way of Buddhism. In order to counteract the law of impermanence, the doctrine of *Anataman*, and the theory of emptiness, they had to construct a new philosophy which should be based on the ideas and terms of Confucianism."[35] These philosophers called their new way of thinking "The School of the Study of the Dao," emphasizing their roots in the mainstream of Chinese thought, while in the West their philosophy has become known as Neo-Confucianism.[36]

The Neo-Confucians at the time certainly didn't think of their philosophy as incorporating Buddhism and Daoism. Their leading philosopher, Zhu Xi, made it quite clear that they wanted a return to the Confucian tradition, stating that "what we mean by Tao is the concrete principles whereby rulers and ministers, fathers and sons, husbands and wives, brothers, and friends are as they should be. What is called Tao by the others [Buddhists and Taoists] is to wipe out these relations as illusory and erroneous and to seek what they call purity, tranquility, silence, and extinction."[37] But it was impossible for the Neo-Confucians to eliminate a thousand years of Buddhist and Daoist thought from their minds – and this is ironically the very thing that made their Neo-Confucian philosophy so powerful: in their attempts to refute Buddhism and Daoism and return to Confucianism, they ended up creating a unique synthesis of all three of these great thought traditions, weaving crucial elements of each into a philosophical fabric that was far more comprehensive than each of them alone could ever have been. "What the Neo-Confucians did," explains celebrated sinologist Derk Bodde, "was to reinterpret the Confucian classics... in the light of Buddhist and Taoist

---

[33] Hu Yin, cited in Needham, J. (1972). *Science and Civilisation in China* (Vol. 2: History of Scientific Thought). London: Cambridge University Press, 411.

[34] Huang, op. cit., 6-7.

[35] Chang, C. (1957). *The Development of Neo-Confucian Thought*. New York: Bookman Associates, 28.

[36] Dumoulin, op. cit., 268; Fung, op. cit., 268.

[37] Chan, W.-T. (1975). "Chu Hsi's Appraisal of Lao Tzu." *Philosophy East and West, 25*(2: April 1975), 131-144.

conceptions. In so doing they declared Confucianism to be orthodox and made it the basis of their system of ethics, but drew heavily on Buddhism and Taoism for their metaphysical and cosmological speculations. The result is a syncretization and systematization of several originally disparate conceptions which represents perhaps the supreme triumph of the ever eclectic tendency of Chinese thought."[38]

The principles of reality

If the Neo-Confucians wanted to propose an alternative understanding of reality to refute the Buddhist notion of emptiness, where could they begin? In 1017 – the year that King Canute was being crowned in London – Zhou Dun-yi (1017-1073), the man generally regarded as the father of Neo-Confucianism, was born in the Hunan province. In his philosophical explorations, Zhou came across an approach to this conundrum that would set the stage for those who followed him.[39]* He looked to two of the foundational texts of Chinese thought, the *Tao Te Ching* and the *I Ching ("The Book of Changes")*, for some hint of what the ancients viewed as some kind of ultimate ground of reality.[40] In the *Tao Te Ching*, he focused on a passage that said:

> To know the white
> But to abide by the black
> Is to be the model of the world.
> Being the model of the world,
> And deviating not from the everlasting power,
> One again returns to the unlimited.[41]

This concept of "the unlimited" – *wu-ji* – was a powerful one. It appeared to hint at a Daoist version of the Buddhist concept of *shunyata*. Then, Zhou turned to a key passage in the *I Ching* that again seemed to name the very basis of reality, which goes as follows: "Therefore in [the system] of the *Changes* there is the Supreme Ultimate (*tai-ji*), which produced the Two Forms [of *yin* and *yang*]." At this point, Zhou made a bold move. *Wu-ji*, he said, is identical to *tai-ji*. The "unlimited" of the *Tao Te Ching* was referring to the same concept as the "Supreme Ultimate" of the *I Ching*. Here, the synthesizing character of the Neo-Confucian movement can already be seen. The *Tao Te Ching* was the most important text of the Daoists while the *I Ching* was equally valued by the Confucian tradition. In one sweeping move, Zhou Dun-yi proposed that both sources of Chinese wisdom had the same underlying theory of ultimate reality.

From there, Zhou felt he could describe how everything else in the universe arises and he sketched it out in a document that became known as the "Diagram of the Supreme Ultimate." Just as the *I Ching* described, the Supreme Ultimate produced the two modes of existence that infused all reality: the *yang* or active mode and the *yin* or passive mode. From this interplay of *yang* and *yin*, five elemental phases or states of existence manifested themselves, which were known in Chinese lore as fire, water, earth, metal and wood. Finally,

---

[38] Fung, Y.-L., & Bodde, D. (1942a). "The Philosophy of Chu Hsi." *Harvard Journal of Asiatic Studies, 7*(1), 1-51.

[39] Although Zhou Dun-yi is viewed as the father of Neo-Confucianism, credit is generally given to two philosophers of the Tang dynasty – Han Yu and Li Ao – for setting the philosophical stage for the new movement. See Fung, Y.-L., & Bodde, D. (1942b). "The Rise of Neo-Confucianism and Its Borrowings From Buddhism and Taoism." *Harvard Journal of Asiatic Studies, 7*(2), 89-125.

[40] See Chapter 12 for a full discussion on both the *I Ching* and the *Tao Te Ching*.

[41] Chen, E. M. (1989). *The Tao Te Ching: A New Translation with Commentary*. St. Paul, Minnesota: Paragon House, Chapter 28, 124-5.

after another *yang*/*yin* type of transformation, the "ten thousand things" – the myriad manifestations of the material world – arose.[42]

Zhou's new conception of reality would have an important influence on the later development of the Neo-Confucian school, but it had relatively little immediate impact. Other contemporary philosophers were similarly working on conceptualizing alternative versions of reality in response to the Buddhist cosmology. One named Shao Yong tried to approach the problem mathematically, in a manner resembling the Pythagorean school of the ancient Greeks.[43] He also began with the Supreme Ultimate of the *I Ching*, as an essential unity that split into the two forms of *yang* and *yin*. From there, he followed the progression to the sixty-four hexagrams that comprise the *I Ching* and related these to the various cycles of the sun, moon, stars and planets.[44]

Still another approach was developed by Zhang Zai (1020-1077), who focused his attention on the *qi* – the energy force, both material and spiritual in character, which, as described in Chapter 12, was understood by the Chinese to pervade the entire universe.[45] *Qi* was, in Zhang's view, "the fundamental substance by which all processes of the universe can be explained."[46] Instead of the Buddhist emptiness, Zhang's universe was entirely filled with *qi*. Zhang characterized *qi* as both indestructible and continually transforming, an understanding which – in the first of many such instances – accurately presages the law of conservation of energy first formulated in Europe in the 19th century, which states that while energy can change its form within a system, it can neither be created nor destroyed. Zhang emphasized the dynamic, ever-changing nature of *qi*, which he saw as manifesting what he called the Great Harmony of the Dao. "It embraces," he wrote, "the nature which underlies all counter processes of floating and sinking, rising and falling, and motion and rest. It is the origin of the process of fusion and intermingling, of overcoming and being overcome, and of expansion and contraction." Zhang was fascinated by the way in which this Great Harmony was an organic unity and yet always different. "The Principle (*li*) is one," he observed, "but its function is differentiated into the many" – a vision of the one-and-many which echoes the insights of both early Vedic thinkers as well as the cosmology of Ancient Egypt, and one which was to "become a keynote in the entire course" of Neo-Confucian thought that would ensue.[47]

What, however, was this mysterious "Principle" which could encompass both the unity and differentiation of all things? Zhang Zai would occasionally hint at it in his writings, such as when he wrote: "Although the condensation and dispersion of the *qi* in the universe works in a hundred different ways, the principles according to which it operates are orderly and without error."[48] But, other than these suggestions of an underlying principle pervading all things, he didn't probe any further into the ultimate nature of the reality he saw manifested in the *qi*. This next step in the Neo-Confucian investigation of reality would be taken by two brothers, Cheng Hao and Cheng Yi.

The two Cheng brothers seemed almost destined by birth to take the Neo-Confucian project further along on its natural progression. Their uncle was none other than Zhang Zai, they were friends with Shao Yong and students of Zhou Dun-yi. As a result of these

---

[42] Huang, op. cit., 20-24; Needham, op. cit., 460-66. Note: Chinese terms in a quotation that were originally given in the Wade-Giles format have been converted to the Pinyin format for ease of reader comprehension.

[43] See Chapter 10, "The birth of scientific methodology," pages 162-164.

[44] Huang, op. cit., 37-55.

[45] See Chapter 12, "The basis of the universe: qi," pages 201-203.

[46] Huang, op. cit., 60, 62, 68.

[47] Chan, W.-T. (1955). "The Evolution of the Confucian Concept Jên." *Philosophy East and West, 4*(4: January 1955), 295-319. For the ancient Egyptian view of the "one-and-many" see Chapter 7, "The one and the many: tackling the cognitive dissonance," pages 118-120; for the Vedic view, see Chapter 11, "The emergence of transcendent pantheism," pages 195-197.

[48] Huang, op. cit., 87.

relationships, "they were familiar with the thinking of each of these three early Neo-Confucian masters."[49] As they developed their own unique understanding, each of them in their way tried to make sense of the "principle" – the *li* - that their uncle had identified as pervading all things. It was the younger brother, Cheng Yi (1033-1107), who took this concept of *li* and applied it most comprehensively to everything in the universe. "All things under heaven," he wrote, "can be understood by their *li*. As there are things, there must be principles of their being. Everything must have its principle.'[50] With this all-encompassing statement as a foundation, Cheng Yi, in the words of A.C. Graham, "achieved a great paradigm-shift, by which *li*, which has only a modest place in [early Chinese] thought... moved to the centre, and 'Heaven', 'the Way', 'nature' and 'destiny' were redefined in terms of it."[51]

This was the state of affairs in Song speculation about the cosmos as the dynasty continued on into the twelfth century CE. Brilliant insights had been achieved; different traditions of thought had been challenged and combined; but a comprehensive and systematic integration of all these different ideas had yet to be achieved. A full century would pass between this first wave of thinkers and the philosopher who would put it all together to form an explanation of the universe that would not only refute the Buddhist view of *shunyata* but provide a basis for the Chinese understanding of the cosmos for centuries to come. His name was Zhu Xi (1130-1200), and what he accomplished was an extraordinary act of synthesis and transformation. He took Zhou Dun-yi's interpretation of the Supreme Ultimate, Zhang Zai's understanding of *qi*, and Cheng Yi's identification of the central role of the *li*, and wove these elements together into one coherent system.[52] His profound understanding of the *li* and its implications for how humans can fully realize meaning in their lives will infuse the remainder of this chapter.

In search of the real meaning of li

At the most fundamental level, Zhu Xi described the universe as being comprised of both qi and li. Qi was the term for all the energy and matter in the entire universe and li was the term for describing how that energy/matter was organized. The interplay of qi and li, as one scholar notes, "makes up the basic structure of Zhu's thought system, defining all other ideas."[53] Zhu himself was explicit about this. In one of his seminal statements, he explained: "Throughout the universe, there is no qi without li, nor li without qi."[54] The one cannot exist without the other because each can really only be defined in terms of the other, in much the same way that a rectangle cannot exist without both width and length. Zhu Xi attempts, on several occasions, to clarify the relationship between these two fundamental concepts. "If there were only li," he explains, "there would only be a blank and open world, devoid of form and trace."[55] On the other hand, li is a precondition for qi to exist. "Only after there is li," he once said, "then there is qi. When there is qi, then li has a place to settle. Whether it is as large as heaven and earth, or as small as ants, this is the process by which all things are produced."[56] When one of Zhu Xi's student asked him what came first, li or qi, he gave the

[49] Ibid., 85.

[50] Cited in Chan, W.-T. (1957). "Neo-Confucianism and Chinese Scientific Thought." *Philosophy East and West, 6*(4), 309-332.

[51] Graham, op. cit., 313-14.

[52] Ching, J. (2000). *The Religious Thought of Chu Hsi*. New York: Oxford University Press, 167.

[53] Ibid., 27. Given the frequent usage of the terms li and qi in the remainder of this chapter, neither word will henceforth be italicized in the interest of ease in reading the text.

[54] Yoke, H. P. (1985). *Li, Qi and Shu: An Introduction to Science and Civilization in China*. Mineola, NY: Dover Publications, 5.

[55] Angle, S. C. (2009). *Sagehood: The Contemporary Significance of Neo-Confucian Philosophy*. New York: Oxford University Press, 40.

[56] Huang, op. cit., 131-3.

following answer: "Fundamentally, they cannot be spoken of in terms of priority and posteriority. However, if it is necessary to trace their origin, one is obliged to admit that li has priority."[57] This doesn't necessarily mean that Zhu Xi was speculating about the origins of the universe. Rather, as one scholar describes it, "Zhu gives logical, thought not temporal, priority to li over qi."[58] Conceptually, he was suggesting, matter or energy can't exist without being organized in one way or another.

If your understanding of these two concepts and their interrelation is still a little unclear, this should not be surprising. The concept of li – and its interaction with qi – is one that is alien to the Western way of thinking and requires a shift in some of the fundamental concepts we have inherited from our dualistic cosmology that has been described in the pages of this book. In fact, when Westerners first came across the Neo-Confucian concept of li and qi, they immediately translated them in terms of their own dualistic cosmological paradigm, which has created centuries of confusion and misunderstanding. This muddled historical understanding of li and qi is itself an enlightening topic, and is worthwhile reviewing before we begin the process of attempting to unfurl the true meaning of the terms.

Historically, the way that the word li has been translated by Westerners can be viewed as a kind of Rorschach test of each interpreter's own view of the cosmos, where each person would see the meaning that they implicitly and unconsciously chose to impose on the concept. The Jesuits who first attempted to make inroads into China in the 16th and 17th centuries interpreted li and qi as "reason" and "matter." In 17th century Europe, the philosopher Baruch Spinoza was espousing a worldview bordering on pantheism, and one philosopher, Nicolas de Malebranche, wrote a critique of Spinoza comparing his ideas to the Neo-Confucians, refuting both of them as forms of atheism. Meanwhile, another great philosopher of the period, Gottfried Leibniz, who was sympathetic to Chinese cosmology, interpreted Zhu Xi's li and qi as a sign that "the Chinese were not materialists but had a real understanding of God and of spiritual beings."[59]

During the period when China was under Western colonial domination, which essentially lasted until the second half of the 20th century, even Chinese philosophers would attempt to interpret li and qi in terms of the dominant Western dualistic thought tradition. A notable example was the well-known 20th century philosopher Feng Youlang, who wrote in 1942 that "the Supreme Ultimate is very much like what Plato called the Idea of the Good, or what Aristotle called God." He went on to observe that "li is equivalent to what Greek philosophy called Form; qi is equivalent to what it called Matter."[60] Feng's reputation is such that even more recent writers about China frequently fall into the trap of interpreting Zhu Xi's qi and li as a dualist cosmology paralleling that of Plato. A history of China published in 1995, for example, states that "the similarity between [Zhu Xi's] theory and Plato's theory of Ideas or Forms is immediately apparent, and the parallel extends to the notion of the Great Ultimate, which is not unlike the Idea of the Good."[61]

A fundamental cause of Western misinterpretations of li and qi is that the dualistic structure so pervades Western thought that transcendence of some form or another is frequently seen as a necessary source of meaning in the cosmos. However, as Graham points out, "in the Chinese cosmos all things are interdependent, without transcendent principles by which to explain them or a transcendent origin from which they derive." The problem translators fall into, Graham explains, is the "preconception" that terms such as li or Dao "must

[57] Ibid.

[58] Ching, op. cit., 29. See also Angle who writes: "Since li serves to explain or constrain the movement of qi, then it must be conceptually prior to qi." – Angle, op. cit., 40.

[59] Ching, op. cit., 195-6.

[60] Fung & Bodde (1942a) op. cit., 12-14, 19.

[61] Morton, W. S., & Lewis, C. M. (2005). *China: Its History and Culture*. New York: McGraw-Hill, 113-14.

have the transcendence of our own ultimate principles."[62] This preconception, in the words of modern scholars Hall & Ames, has led "generations of Chinese scholars to claim the existence of altogether too much common ground between the classical Western and Chinese cultural traditions, and in so doing, to underappreciate the contribution of Chinese philosophy to world culture as a real alternative to dominant Western sensibilities."[63] Indeed, much of the rest of this chapter is devoted to following up this theme raised by Hall & Ames, and exploring in more detail the very real and significant alternative worldview contributed to humanity by the Neo-Confucian concepts of li and qi and their natural entailments.

It took a highly unusual individual named Joseph Needham to identify what had become the orthodox Western dualistic interpretation of li and qi and confront it head on in the middle of the 20th century. Needham was an eminent Cambridge academic who first made a name for himself in the 1930s as a biochemist, publishing a three volume opus on embryology that earned him election to the Royal Society, "arguably the greatest scientific distinction short of a Nobel prize."[64] In mid-career, Needham became fascinated by the Chinese language and culture, and went on to publish a series of volumes beginning in the 1950s entitled *Science and Civilization in China,* which utterly transformed the conventional Western view of Chinese history that had previously considered China as a backwards and ineffectual society. It was, in fact, Needham's original research that led to the modern evaluation of the Song dynasty as a peak of scientific and technological achievement, as described earlier in this chapter.[65]

When Needham began to evaluate the meaning of li and qi, he was well versed in the orthodox Western philosophical tradition, but he had also learned to think as a biologist, and was to some extent influenced by the early 20th century process philosophy of Alfred North Whitehead which rejected conventional mind-body dualism.[66]* He was, therefore, unusually well-equipped to offer an alternative perspective of what li and qi really meant. Referring to Feng's dualistic interpretation, he noted that "the suggestion that Li and Qi can be equated with the Form and Matter of Platonic-Aristotelian philosophy...has recently been revived, but I believe it to be entirely unacceptable." He then pointed out how the fundamental dualistic splits of Western thought – body and soul, material world and eternal God – simply didn't exist in the Chinese cosmos. "The great tradition of Chinese philosophy," he explained, "had no place for souls," and "in the Chinese philosophic tradition the need for a Supreme Being had never been felt." Anticipating the theme that would be raised decades later by Hall & Ames, he observed that "the distinctive importance of Li is precisely that it was not intrinsically soul-like... I believe that Li was not in any strict sense metaphysical, as were Platonic ideas and Aristotelian forms, but rather the invisible organizing fields or forces existing at all levels within the natural world."[67]*

---

[62] Quoted in Hall, D. L., & Ames, R. T. (1998). *Thinking From the Han: Self, Truth and Transcendence in Chinese and Western Culture*. Albany: State University of New York Press, 234.

[63] Ibid., 228.

[64] Winchester, S. (2008). *The Man Who Loved China: The Fantastic Story of the Eccentric Scientist Who Unlocked the Mysteries of the Middle Kingdom*. New York: HarperCollins, 28-9.

[65] See, for example, Abu-Lughod, op. cit., 322-23.

[66] It is noteworthy that Whitehead is referred to in fourteen separate instances in Needham's groundbreaking book on early Chinese philosophy, *Science and Civilization in China, Volume 2*. Needham himself was clear about this linkage, stating that "Zhu Xi's philosophy was fundamentally a philosophy or organism, and that the Sung Neo-Confucians thus attained, primarily by insight, a position analogous to that of Whitehead." – Cited in Chan, W.-T. (1976). "The Study of Chu Hsi in the West." *The Journal of Asian Studies, 35*(4), 555-577.

[67] Needham, op. cit., 475-6. For another more recent critique of Feng's interpretation, see Ziporyn, B. (2008). "Form, Principle, Pattern or Coherence? Li in Chinese Philosophy." *Philosophy Compass, 3*(3), 401-422, where Ziporyn describes the refutations that arose after Feng Yulan "famously and rather rashly declared that the … Neo-Confucian notion of Li was the traditional Chinese equivalent of the Platonic forms." See also Thompson, K. O. (1988). "Li and yi as immanent: Chu Hsi's Thought in Practical Perspective." *Philosophy East and West, 38*(1), 30-46. Thompson notes that "Chu Hsi's

In order to introduce his readers to a more authentic Chinese view of what li meant, Needham helpfully refers us back to the early etymology of the word. "Li, in its most ancient meaning," he tells us, "signified the pattern in things, the markings in jade or the fibres in muscle; as a verb it meant to cut things according to their natural grain or divisions." Some scholars, he notes, "believe that the earliest meaning of the word was the pattern in which the fields were laid out for cultivation according to the lie of the land."[68]* It is noteworthy that these are not the theoretical, geometric patterns such as circles and squares that early Greek philosophers saw as the basis of the universe; rather, they are the nonlinear, organic patterns that arise from the natural world.

With this etymological background, Needham proposes that "Li could be described as the ordering and organizing principle in the cosmos... the order and pattern in Nature." Then he adds a crucial element to this definition. "But it is not pattern thought of as something dead, like a mosaic," he writes; "it is dynamic pattern as embodied in all living things, and in human relationships and in the highest human values."[69] This interpretation of li as the organizing principles of the cosmos embodied in dynamic patterns is what we are now ready to explore in a little more detail.

Li as the organizing principles of the cosmos

Look around you at any piece of wood that happens to be nearby. Note the swirling pattern of its grain. If there's any natural stone close to you, look at it too. See how the patterns form a random shape, yet somehow seem ordered in a way that you could never define. Now look outside the window at the clouds in the sky or the branches of any tree that's close by. Again, you can immediately see the natural patterns each object has formed. You are looking at the li, which as philosopher Alan Watts once described it, is "the asymmetrical, nonrepetitive, and unregimented order which we find in the patterns of moving water, the forms of trees and clouds, of frost crystals on the window, or the scattering of pebbles on beach sand."[70]

But these are only the most obvious and clearly seen examples of the li – the natural patterns of the universe – that are continually forming and re-forming around us. The li refers also to dynamic patterns, patterns within patterns, and patterns in time as well as patterns in space, along with patterns that we create in our own minds through our unique perceptions of these external patterns. The li is perhaps best described as the ever-moving, ever-present set of patterns which flow through everything in nature and in all our perceptions of the world including our own consciousness. With this perspective, we can understand what Zhu Xi meant when he gave this description of what he called the "ever-flowing presence of li":

> This li moves in the world in continuous cycles without a single moment's cessation. None of the myriad things and activities – be they small, large, fine, or coarse would have been possible without the ever-flowing presence of li in them. So is my mind (heart) which also

notion of li is often understood to designate a sort of transcendental concept or metaphysical notion indicative of a realm beyond normal human experience" and argues that "there are powerful reasons, however, for resisting this line of interpretation and the inappropriate transcendental understanding of li it entails."

[68] Needham, op. cit., 558, 473. See also Needham, J. (1951). "Human Laws and Laws of Nature in China and the West (II): Chinese Civilization and the Laws of Nature." *Journal of the History of Ideas*, 194-230. Elsewhere, corroborating Needham, Nakamura refers to the original meaning of li as "well distributed veins on minerals or precious stones." See Nakamura, H. (1964). *Ways of Thinking of Eastern Peoples: India-China-Tibet-Japan*. Honolulu: University of Hawaii Press, 179.

[69] Ibid., 558.

[70] Watts, A. (1975). *Tao: The Watercourse Way*. New York: Pantheon Books, 45-6.

> receives it. The li never ceases to stay in my mind for a moment; its creative process never ceases to reciprocate with the physical world.[71]

Needham tries to capture this idea by describing the li as "in effect a Great Pattern in which all lesser patterns are included."[72] This conception of one overriding Great Pattern which includes all other patterns helps us to make sense of that earlier statement of Zhang Zai that "the li is one but its function is differentiated into the many." Zhu Xi echoed these words of Zhang when he declared that "There is only one li that permeates all things... Everything has its li, but all li are one and the same." In trying to give a tangible sense of what he meant, Zhu offers an illustration. "It is like a grain of millet," he said, "growing to become a seedling, which produces a flower. The flower bears seeds that become millet again... One ear of millet will bear one hundred grains and yet each grain is integral to itself."[73] This sense of the li as a dynamic pattern which continues to inform new generations of patterns that it generates prompted Needham to conclude that it "can only be expressed by the term 'organism.'" He continued: "Indeed I suggest that Neo-Confucian philosophy was in fact a scheme of thought striving to be a philosophy of organism."[74]*

At the same time, one should not make the mistake of thinking from this terminology that the li only applies to the natural or organic world. In understanding the universal nature of the li, it is important to recognize that the li is applicable to all aspects of the cosmos from inanimate material objects at one extreme to intangibles such as human consciousness at the other. A leading student of Zhu Xi named Chen Chun made this clear in an explanation of his teacher's philosophy:

> Walking up some steps, the philosopher said: The bricks of these steps have the Li of bricks. Sitting down, he said, A bamboo chair has the Li of a bamboo chair. You may say [he went on] that dried and withered things are without the vital impulse, but not that they are without the Li of specific existence. For example, rotten wood is useless for anything except for putting in the cooking-stove. It is without the vital impulse. And yet each kind of wood as it burns has its own fragrance, each differing from the other. It is Li which originally constituted it so.

---

[71] Cited in Yu, D. (1980). "The Conceptions of Self in Whitehead and Chu Hsi." *Journal of Chinese Philosophy, 7*(1980), 153-173.

In another passage, Zhu Xi again notes how the li exists both in patterns of the external world and those of our own mind: "Li is like a piece of thread with its strands, or like this bamboo basket. Pointing to its rows of bamboo strips, the philosopher said, One strip goes this way; and pointing to another strip, Another strip goes that way. It is also like the grain in the bamboo – on the straight it is of one kind, and on the transverse it is of another kind. So also the mind possesses numerous principles (li)." – Needham (1972) op. cit., 558. *Note: For the remainder of this chapter, in citations where the words "li," "qi," and "Tao" were originally translated into an English word, they have been converted back to the original Chinese word, in order to avoid exegetical confusion.*

[72] Needham (1951) op. cit., 218.

[73] Ching, op. cit., 46.

[74] Needham (1972) op. cit., 58. More recently, Needham's view of Neo-Confucian thought as "philosophy of organism" has been criticized by Hall & Ames, as "not giving an adequate account of the significant differences between biological 'organism' and bureaucratic 'organization.'" They go on to say: "It is the latter sense that more closely approximates the model to which the classical Chinese appeal in understanding the world about them." (See Hall & Ames, op. cit., 36-7.) To the extent that the li refers to all patterns of organization in the universe, including man-made social patterns of organization, this criticism contains some validity, as discussed later in the chapter. However, readers are reminded of the contrasting views of the Dao between Daoist and Confucian thinkers as described in Chapter 12, one emphasizing the natural manifestation of the Dao, the other emphasizing its human-mediated transformation. It is the genius of the Neo-Confucian worldview that it was able to incorporate both these interpretations of the Dao in the all-encompassing scope of the li. Needham himself recognized this without viewing it as inconsistent with the "philosophy of organism," writing: "The [Confucian] Tao of human society was now seen to be that part of the [Daoist] Tao of the cosmos which makes itself manifest at the organic level of human society, not before, and not elsewhere. In this way the two greatest indigenous schools of Chinese thought attained a synthesis." [Needham (1972) op. cit., 485.] In this author's view, Needham's sense of the Chinese "philosophy of organism" remains an accurate and helpful way of understanding the Neo-Confucian conception of the natural world and humanity's place within it.

When li is applied to living organisms, it takes on an extra level of complexity which Chen Chun termed "consciousness" or "vital force":

> Someone said: Birds and beasts, as well as man, all have sensation and consciousness, though with different degrees of penetration. Is there 'consciousness' also in the vegetable kingdom?
>
> [The philosopher] answered: There is. Take the case of a plant, when watered, its flowers shed forth glory; when pinched, it withers and droops. Can it be said to be without 'consciousness' [vital force]? Zhou Dun-yi refrained from clearing away the grasses from in front of his window, because, he said, 'their vital impulse is just like my own.' In this he attributed 'consciousness' to the plants. But the 'consciousness' of the animals is not on the same plane as man's consciousness, nor is the 'consciousness' of the plants on the same level as that of animals.

Additionally, Chen Chun makes clear that the concept of li is applicable to man-made objects:

> As soon as the object exists, Li is inherent in it. Even in the case of a pen – though not produced by Heaven [directly], but by Man, who takes the long soft hairs of the hare and makes them into pens – as soon as it exists Li is inherent in it...[75]

This exposition from Chen Chun is particularly helpful in demonstrating how the li applies to everything in the universe but at different levels of complexity. It can be applied to something as simple as a pen, the organizing principles of which are man-made and related to a specific purpose. It can be applied to every organism existing in the natural world. And it can equally well be applied to the unfathomably complex principles of organization with the human brain and nervous system that form our mind and consciousness.

The modern relevance of li and qi

When Needham recognized what the Neo-Confucians really meant by the relationship between qi and li, he immediately saw its congruity to the modern scientific worldview. "In its medieval way," he wrote, "the affirmation of the universal interpenetration of Li and Qi mirrors the standpoint of modern science. Form... exists as the essential characteristic of the whole realm of organic chemistry, and cannot be excluded either from 'inorganic' chemistry or nuclear physics. Similarly, Matter is no longer as simple as philosophers thought, and is interconvertible with energy. We must therefore finally give up all the old arguments about form and matter, and speak only of Energy and Organisation." Zhu Xi, Needham proposes, "was closely in accord with the organic world-view of modern natural science. For is not the natural world wholly composed of energy and order?"[76]

In speaking of how energy and matter is "interconvertible," Needham was referring to the seminal discovery of Einstein encapsulated in perhaps the world's most famous equation, $e=mc^2$, which states that the energy of a body is equal to its mass times the speed of light squared. The mysterious Chinese notion of qi as something both tangible and invisible permeating the cosmos could now be related to the findings of modern science. As physicists delved further into the subatomic world, the congruence between their findings and the Neo-Confucian understanding of li and qi became even more striking. A generation after Needham's work, another scholar who began his career as a scientist (only this time as a physicist), Fritjof Capra, went further in pointing out some of the relevance of traditional Chinese thought to our modern scientific understanding of the universe in his book entitled *The Tao of Physics*. "The Neo-Confucians," Capra wrote, "developed a notion of *qi* which bears the most striking resemblance to the concept of the quantum field in modern physics. Like

[75] Cited Needham (1951) op. cit., 220-21.

[76] Needham (1972) op. cit., 479-80.

the quantum field, *qi* is conceived as a tenuous and non-perceptible form of matter which is present throughout space and can condense into solid material objects."[77]

Capra focuses much of his attention on the Chinese conception of how qi acts according to the principles of *yang* and *yin* which, as noted by the early Neo-Confucian Zhou Dun-yi, are considered the most fundamental principles of organization attributable to qi. Zhu Xi in fact viewed Zhou's work as foundational to his own philosophy, noting how "Movement and Quiescence, in their alternation, are each the roots of the other. There is Movement and then Quiescence; Quiescence and then Movement. They open and close, go and come, succeeding each other without pause. There is a division into the *yin* and into the *yang*, and the Two Forms are thus established."[78] Capra links this idea to one of the most important findings of quantum mechanics – the dual characteristic of subatomic matter as both wave and particle.[79]* Capra notes that one of the founders of quantum mechanics, Niels Bohr was "well aware of the parallel between his concept of complementarity and Chinese thought," telling us that Bohr was so deeply impressed by the Chinese conception of the universe that when he was being knighted and had to choose a motif for his coat-of-arms, he decided on the Chinese symbol of *tai-ji* – the Supreme Ultimate.[80]

While this parallel between the Neo-Confucian concept of qi and the findings of quantum mechanics is notable, there is another correspondence with modern scientific understanding with even more far-reaching implications. What Needham referred to as "modern natural science" has come a long way since he wrote those words in 1956. In areas known as complexity science and dynamical systems theory, researchers from specialties as diverse as mathematics, physics, climatology, biology and neuroscience have come to understand the natural world in terms of a complex of different systems continually interacting with each other. They have begun to recognize certain universal features of how these dynamical systems interact which remain valid across the entire natural world, from vast systems such as global weather patterns to microscopic systems such a living cell. The most fundamental feature of these systems is that they self-organize according to certain principles to create a cohesive whole that cannot be completely understood by reducing the system to its elemental parts. The principles that organize the system remain relatively stable even while the physical matter that makes up the system changes. The correspondence of these findings to the Neo-Confucian concepts of li and qi are more than superficial – they are intrinsic to the very structure of both dynamical systems theory and Neo-Confucian thought.[81]

A simple way to understand the fundamental notion of systems theory is to consider a candle flame. Over a period of several minutes, the flame continues to burn as a stable system, but every molecule that originally comprised the flame has now vanished into the atmosphere. The molecules making up the flame bear no resemblance to those of the earlier flame, yet the flame remains an ongoing entity. In scientific terms, we can understand the organizing

---

[77] Capra, F. (1975/1999). *The Tao of Physics: An Exploration of the Parallels between Modern Physics and Eastern Mysticism*. Boston: Shambhala Publications, 213-14.

[78] Fung & Bodde (1942b), op. cit., 23.

[79] Interestingly, considering the dual concepts of li and qi as analogous to wave and particle, this subatomic characteristic of matter could be viewed as providing an answer to the question posed a thousand years ago to Zhu Xi: "What came first, li or qi?" The quantum field might perhaps be understood as the region where li and qi are indistinguishable, and it is therefore only at the level of atoms where qi and li become separable concepts.

[80] Capra, op. cit., 158, 160.

[81] See, for example, Kauffman, S. (1995). *At Home in the Universe: the Search for Laws of Self-Organization and Complexity*. New York: Oxford University Press; Thompson, E. (2007). *Mind in Life: Biology, Phenomenology, and the Sciences of Mind*. Cambridge, Mass.: Harvard University Press; Solé, R., & Goodwin, B. (2000). *Signs of Life: How Complexity Pervades Biology*. New York: Basic Books; Goodenough, U. (1998). *The Sacred Depths of Nature*. New York: Oxford University Press; Camazine, S., Deneubourg, J.-L., Franks, N. R., Sneyd, J., Theraulaz, G., & Bonabeau, E. (2001). *Self-Organization in Biological Systems*. Princeton: Princeton University Press.

principles that create the dynamics of the flame in terms of the relatively stable relationship between the wax, the wick, the flame's heat and the oxygen in the atmosphere. In Neo-Confucian terminology, we can understand these relationships as the li of the flame which remains stable even while the qi – the physical components – continually changes.

The same principles of the relationship between li and qi apply when we consider ourselves as a complex dynamical system. If you look at a photograph of yourself when you were a child, you instantly recognize it as yourself, but virtually every cell that was in that child no longer exists in your body. Even the cells that do remain, such as brain and muscle cells, have reconfigured their own internal contents, so that probably none of the molecules forming that child in the photograph are part of you now. This raises the question of what it actually is that forms the intimate connection between you and that child. The answer is that the li is what connects you. The qi has all changed, but the li remains stable: growing, evolving, but patterning its growth on the original principles of organization of the child in the picture.

The same concept of li can be applied to current studies of consciousness. Some researchers have tried to place consciousness in a specific place in the human brain, such as the thalamus, but sophisticated neuroscientific theories of consciousness which arise from dynamical systems theory look to the li rather than the qi for the source of consciousness. This is how two of the foremost neuroscientists in the area describe the li of consciousness:

> Many neuroscientists have emphasized particular neural structures whose activity correlates with conscious experience... but it is a mistake to expect that pinpointing particular locations in the brain or understanding intrinsic properties of particular neurons will, in itself, explain why their activity does or does not contribute to conscious experience...
>
> A dynamic core [of consciousness] is ... a process, not a thing or a place, and it is defined in terms of neural interactions, rather than in terms of specific neural location, connectivity, or activity... the core may change in composition over time... the same group of neurons may sometimes be part of the dynamic core and underlie conscious experience, but at other times may not be part of it and thus be involved in unconscious processes.[82]

Just as the li was understood by the Neo-Confucians to apply to every aspect of the universe, so dynamical systems theorists are beginning to recognize that their principles apply equally to everything in the natural world. The prominent biologist Carl Woese touched on this implication when he applied his systems understanding of an organism to all natural systems:

> Organisms are resilient patterns in a turbulent flow – patterns in an energy flow... It is becoming increasingly clear that to understand living systems in any deep sense, we must come to see them not materialistically, as machines, but as stable, complex, dynamic organization.
>
> This picture of living creatures, as patterns of organization rather than collections of molecules, applies not only to bees and bacteria, butterflies and rain forests, but also to sand dunes and snowflakes, thunderstorms and hurricanes. The nonliving universe is as diverse and as dynamic as the living universe, and is also dominated by patterns of organization that are not yet understood.[83]

---

[82] Edelman, G. M., and Tononi, G. (2000). *A Universe of Consciousness: How Matter Becomes Imagination*, New York: Basic Books, 18-19, 144. Interestingly, Zhu Xi himself uses the analogy of a candle flame in discussing in the following passage: "(Question:) 'With regard to consciousness: is it the mental faculty of the mind that is thus conscious, or is it the action of the Qi?' (Answer:) 'It is not wholly Qi. There is first the Li of consciousness; but by itself it cannot exercise consciousness. There can be consciousness only when the Qi has agglomerated to form physical shapes, and the Li has united with the Qi. The case is similar to that of the flame of this candle. It is because the latter receives this rich fat that we have so much light.'" See Fung (1976), op. cit., 302.

[83] Woese, C. R. (2004). "A New Biology for a New Century", *Microbiology and Molecular Biology Reviews*, pp. 173-186.

The significance of this correspondence between the Neo-Confucian system of thought and that of dynamical systems theory is far-reaching and will be explored in detail in the second volume of this book. Crucially, many of the insights generated by the Neo-Confucian philosophers arise from the fundamental interplay between li and qi in the natural world, in our human experience, and in our relation to the cosmos – the same dynamic that is currently being explored by scientific researchers in dynamical systems. These insights arose in the particular context of Song dynasty China and carry some of the unique linguistic and cultural characteristics of that time and place; but much of what the Neo-Confucian thinkers discovered about human nature and how the li can inform our values and life experiences remains valid across the span of time and place, offering a potential treasure trove of wisdom which can be applied to our modern era. The remainder of this chapter will explore some of that treasure.

The li and the laws of nature

One crucial insight afforded us by the Neo-Confucian concept of the li arises from its contrast to the conventional Western idea of "laws of nature." As will be discussed in some detail later in this book, the idea that there are fixed laws of nature imposed on our universe is so embedded in our Western cultural inheritance that it is rarely questioned, but it may also be seen as a cognitive construction unique to the Western tradition. Since the 17th century, when Isaac Newton formulated the laws that govern the motion of objects, these "laws of nature" have become foundational to how we think about the natural world. It is not surprising, then, that some scholars have taken the logical step of interpreting the Neo-Confucian concept of li as meaning the "laws of nature." The prominent 20th century sinologist Derk Bodde, for example, who worked closely with Feng Youlan, chose to translate li as "Law," writing: "The word may be translated either in the plural, as Laws, or in the singular, Law, when referring to these Laws as forming a collective entity. Sometimes, too, to emphasize its pure and metaphysical nature, the term *tian li* or Celestial Law is used."[84]

Needham weighed in against this translation, just as strongly as with Feng's dualistic translation, stating that Bodde and others who chose that term "were not well justified in doing so, and in view of the great confusion which it is liable to cause, this reading should be given up."[85] Needham focused on two essential elements of the Western idea of "laws of nature" that didn't apply to the Chinese conception of li. First of all, our understanding of these laws is that they are fixed and eternal – never changing. The Chinese did have a word for this kind of law, but it was not li. Instead, they used the word *ze* which, in its earliest formulation referred to the act of "incising codes of laws on ritual cauldrons."[86] The word *ze* thus came to mean a law imposed by men: "the laying down and following of written rules and lists of what may and may not be done … going by the book."[87] For example, there are references in Chinese texts to "his words will be a *rule* for the empire"; "unvarying *laws*"; "a Customs *tariff*" – all using the Chinese word "*ze*."[88]*

By contrast – and here we get the full magnitude of the distinction – Needham points out that the Dao is viewed as "non-law", as the *opposite* of *ze*. The following, coming from a Chinese classic of the 2nd century BCE, explicitly describes the Dao in opposition to *ze*:

---

[84] Fung & Bodde (1942b) op. cit., 7.

[85] Needham (1972) op. cit., 558. See also Needham (1951) op. cit., 208-9.

[86] Ibid., 210-11.

[87] Watts, A., op. cit., 45-6.

[88] Needham (1951) op. cit., 211-12. In addition to *ze*, Needham notes that another important Chinese term for the body of law is *fa*, which is the word used for the rule-oriented philosophical group called the Legalists who were frequently in direct opposition to the Confucians in ancient Chinese history.

> The Dao of Heaven operates mysteriously and secretly; it has no fixed shape; it follows no definite rules [*wu-ze*, literally "non-law"]; it is so great that you can never come to the end of it; it is so deep that you can never fathom it.[89]

This distinction between the simplicity of the fixed Newtonian laws of nature and the actual complexity of the natural world is one which modern scientists are beginning to focus their attention on, as they increasingly explore dynamical systems theory to understand those aspects of the natural world that traditional science has ignored. Here is a recent description of this dichotomy raised by two physicists in the journal *Science*:

> One of the most striking aspects of physics is the simplicity of its laws. Maxwell's equations, Schrödinger's equation, and Hamiltonian mechanics can each be expressed in a few lines. The ideas that form the foundation of our worldview are also very simple indeed: The world is lawful, and the same basic laws hold everywhere. Everything is simple, neat, and expressible in terms of everyday mathematics, either partial differential or ordinary differential equations.
>
> Everything is simple and neat – except, of course, the world.
>
> Every place we look – outside the physics classroom – we see a world of amazing complexity. The world contains many examples of complex 'ecologies' at all levels: huge mountain ranges, the delicate ridge on the surface of a sand dune, the salt spray coming off a wave, the interdependencies of financial markets, and the true ecologies formed by living things. Each situation is highly organized and distinctive, with biological systems forming a limiting case of exceptional complexity. So why, if the laws are so simple, is the world so complicated?"[90]

The authors then go on to describe some of the principles of that natural complexity that they and others are beginning to distinguish. It is hard to imagine a more eloquent description of the difference between the Western laws of nature and the Neo-Confucian conception of the li.

The second element of the Western idea of "laws of nature" that Needham critiqued is the implicit sense that there is an external law-maker imposing this law on the universe and enforcing it. As we shall see in a future chapter, the Western sense of God as divine law-giver played an important role in the evolution of the scientific tradition in Europe. The Chinese, however, didn't conceive of a creator God in the Western way, and this contrast is key to their understanding of the li as a set of principles intrinsic to the systems they describe rather than imposed on them – closely equivalent to the modern dynamical systems conception of self-organization. "There is 'law' implicit in it," Needham writes in relation to the Neo-Confucian li, "but this law is the law which parts of wholes have to conform to by virtue of their very existence as parts of wholes. And this [is] true whether they are material parts of material wholes, or non-material parts of non-material wholes. The most important things about parts is that they have to fit precisely into place with the other parts in the whole organism which they compose, without, as Chen Chun says, the slightest excess or deficiency."[91]

As an example of the deep-rooted Chinese sense of natural order as intrinsic, Needham quotes from Wangbi's commentary on the *I Ching*. In discussing a passage on the best way of governing, Wangbi argues that *ze* should not be imposed "by means of punishments and legal pressure, but... one should exert one's influence [by example] so as to change all things." Wangbi then goes on to contrast *ze* with the "laws" of the natural world, observing that "Divine law (*ze*) has no sanctions. We do not see Heaven command the four seasons, and yet they do not swerve from their course." This thought, Needham points out, "is extremely Chinese. Universal harmony comes about not by the celestial fiat of some King of Kings, but by the spontaneous co-operation of all beings in the universe brought about by their following

[89] *Huainanzi*, cited in Needham (1972), op. cit., 561.

[90] Goldenfeld, N., & Kadanoff, L. P. (1999). "Simple Lessons from Complexity." *Science, 284*, 87-89.

[91] Needham (1951) op. cit., 218.

the *internal* necessities of their own natures. One begins to see how deeply rooted in ancient Chinese ideas was the Neo-Confucian philosophy of organism… all entities at all levels behave in accordance with their position in the greater patterns (organisms) of which they are parts."[92]*

This profound sense of how everything in the natural world coheres into a harmonious set of interlocking dynamic systems has led some recent translators to suggest that perhaps the best single English word to translate the term "li" is "coherence," which one modern sinologist, Stephen Angle, spells out as "the valuable, intelligible way that things fit together."[93] Here, for example, is a statement of Zhu Xi that is more readily understandable when "li" is translated as "coherence": "There is coherence for each and every thing, whether that thing is taken as heaven-and-earth as a whole, or a thing smaller than a cricket, an ant, or a blade of grass."[94] As we continue in this chapter, the reader is encouraged to consider the term "coherence" in addition to "principles of organization" when trying to make sense of the word "li."

Li, Dao and Tai-ji

The Neo-Confucian philosophers spent considerable time pondering this cosmic coherence that Needham describes as "the universal harmony" brought about by "the spontaneous co-operation of all beings in the universe," and they generally tended to agree that this was what should be called the Dao. Zhu Xi was asked by his students to differentiate between the li and the Dao, and his answer is helpful for our understanding:

> Someone asked what the difference is between the Dao and the Li. Master Zhu said: "The Dao is like a roadway. The Li is its ordered pattern." It was also asked if this is anything like the grains in wood, and Master Zhu answered: "It is."
>
> It was further asked that, if this is the case, then the Dao and the Li appear to be alike, and Master Zhu said: "The word 'Dao' is all-embracing, while the Li are so many veins inside the Dao." He also said: "The Dao is vast and large. The Li is minute and detailed."[95]

This passage seems to suggest that we consider the li to refer to the organizing principles of everything that exists in the universe, while the Dao should be understood as the general set of principles that incorporates all the other principles. Elsewhere, in a similar formulation, Zhu Xi states: "Everything that has shape and form is qi. That which constitutes the li of this qi is Dao."

The celebrated systems thinker Gregory Bateson, who is regarded by some as a founding figure in cybernetics and dynamical systems theory, once famously wrote in one his books the following:

> What is the pattern which connects all the living creatures? …
>
> My central thesis can now be approached in words: *The pattern which connects is a metapattern*. It is a pattern of patterns. It is that metapattern which defines the vast generalization that, indeed, *it is patterns which connect*.[96]

---

[92] Ibid., 213. For a more recent critique of the translation of li as law, see Angle, op. cit., 42, who asserts that "without a lawgiver, 'law' is not the best way to understand li, as Needham and Graham have argued. We find ourselves and our world to be structured according to these patterns of coherence (which we find both valuable and intelligible), without being 'bound' to them by any authority."

[93] Angle, op. cit., 32.

[94] Ziporyn, op. cit.

[95] Cited in Angle, op. cit. 42-3; Needham (1972) op. cit. 484; and Tillman, H. C. (1992). *Confucian Discourse and Chu Hsi's Ascendancy*. Honolulu: University of Hawaii Press, 10. In the interests of pedagogical clarity, the quoted passage is a composite incorporating elements of all three translations.

[96] Bateson, G. (2002). *Mind and Nature: A Necessary Unity*. Cresskill, New Jersey: Hampton Press, 7, 10.

In terms of the Neo-Confucian approach to the cosmos, Bateson's passage could be interpreted as explaining, just like Zhu Xi a thousand years earlier, the relationship between the Dao – the metapattern – and the li – the innumerable patterns connected by the metapattern.

It would seem, from our human perspective, that it might be much easier to discern some of the patterns making up the cosmos than the ultimate metapattern – and that is precisely how Zhu Xi perceived it. "The Dao," he explains, "is… so distant that even sages cannot… comprehensively understand it… But the li that is the reason for things, though hidden and not visible, can nonetheless be known and acted upon."[97]

If the Dao represents the metapattern for the li, then how do both Dao and li relate to the Supreme Ultimate – *tai-ji* – that ultimate ground of reality that Zhou Dun-yi had originally identified a hundred years earlier in his attempt to build an alternative worldview to Buddhism? After all, Zhu Xi's intention was to describe a systematic and coherent cosmology, and he needed to integrate these various concepts in a way that could make sense. Zhu was highly aware of this, and over his lifetime he contributed five different essays or commentaries on Zhou Dun-yi's famous Diagram of the Supreme Ultimate.[98]

The relationship between Dao, li and *tai-ji* was certainly not easy to discern. In fact, one of the early Neo-Confucians, Cheng Yi, went so far as to equate Dao and *tai-ji*, simply saying "The Great Ultimate is the Tao: the two modes are yin and yang. Yin and yang belong to the one Tao."[99] Indeed, in some of his own statements, Zhu Xi seems to be describing the relationship between li and *tai-ji* in a similar way to how he described the relationship between li and Dao. He said, for example, that "when all li of heaven and earth and all myriad things are put together, that is the Supreme Ultimate (*tai-ji*)."[100] But Zhu Xi insisted on one crucially important characteristic of the Supreme Ultimate: it consists of all the li without any qi.[101] He focused on Zhou Dun-yi's seminal statement "*wu-ji er tai-ji*" or "the unlimited (of the *Tao Te Ching*) is the same as the Supreme Ultimate (of the *I Ching*)." Zhou Dun-yi made this statement, Zhu surmised, because he didn't want people to think of the Supreme Ultimate as tangible, so he described it as *wu-ji* or unlimited.[102] "The Supreme Ultimate is merely the pattern of heaven and earth and the myriad things," he explained. "Before heaven and earth existed, there assuredly was this pattern."[103] Needham summarizes well the meaning that Zhu Xi was inferring from Zhou Dun-yi's celebrated statement: "In sum the identity of *tai-ji* and *wu-ji* was… a recognition of two things, first, the existence of a universal pattern or field determining all states and transformations of matter-energy, and secondly, the omnipresence of this pattern."[104]

The difference, then, between the Supreme Ultimate and the Dao was that the Supreme Ultimate represented the underlying patterning of the universe conceptually prior to its actual existence, whereas the Dao represented the tangible manifestation of the universe in the ever-changing and infinitely complex interactions between the li and qi that comprise the cosmos. The phrase "conceptually prior," however, risks leading us down a slippery slope. How is this idea of something existing conceptually prior to the universe any different from Plato's theory of Forms? Haven't we slipped right back into Feng Youlan's dualistic interpretation of Neo-Confucianism? There is, in fact, a crucial difference between the idea of

[97] Cited in Angle, op. cit., 86.
[98] Ching, op. cit., 37.
[99] Ibid., 39.
[100] Huang, op. cit., 130.
[101] Ching, op. cit., 44.
[102] Ibid.
[103] Thompson, op. cit.
[104] Needham, op. cit., 466.

the Supreme Ultimate and Plato's Forms, a difference which set both philosophical traditions in opposite directions as they built up from their foundational concepts. Plato's theory of Forms posited two different dimensions, one dimension of eternal Forms which was the ultimate source of value, the other a worldly dimension filled with imperfect, polluted imitations of those eternal Forms. This led Plato and his followers to pursue the transcendent dimension of eternal Forms by rejecting the material world, conceptualizing the soul as their link with that transcendent dimension, and therefore viewing their embodied existence as inadequate.

The Neo-Confucian conception of the Supreme Ultimate, on the other hand, perceived it as existing everywhere in the entire universe in its tangible manifestation as the Dao, expressed in an infinite variety of ways through the li. A persistent theme in Neo-Confucian thought is the existence of the Supreme Ultimate in the universe as a unity and at the same time as endlessly differentiated. "Fundamentally there is only one Supreme Ultimate," Zhu Xi says, "yet each of the myriad things has been endowed with it and each in itself possesses the Supreme Ultimate in its entirety."[105] On numerous occasions, Zhu Xi sought to explain this apparent paradox. "It is as if one lined up some basins of water," he said, "each full without having to rely on any others. But break them and release the water, and it is all the same water."[106] Elsewhere, he alluded to a Buddhist metaphor of moonlight:

> Just as the moon is in heaven:
> It is only one.
> Yet it is reflected in rivers and lakes;
> It can be seen everywhere;
> It should not be called divided.[107]

Here, Zhu Xi concedes, "the Buddhists have glimpsed the li of the Dao."[108]*

As we have seen in earlier chapters of this book, this is one of the oldest recorded ideas in human thought. The ancient Egyptians prayed to Amun intoning: "You are the sky, you are the earth, you are the netherworld, you are the water, you are the air between them."[109] The Upanishads described the manifestations of Brahman as: "He is the fire and the sun, and the moon and the stars. He is the air and the sea... He is the boy, he is that that girl.. He is the blue bird... and he is the seasons and the seas."[110] The sense of divinity existing immanently through the entire universe is known in the Western tradition as pantheism, and during the period of Christian dominance was viewed as a heresy punishable by death.[111]* In the modern era, an experience of the ultimate oneness of the cosmos is likely to be dismissed as "mystical" and not considered valid in any mainstream scientific or rational description of the universe. The Neo-Confucians, on the other hand, came to this understanding of the universe by way of

---

[105] Thompson, op. cit., 1988.

[106] Angle, op. cit., 44-5.

[107] Ching, op. cit., 46.

[108] Angle, op. cit., 44-5. This Buddhist metaphor of the moon appearing as both a unity and differentiated may be traced ultimately back to the original Vedic vision of Agni, the god of fire, existing as a unity in all separate fires. As noted in Chapter 11, "Atman equals Brahman," pages 183-5, this original conception of the one-and-the-many led eventually to the Vedic identity between the individual soul, *atman*, and the divinity of the entire universe, *Brahman*. A passage in the *Katha Upanishad* makes this linkage explicit, stating: "Even as one Fire has entered into the world, but it shapes itself to the forms it meets, so there is one Spirit within all the creatures, but it shapes itself to form and form: it is likewise outside these." Thus, we can trace a lineage for the Neo-Confucian approach to the Supreme Ultimate all the way back to the source of the Indian Vedic tradition. This underlines the astonishing act of synthesis accomplished by the Neo-Confucians, conceptually integrating the essential vision of Vedic cosmology with the more tangible Daoist sense of the natural world and the Confucian perception of human identity arousing out of cultural community.

[109] Chapter 7, "The one and the many: tackling the cognitive dissonance," pages 118-120.

[110] Chapter 11, "The emergence of transcendent pantheism," pages 195-7.

[111] Giordano Bruno, for example, was burned at the stake in 1600 for his heretical, pantheistic beliefs. See http://en.wikipedia.org/wiki/Giordano_Bruno#Theological_heresy.

a systematic exploration of the implications of a cosmos consisting entirely of li and qi. "When we speak of heaven, earth, and the myriad things together, there is just one li," says Zhu Xi. "When we come to humans, each has his or her own li… Although each has his own li, each nonetheless emerges from a single li."[112] While these statements appear paradoxical, they make more sense in English if we adopt the practice of translating li as "coherence": Each of us has our own unique coherence, which nonetheless emerges from a single coherence.

What, then, is this coherence that is intrinsic to each of us and to the entire natural world? The Neo-Confucians pursued this question with a passion. Rather than attempting to transcend their bodies as in the Platonically derived dualistic path of the Western tradition, they turned their attention to understanding their embodied existence as conscious participants in the natural world. They had a name for this process: *ge wu*, which is conventionally translated as "investigation of things." What it was that they investigated, and how they went about it, is the subject of our next section.

The Investigation of Things

For Zhu Xi, there was no separation between the Supreme Ultimate and the mundane activities of daily life. In one of his essays on Zhou Dun-yi's *Diagram of the Supreme Ultimate*, he wrote:

> The exalted words of Master Zhou on the marvels of *wu-ji er tai-ji* are inseparable from our daily living. His profound explorations into the transformations of yin, yang, and the Five Phases are inseparable from humanity, rightness, propriety, wisdom, firmness and suppleness, good and evil… What is called the Supreme Ultimate is nothing but the common name of the principles of Heaven, Earth, and the myriad things.[113]

Zhu Xi was inspired by the statement of another of the early Neo-Confucians, Cheng Yi, regarding how one should conduct one's life as a result of this insight. "There is li in everything," Cheng Yi wrote, "and one must investigate li to the utmost."[114] Following Cheng's exhortation, Zhu emphasized the importance of understanding the li in every manifestation of the natural world. "From the Supreme Ultimate above," he said, "to a small thing like a blade of grass, a plant or an insect below, each has its li… we must understand them one by one… As more and more is accumulated, one will spontaneously be able to achieve a far and broad understanding."[115]

This emphasis on understanding things in the material world has occasionally led some observers to see Zhu Xi and his fellow Neo-Confucians as early proponents of the modern empirical, scientific approach to investigating the world. In this view, as described by the early 20th century philosopher William Hocking, "this remarkable thinker of the twelfth century, the most systematic of Chinese philosophers, was also closer than any other before our own century to an anticipation of what we now call 'scientific method,'" demonstrating "the essence of the empirical spirit." However, this interpretation misses what is most important about the Neo-Confucian approach. Instead of approaching the material world with the detached objectivity of the modern scientific method, the Neo-Confucians understood themselves to be part of the li they were investigating, and as such their motivation, in Hocking's words, "is not the motivation of modern science." The early pioneers of the scientific revolution in Europe such as Francis Bacon, Hocking notes, "sought principles

[112] Angle, op. cit., 44-5.
[113] Cited in Ching, op. cit., 130.
[114] Chan (1957) op. cit.
[115] Cited in Huang, op. cit., 138.

for the sake of the control of nature," whereas Zhu Xi on the other hand, "was interested not at all in the mastery of nature, but rather in self-mastery and the right ordering of life."[116]

A crucial difference between Neo-Confucian investigation of things and the modern, scientific approach to the world is the Neo-Confucian sense that principles of morality and ethics naturally arise from an understanding of the li. It was "not natural laws but ethical virtues" that the Neo-Confucians were interested in investigating, writes historian Toby Huff.[117] "In Zhu Xi's thinking," observes prominent 20th century Chinese scholar Wing-Tsit Chan, "all moral virtues such as humanity and righteousness, human relations... and social decorum... are nothing but Dao." And Dao, as we saw in the previous section, is comprised of all the interactions of li and qi that make up the universe. Chan quotes Cheng Yi's suggestion on how to approach the investigation of things: "There are many ways of investigating li to the utmost. One way is to read about and discuss truth and principles. Another way is to talk about the people and events of the past as well as the present, and to distinguish which is right and which is wrong. Still another way is to handle affairs and settle them in the proper way." "The Neo-Confucians," Chan concludes, "were primarily interested in the knowledge of value."[118]

The question of the source of value in human experience and how it should be interpreted in daily human life is one of the most central elements of the entire human search for meaning in the universe, and the Neo-Confucian contribution to this issue is of the utmost importance. In our modern global culture, the debate over the source of value tends to be channeled into two opinion sets: monotheistic and rationalistic. The monotheistic viewpoint arises from the themes covered in previous chapters of this book: that the ultimate source of value derives from a transcendent realm and is imposed on us by God. The rationalistic perspective takes different forms, but generally looks to humanity as a source of values, while evolutionary biologists point to the adaptive value of basic human social emotions such as a sense of fairness and in-group loyalty.[119] The Neo-Confucian perspective, while fully consistent with the rational view of evolutionary biology, goes further than most scientific explanations in attributing the ultimate source of value to the natural world and humanity's intrinsic connection with it.

At the heart of the Neo-Confucian understanding of the cosmos, and humanity's relationship to it, is the sense that everything is ultimately connected to everything else through the li. Therefore, to understand any aspect of reality, it's necessary to recognize it as a certain perspective linked to all other aspects of reality. A.C. Graham offers a helpful way of seeing this, writing that "Li is itself conceived as a vast three-dimensional structure which looks different from different angles. In laying down the lines along which everything moves, it appears as the Dao; in that the lines are independent of my own personal desires, it imposes itself on me as Heaven; as a pattern which from my own viewpoint spreads out from the sub-pattern of my own profoundest reactions, it appears to me as my own basic Nature."[120] So in this sense, the ultimate goal of the investigation of things is recognizing this interconnectivity of all aspects of existence; or, in Angle's rendition, "fully apprehending the coherence of things."[121]

---

[116] Hocking, W. E. (1936). "Chu Hsi's Theory of Knowledge." *Harvard Journal of Asiatic Studies, 1*(1), 109-127.

[117] Huff, T. E. (2006). *The Rise of Early Modern Science: Islam, China, and the West*. New York: Cambridge University Press, 254.

[118] Chan (1975) op. cit.

[119] See for example, Boehm, C. (2012). *Moral Origins: The Evolution of Virtue, Altruism, and Shame*. New York: Basic Books; Churchland, P.S. (2011). *Braintrust: What Neuroscience Tells Us about Morality*. Princeton: Princeton University Press; Harris, S. (2011). *The Moral Landscape: How Science Can Determine Human Values.* New York: Free Press.

[120] Quoted in Angle, op. cit., 35.

[121] Ibid., 156.

This sense of the interconnectivity of the li demonstrates a highly sophisticated understanding of the natural world and our perception of it, which only began to be explored in the West by certain schools of thought in the 20th century. Gestalt psychology for example, which comes from the German word meaning "shape" or "form," sees human perception as a holistic, self-organized integration of a complex interplay of patterns. One scholar notes the close connection of Gestalt to Neo-Confucian thought, writing that "Zhu Xi's call to investigate things so as to explore their li rather was to encourage people to regard things as gestalts (embedded within larger gestalts). He thus took li to refer in practice to the fundamental patterns on the basis of which such perceptual gestalts can be viewed as identifiable phenomena."[122]

It was Cheng-yi who first explored this characteristic of the natural world that coherent patterns or gestalts are universally embedded within larger gestalts. Cheng was emphatic about this fundamental principle of reality. "We say that all things are one reality," he wrote, "because all things have the same li in them... The li of a thing is one with the li of all things... There is only one li in the world. You may extend it over the Four Seas, and it is everywhere true."[123] While this might sound at first like a rather mystical and non-specific pronouncement, breakthroughs in mathematics in recent decades have demonstrated Cheng's statements to be an astonishingly accurate representation of the nature of reality as modern scientists are coming to understand it. In 1982, the brilliant mathematician, Benoit Mandelbrot, published a book entitled *The Fractal Geometry of Nature*, which has transformed the scientific approach to understanding the natural world. Mandelbrot showed that nature forms intricate patterns which continually replicate themselves at different scales, each pattern nested inside another, so that however closely you zoom in, you will see the same underlying patterning occur. Examples of these fractal patterns can be clearly seen in clouds, coastlines, ferns and sand dunes.[124] Since Mandelbrot's discovery, biologists have come to recognize that the design of life itself can also be identified as fractal. As biologist Lynn Margulis observes, "Life resembles a fractal... The 'fractals' of life are cells, arrangements of cells, many-celled organisms, communities of organisms, and ecosystems of communities. Repeated millions of times over thousands of millions of years, the processes of life have led to the wonderful, three-dimensional patterns seen in organisms, hives, cities, and planetary life as a whole."[125]

The implications of the fractal nature of life continue to unfold in contemporary scientific research. In the human body, fractal designs have been discovered in systems as diverse as blood vessels, lungs, heart rate, the digestive system, and brain networks, so much so that fractal behavior in a system is coming to be seen as a sign of good health.[126] Researchers have noticed similarities between the patterns of connectivity between neurons in the brain and the patterns exhibited by insect colonies such as ants or bees, hinting at analogous self-organized processes that create both our own consciousness and the "intelligence" of the natural world.[127] Even the human creative process and our sense of beauty seem to be characterized by a fractal design, which has been identified in the compositions of

[122] Thompson, op. cit.

[123] Cited in Chan (1957) op. cit.

[124] Gleick, J. (1987). *Chaos: Making a New Science*. New York: Penguin, 81-118.

[125] Margulis, L., & Sagan, D. (2000). *What Is Life?* Berkeley/Los Angeles: University of California Press, 4.

[126] Cipra, B. A. (2003). "A Healthy Heart Is a Fractal Heart." *SIAM News, 36*(7); Gleick, op. cit., 108-10; Buzsáki, G. (2006). *Rhythms of the Brain*. New York: Oxford University Press, 126-7.

[127] Solé & Goodwin, op. cit., 147-51; Couzin, I. D. (2008). "Collective cognition in animal groups." *Trends in Cognitive Sciences*, 13(1), 36-43; Ward, A. J. W. et. al. (2008). "Quorum decision-making facilitates information transfer in fish shoals." *PNAS*, 105(19), 6948-6953.

Bach and Mozart.[128] While the full significance of the fractal patterning of nature will be explored more in the second volume of this book, it is noteworthy here as a resounding validation of the Neo-Confucian insight that the underlying patterns of nature are universal in their scope and embedded within larger patterns with the same principles, the investigation of which represents a crucial key to understanding both the natural world and ourselves.

The Dao in one's own nature

As they approached their own investigation of things, the Neo-Confucians began with the realization of the fractal nesting of their own consciousness within the patterns of reality all around them. They recognized that their very perception of reality became part of it and could never be separated from it. "If one wishes to know the reality of Dao," wrote Zhu Xi, "one must seek it in one's own nature." Or coming at it from the other perspective, he would also quote an earlier philosopher, Shao Yang, that one's "nature is the concrete expression of the Dao."[129] They thus, as one scholar notes, acknowledged that "discernment of li is a deeply subjective process, and being in a situation, cognizant of its constituent li, already involves initiating a response."[130] This is another profound philosophical insight that was achieved in Western thought only in the 20th century by phenomenological philosophers such as Husserl and Merleau-Ponty, who emphasized that our knowledge of the world, as embodied creatures, was ultimately subjective rather than objective. As Merleau-Ponty put it, "All my knowledge of the world, even my scientific knowledge, is gained from my own particular point of view, or from some experience of the world without which the symbols of science would be meaningless. The whole universe of science is built upon the world as directly experienced, and if we want to subject science itself to rigorous scrutiny and arrive at a precise assessment of its meaning and scope, we must begin by reawakening the basic experience of the world, of which science is the second-order expression."[131] In some respects, this "reawakening the basic experience of the world" may be seen as the basis for the Neo-Confucian investigation of things.

An important realization the Neo-Confucians arrived at from this understanding was that the approach they took in their investigation of the universe would directly the outcome. They therefore focused much of their attention on what this approach should be and concluded that the most essential quality was a state of mind known as *jing*, frequently translated as "reverence." The original Confucian term referred to approaching a revered object such as an ancestral spirit or a parent. The Neo-Confucians expanded this sense of reverence to the entire experience of one's life, encouraging the cultivation of qualities such as attentiveness and concentration.[132] Bodde interprets the word to mean: "an unflinching determination, a meticulous attentiveness to [one's] conduct, and an absolute seriousness of purpose."[133] However, this interpretation implies a rather austere tone, which is different from what the Neo-Confucians appeared to experience. A helpful modern description of the state of *jing* that seems to resonate with the Neo-Confucian sensibility is offered by biologist Ursula Goodenough in her book entitled *The Sacred Depths of Nature*:

> As a cell biologist immersed in [a deep understanding of, and admiration for, the notes and the strings and the keys of life] I experience the same kind of awe and reverence when I contemplate the structure of an enzyme or the flowing of a signal-transduction cascade as

[128] Hsu, K. J., & Hsu, A. (1991). "Self-similarity of the "1/f noise" called music." *PNAS, 88*(April 1991), 3507-3509; Wu, D., Li, C.-Y., & Yao, D.-Z. (2009). "Scale-Free Music of the Brain." *PLoS ONE, 4*(6:June 2009), e5915; Buzsáki, op. cit., 123.
[129] Cited in Huang, op. cit., 148-9.
[130] Thompson, op. cit.
[131] *Phenomenology of Perception*, cited in Abram, D. (1996). *The Spell of the Sensuous*. New York Random House, 36.
[132] Huang, op. cit., 96.
[133] Bodde & Fung (1942a) op. cit., 9-10.

> when I watch the moon rise or stand in front of a Mayan temple. Same rush, same rapture.[134]

This awe and reverence applied equally for the Neo-Confucians whether they were considering the outside world around them or the Dao within their own consciousness. They realized, in Angle's words, that "each and every thing we encounter can teach us about that coherence which is ultimately one-and-the-same with the coherence of our own heart-minds."[135] Indeed, there were some Neo-Confucian philosophers, such as Cheng Hao, who believed that the only valid way to understand the universe is to begin and end with understanding oneself. "The student need not seek afar," he proposed, "but search what is in his own person... Therefore, when the reality of the Dao and li is understood, Heaven and man are one and there is no further distinction between them.'" He concluded that "to seek after the truth or goal is not to investigate external things, but to investigate thoroughly one's own inner self. In other words... when one succeeds in an exhaustive investigation of li, one will succeed in fully developing his nature and attaining his destiny."[136]

Cheng Hao's approach initiated a separate school of thought in the Neo-Confucian tradition which became known as the "School of the Mind," – *xin xue* – in contrast to the more mainstream approach known as the "School of the Li."[137] Cheng's favorite expression was the pronouncement that "the li and the mind are one," and to endorse his approach he would refer to the classical Confucian philosopher, Mencius, who famously said that "all things are complete within us."[138] To understand Cheng Hao's approach, we need to remember (as discussed in Chapter 14) that the Chinese word *xin* refers to something very different from the conventional English concept of mind. The Chinese placed the *xin* in the heart, and in contrast to the dualistic Platonically-derived mind-body split of the Western tradition, they understood it as "the locus of the entire range of conscious experience, including perception, thought, emotion, desire, and intuition."[139]

Cheng Hao believed that, if you begin with an authentic sense of reverence for your exploration, and a sincere intention to pursue it seriously, then the experience of your investigation will be natural and easeful. In fact, if you try to force your investigation out of its natural rhythm, you will only fail in your quest. "The student," he wrote, "ought to preserve this mind with *jing* and ought not be impatiently anxious. He ought to cultivate and nourish it deeply and fully, and immerse himself in it, then he will be at ease with himself. But if he seeks after it with impatient anxiety... in the end he will never succeed in understanding the Dao." Far from being austere, Cheng Hao saw the path of internal investigation as a joyful and rewarding one. "If one finds joy," he writes, "in being able to manifest [one's li], then there is no trouble of being unable to hold on to it."[140]

The key to understanding Cheng's approach is to recognize that the exploration of *xin* was not a purely intellectual exercise, but rather a deep integration of the different aspects of human consciousness. As one scholar explains it, one becomes united with the Dao in oneself "by means of an intuitive method in light of personal experience through sincere and earnest self-examination, not conceptual inference in terms of rational analysis."[141] While the mainstream Neo-Confucians in the School of the Li differed from Cheng Hao in believing that external reality was as important as internal reality, they all agreed with him that the internal

---

[134] Goodenough, U. (1998). *The Sacred Depths of Nature,* New York: Oxford University Press, 46.
[135] Angle, op. cit., 170.
[136] Cited in Huang, op. cit., 93-6.
[137] Ibid., 85.
[138] Ibid., 98. See also Wing-tsit Chan cited in Dumoulin, op. cit.
[139] Chapter 14, "*Psyche* versus *xin*", pages 264-267.
[140] Huang, op. cit., 96.
[141] Ibid., 98.

investigation was essential, and that this process was an integrative one. In Zhu Xi's own investigation of things, as one scholar remarks, "there is no distinction of subject and object, for only when one comes into contact with things can one investigate their principle. Thus intuition and intellection are simultaneous."[142] Throughout this book, we have seen how the Western approach to finding meaning in the universe involved separating the prefrontal cortex (pfc)-mediated aspects of the mind's activity, or "conceptual consciousness," and elevating these functions above those other components of human experience known as "animate consciousness." This process has been referred to as the "tyranny of the pfc." Here, in Neo-Confucian China, we find the exact opposite process taking place. The pfc-mediated aspects of the mind are considered to be part of the overall functioning of *xin*, and the pursuit of meaning in one's life involves the seamless integration of all *xin*'s functions: feeling and intellect, intuition and reason – in essence, forming a "democracy of consciousness" instead of a tyranny of the pfc.

The celebrated sinologist Donald Munro describes how Zhu Xi used a particular word, *tiren*, to express the fully embodied experience of knowing something, not just through the pfc-mediated intellect, but throughout the entire mind-body organism – an experience so far from the Western sensibility that no word for this kind of knowing exists in English. The word *ti*, he explains, refers to "a skeletal framework or a body. When used as a verb in the context of relating the self to things, *ti* means to make things part of the body or of the self – in short, to embody them. *Tiren* means to understand something personally, with one's body and mind. This knowledge becomes qualitatively different from knowledge that does not involve personal experience."[143] The deep sense of integration that can arise from this harmonization of cognition and feeling, of subject and object, can lead to a full realization of one's nature in harmony with the entire universe. In this respect, the Neo-Confucians were fond of quoting Mencius' words: "For a person to realize fully one's *xin* is to realize fully one's nature, and in so doing, one realizes heaven."[144]

Harmonizing emotions with the Dao

This welcoming attitude towards feeling and intuition on the path to personal realization didn't mean that the Neo-Confucians believed in letting their emotions run wild. Far from it. Rather, they developed a sophisticated and coherent theory of human psychology that recognized a central place for the appropriate expression of human emotions. They saw *xin* as uniting two different principles to create a complete human being. However, these two principles had nothing to do with the classic Western view of humanity which, as discussed in Chapter 16, saw the human being as "a strange hybrid monster" combining the "divinity" of reason and the animalistic aspects of the body.[145] Rather, the Neo-Confucians saw the *xin* as combining the intrinsic nature of embodied existence with the strong emotions that arise from a person's social interactions, such as love, hate and anger. This configuration of thought is so different from the conventional Western framework that it needs a little unpacking.

When they referred to something's intrinsic nature, the Neo-Confucians used the word *xing*, which means the unique patterning of the li and qi of any specific entity that gives it its own distinctive character. Thus, a tree, an animal, a mountain or a chair each has its own *xing*.[146]* When applied to humans, the word has the same meaning. But there's something

---

[142] Chan (1976) op. cit., referring to the work of David Yu.

[143] Munro, D. J. (2005). *A Chinese Ethics for the New Century: The Ch'ien Mu Lectures in History and Culture, and Other Essays on Science and Confucian Ethics*. Hong Kong: The Chinese University Press, 24.

[144] Cited in Hall & Ames (1998) op. cit., 309n.

[145] Chapter 16, "A strange hybrid monster", pages 308-309.

[146] Fung & Bodde (1942) op. cit., 9. See also Huang, op. cit., 110; Angle, op. cit., 34. Readers may recall that in Chapter 12, the word *de* was translated as "intrinsic nature," and may wonder how this relates to *xing*. Ellen Chen explains that both

else that impels a human being, beyond her *xing*. That, the Neo-Confucians believed, was the set of feelings, emotions and passions arising in a person that they referred to as *qing*.[147] It's in the human heart-mind, or *xin*, that these two principles are combined. In the words of Zhu Xi, "the *xin* is that which unites *xing* and *qing*." In trying to explain this concept, Zhu Xi used the analogy of the *xin* as seed-corn. The li of the seed-corn creates its intrinsic nature, or *xing*; when the seed-corn expresses itself through its qi, then it's expressing its *qing*.[148]* We can see from this analogy that *qing* was not viewed as something bad, which needed to be restrained, but as the creative expression of one's life-force.

However, the Neo-Confucians were well aware that *qing* could be expressed in destructive as well as healthy ways. Their term for these destructive expressions of human emotions was *yu*, which, in the words of one Chinese scholar, "does not mean the natural desires of the body... It refers to the unnatural desires that arise with the awareness of the self and the development of value consciousness. Mind stirring up selfish desires prompts the will to dominate and conquer."[149] As described by Bodde, when the *qing* are "allowed to flow without control and to lose the state of harmonious balance proper to them, [they] result in *yu*, which has evil results."[150]*

How does a person manage to experience and express his emotions without doing so in a destructive way? The Neo-Confucians recognized another faculty in the heart-mind, which they referred to as the regulator or controller, known as *zai*.[151] But this faculty was not like a ruler imposing its will on the feelings arising within a person. Rather, it was something arising from the very cohesion and integration of a person's character, from a person's li. In the words of one Neo-Confucian philosopher, the li is that which "controls without controlling."[152] Zhu Xi was once asked whether the *xin* was the controller, and he responded: "The *xin* does indeed mean the controller. That which controls is none other than the li, and this is not some li that is external to the *xin*."[153]*

How different was this conception of the human personality from that of the Western tradition that we've been tracing over the past several chapters! Far from the Western split of body and soul, with the soul (later transformed into mind) desperately trying to prevent the body from carrying out its sinful desires, the Neo-Confucians saw their natural embodied feelings as integral to their healthy existence, and they recognized that regulating these feelings was the result of an intrinsic process within the heart-mind rather than an internal battle of the will. And once again, we find that recent findings in neuroscience validate the framework of human psychology that the Neo-Confucians constructed. The regulating faculty

---

terms have very similar or even identical meanings. *De*, rather than *xing*, is used in the *Tao Te Ching*, whereas *xing* is used in the Confucian tradition. She writes: "*Xing*, composed of *xin*, heart or kernel, and *sheng*, to be born, means the kernel or inborn nature of a thing. This is exactly the meaning of *de* in the *Tao Te Ching*." (See Chen, E. M. (1973). "The Meaning of *Te* in the *Tao Te Ching*: An Examination of the Concept of Nature in Chinese Taoism." *Philosophy East and West, 23*(4: October 1973), 457-470.) Zhu Xi, however, appears to use *de* slightly differently than *xing*, using it to refer to the nature of the actualized self, writing: "When the Dao has been attained in one's *xin*, we call that *de.*" See Angle, op. cit., 56.

[147] Fung & Bodde (1942) op. cit., 9.

[148] Cited in Huang, op. cit., 137. Similarly, Cheng Yi stated that "the activity of *xing* is called *qing*." – Ibid., 113.

[149] Chen (1989) op. cit., 60.

[150] Fung & Bodde, (1942) op. cit., 9. Within the larger context of this book, the cultural pursuit of *yu* in Western (and modern global) civilization at the expense of the harmonization of human consciousness might possibly be viewed as analogous to the "tyranny of the pfc" as expressed in Neo-Confucian terms.

[151] Ibid.

[152] Luo Qinshun, cited in Angle, op. cit., 41.

[153] Ibid., 42. In the passage cited, the discourse is using the analogy of the human organism to describe the entire universe, and so technically the description of *xin* and *zai* (or *zhuzai*) in this passage is a description of the structure of the cosmos rather than the human personality. However, it seems apparent from the context that Zhu Xi was basing his description of cosmological structure on his understanding of human psychology, and the citation is therefore believed to be appropriate in this case.

that the Neo-Confucians called *zai* is analogous to the executive function of the pfc. Consistent with the Neo-Confucian understanding, researchers in neuroscience are beginning to recognize that, when the pfc works to regulate emotions in a healthy way, it does so not by repressing or overriding emotional states, but by integrating them harmoniously into appropriate decisions and actions. For example, one leading researcher on how emotion and cognition interact has recently argued that "there are no truly separate systems for emotion and cognition because complex cognitive‐emotional behaviour emerges from the rich, dynamic interactions between brain networks. Indeed, I propose that emotion and cognition not only strongly interact in the brain, but that they are often integrated so that they jointly contribute to behaviour."[154] Other researchers have described how a particular part of the pfc, the ventral medial prefrontal cortex, "plays a role in the integration of emotional and cognitive processes by incorporating emotional biasing signals or markers into decision-making processes."[155]

Based on this sophisticated framework of human psychology, the Neo-Confucians recognized that the spiritual goal of a human being was not to transcend their natural feelings and emotions, but to harmonize the experience and expression of those emotions with the flow of the Dao that was intrinsic to their own nature and the world around them. There was a passage from a classic Confucian text that they liked to refer to in explaining the importance of harmonizing the emotions:

> While there are no stirrings of pleasure, anger, sorrow, joy, the mind may be said in the state of equilibrium. When those feelings have been stirred, and they act in their due degree, there ensues what may be called the state of harmony. This equilibrium is the great root from which grow all the human actings in the world, and this harmony is the universal path which they all should pursue.[156]

Zhu Xi's student, Chen Chun, explains that the meaning of harmony in this passage is "not to contradict." In his explanation, which follows in Angle's translation, li has been rendered as "coherence" to help make the meaning more transparent:

> When the coherence inside is manifested, one feels pleasure when there should be pleasure and is angry when there should be anger, without contradicting coherence in any way. That is attaining due measure and degree. Attaining due measure and degree is simply achieving the coherence of what should be, without any excess or deficiency, and not in conflict with coherence**.** That is why it is called harmony.

A key concept here is to express one's emotions "without any excess or deficiency," or as Angle puts it, "seeing that each element receives its due weight at each point in time." A later Neo-Confucian philosopher, Wang Yang-Ming (1472-1529), who lived several centuries after Zhu Xi, developed this idea of harmonizing one's emotions to an even greater level of understanding. As Angle describes, he made a crucial distinction "between excess, which is always bad, and extremity, which may be appropriate."[157] For Wang, this sense of harmony arose from the appropriate expression of all emotions in the human spectrum. He once wrote in a letter to a student that "there is harmony in sorrow. This refers to its taking rise from complete sincerity and being without any affectation. The excess of emotion is not harmony… To be attached to selfish desires and stubbornness is not harmony. The infant cries all day

---

[154] Pessoa, L. (2008). "On the relationship between emotion and cognition." *Nature Reviews: Neuroscience, 9*(February 2008), 148-158.

[155] Simpson, J. R. J., Snyder, A. Z., Gusnard, D. A., & Raichle, M. E. (2001). "Emotion-induced changes in human medial prefrontal cortex: I. During cognitive task performance." *PNAS, 98*(2: January 16, 2001), 683-687. See also Gusnard, D. A., Akbudak, E., Shulman, G. L., & Raichle, M. E. (2001). "Medial prefrontal cortex and self-referential mental activity: Relation to a default mode of brain function." *PNAS, 98*(7 (March 27, 2001)), 4259-4264.

[156] *Doctrine of the Mean*, cited in Huang, op. cit., 152-3.

[157] Angle, op. cit., 67-8.

without hurting his throat. This is the extreme of harmony." "In other words," Angle explains, "sorrow that is completely sincere, that manifests complete integrity with one's situation: such sorrow can be extreme and still harmonious." Wang even goes so far as to suggest that joy can arise from the appropriate expression of even the most extreme sorrow. He is asked about a situation when a person is crying bitterly because his parents have died, and he replies: "There is real joy only if the son has cried bitterly. If not, there won't be any joy. Joy means that in spite of crying, one's mind is at peace. The original substance of the mind has not been perturbed."[158] In Angle's succinct summary, "harmony does not require a trade-off among our various values, but instead honors them all."[159]

Cheng: the integration of consciousness

How, then, does a person develop this ability to experience and express her feelings in just the right way, "without any excess or deficiency," while honoring all her values? The secret to this lies in what Wang refers to as acting in "complete sincerity and being without any affectation." The Chinese word for this is *cheng*, which is frequently translated as sincerity, but which Needham and others have suggested can be understood by that more weighty English word, integrity: "of being sincere with oneself, of not deluding oneself nor acting contrary to one's true nature." Even the term integrity, though, doesn't quite capture the cosmological implications of what the Chinese meant by *cheng*, which also referred to the manner in which the natural world itself carries out its operations. "*Cheng* is the Dao of heaven," states a classical Confucian text; "to apply oneself to *cheng* is the Dao of man." Within the context of the Neo-Confucian organic, fractal cosmology, where the principles of each entity are understood to be nested within ever-larger entities throughout the entire cosmos, Needham explains the cosmic significance of *cheng*: "In this way we come to the realisation that *cheng* is achieved when every organism fulfils with absolute precision whatever its function may be in the higher organism of which it forms a part. Only by following its inner law and light can it so act." Hinting at the potential contribution that Neo-Confucianism can make to modern systems thinking, Needham adds that "this state of affairs is quite familiar to modern philosophies of organism, which do not seem however to have adopted a special term for it."[160]

Modern systems biology explains how cohesive entities in nature – from something as small as a cell to as large as an entire ecosystem – achieve their organic cohesion by a continuous bottom-up, top-down dynamic process by which all the separate elements within the system interact to form a whole, while at the same time the holistic coherence of the system acts on each of the separate elements to maintain their harmony within the whole. This bottom-up, top-down process, sometimes called "reciprocal causality," has been used to describe how natural entities can self-organize to sustain their existence, and provides a theoretical underpinning for explaining the original formation of life on the earth.[161] In Neo-Confucian terms, this reciprocal causality can be viewed as the manner in which "*cheng* is the Dao of heaven": the inherent integrity of the whole system of life that forms the pathway for all sub-systems within it. What is less well understood in modern thought, but described in detail in Neo-Confucian philosophy, is how this same *cheng* can be applied to the human organism as a path to achieving spiritual fulfillment. By living one's life in complete harmony

---

[158] Ibid., 70, 241n.

[159] Ibid., 104.

[160] Needham (1972) op. cit., 468-9. The Confucian text cited in the paragraph is *The Doctrine of the Mean*.

[161] Thompson, E., & Varela, F. J. (2001). "Radical embodiment: neural dynamics and consciousness." *Trends in Cognitive Sciences, 5*(10), 418-425. See also: Thompson, E. (2007). *Mind in Life: Biology, Phenomenology, and the Sciences of Mind*. Cambridge, Mass.: Harvard University Press; Maturana, H. R., & Varela, F. J. (1987). *The Tree of Knowledge: The Biological Roots of Human Understanding*. Boston: Shambhala; Camazine et al., op. cit.; Kauffman, op. cit.

with oneself as a living system, one is also able to feel deeply connected with the organic integrity of the entire natural universe. As the Confucian philosopher Mencius expressed, "[there is no greater delight] than to be conscious of *cheng* upon self-examination."[162]*

The Neo-Confucians were ultimately concerned about living their lives in a manner which was intimately connected with meaning at every moment and at every level of experience. This inherent connection with meaning incorporated intellectual understanding, ethical engagement and embodied emotional intelligence in one integrated whole, and they referred to it with a word, *sheng*, that is usually translated into English as sagehood.[163] To become a sage was generally accepted as the ultimate intention of anyone interested in truly fulfilling their destiny as a human being. One thing they were clear about was that sagehood could not be achieved exclusively through the use of one's intellectual faculties. In stark contrast to the Western tradition which, following Descartes, believed that understanding the true nature of existence involved identifying with the mind rather than the body, the Neo-Confucians rejected purely intellectual exercise as a waste of time and energy, and saw it as a diversion from the path to sagehood.[164] Cheng Yi, for example, lamented the preoccupation with intellectual pursuits of those around him. "Instead of seeking [goodness] within themselves," he complained, "they seek it from outside and engage in extensive study, memorizing, ingenious literary style, elegant diction, and magnificent in their language, but very few have attained the Way."[165]

Centuries later, Wang Yang-Ming had the same complaint. The generations of people who came after Confucius, he proclaimed, "do not realize that the foundation for becoming a sage is to be completely identified with the li, but instead seek sagehood only in knowledge and ability... Consequently they do not direct their efforts toward the li but merely cripple their spirit and exhaust their energy in scrutinizing books, investigating the names and varieties of things, and imitating the forms and traces [of the acts of the ancients]."[166] Wang noticed the same habits in his own students, considering them to be "quite occupied with intellectual discourses on differences and similarities without beneficial gain." He taught them meditation to try to overcome their intellectual preoccupations, but that didn't work either. They "were gradually so fond of quietness and so tired of activity that they became like dry wood. Some even became devoted to abstract and mysterious doctrines to excite people to hear about them."[167]

Wang instead tried to instill in his students the ability to become aware of their own intrinsic, embodied intelligence, which he called *liang zhi*, a term that literally means "good knowing" and has been translated variously as "intuitive knowledge" or "innate knowledge."[168] Wang's biographer, Julia Ching, explains his view of *liang zhi* as "an inborn moral sense, common to all, whether sages or men in the street, which gives everyone their fundamental

---

[162] Cited in Borthrong, J. (1987). "Chu Hsi's Ethics: *Jen* and *Ch'eng." Journal of Chinese Philosophy, 14*(2), 161-178. Underlining the linkage between the Neo-Confucian (and classical Confucian) conception of *cheng* and the holistic understanding of the organism in systems biology, Borthrong notes how the metaphor of a tree is used in *The Doctrine of the Mean* to describe the "self-creation of humanity": "The perfection of the whole is related to the interaction of the various limbs, branches, roots, and leaves. Just as in a tree there is an organic unity, a human being is also a whole, a living unity of the various senses and bodily limbs.

"All proceed from the natural self-determination of that particular object, the actualization of its own nature. Here again, the spontaneous order of the universe is involved along with the normative pattern of human relations that this pattern implies. *Ziran* ("the spontaneous") and *tangran* ("the normative") find their essential unity in *cheng*."

[163] Angle, op. cit., 13-22.

[164] See Chapter 16, "Descartes and the birth of modern dualism," pages 311-314.

[165] Huang, op. cit., 109-10.

[166] Angle, op. cit., 19-20.

[167] Huang, op. cit., 204-7.

[168] Ibid., 195-7.

dignity and equality." Wang himself describes it as "the capacity for knowledge which does not depend on reflective thinking" and "the ability for action which does not depend on learning." As a paradigmatic example of *liang zhi*, Wang offers the scenario of someone watching a little child about to fall into a well. He doesn't need to think in order to be alarmed and immediately spring into action in order to save the child. This is the "spontaneous, pre-reflective" faculty of *liang zhi*.[169] Another useful way to conceive of *liang zhi* is the phrase "gut feeling" – that embodied, intuitive sense a person has of what feels right and wrong, and how they should act in a certain situation. "Your *liang zhi* is your criterion," Wang explains. "When you direct your thought and intention, your *liang zhi* knows that right is right and wrong is wrong. You cannot conceal anything from it. You ought not to deceive it, but follow it truly and sincerely in whatever you do. Then the good will be preserved, and evil will disappear."[170]

Wang understood *liang zhi* as being "superior to reason because it sees things directly, personally, organically in their wholeness, while reason perceives things in their relations indirectly, impersonally, and discursively in their parts." In the context of this book's terminology, it might be helpful to see *liang zhi* as referring to a person's animate consciousness in contrast to their pfc-mediated conceptual consciousness. However, Wang's approach doesn't reject the faculties mediated by the pfc. Rather, in order to stay connected with one's *liang zhi* and act in a manner truly consistent with it, a person needs to utilize some of their pfc-mediated faculties to the fullest, such as discernment and self-assessment. "To extend *liang zh*i," Wang observes, "requires special efforts, which include self-examination, self-transformation, self-discipline, self-reflection, and most important, the sincerity *(cheng)* of one's will... The effort of the sage to extend his knowledge is characterized by utmost *cheng* and ceaselessness."[171] What we see here is that the faculties of the pfc are being utilized to harmonize with one's animate consciousness rather than, in the Western cognitive model, to dominate it.

This harmonization of the faculties of the pfc with those of animate consciousness can perhaps be understood as an ongoing dynamic which is both the cause and the result of *cheng*. The integrated experience of *cheng* can really only arise in a person when their conceptual and animate consciousness are acting in harmony; and to continue to act according to *cheng* sustains that harmonization. In the same way that the word *cheng* is used to refer both to integrity within a person and the integration of the natural world, so Wang Yang-Ming sees one's connection with their *liang zhi* as permitting them to feel connected with the entire cosmos of which they are part. Wang originally took the term *liang zhi* from the early Confucian philosopher, Mencius, who had written that "the *liang zhi* of man is one with the intuitive knowledge of plants and trees, tiles and stones... In fact, the heaven, earth, and all myriad things originally form one body with man, and such a unity is manifested in its most refined form through the spiritual intelligence of the human mind." Wang's own lived experience was that connecting with his *liang zhi* was the ultimate bedrock of the human experience of meaning. "This is the true secret of investigation of things," he wrote. He discovered it for himself in a midlife spiritual awakening, but then continued to question its true validity. "Only in recent years," he wrote later in his life, "have I personally experienced this and become quite clear about it. At first I doubted whether relying on it alone would be sufficient. Having carefully examined it I have found nothing inadequate in it."[172]

---

[169] Ching (1976) op. cit., 107-110. Wang's phrases are quotations from Mencius. Additionally, the example of the child falling into the well was originally discussed by Mencius.

[170] Huang, op. cit., 204-7.

[171] Ibid., 195-7, 204-7.

[172] Ibid.

In a beautiful poem, Wang describes his own inner sense of the connectedness between himself and the natural world around him brought on by his realization of his own *liang zhi*:

> An autumn rain brings in the newness of a cool night:
> Sitting on the pond's edge, I find my spirit brightened by the solitary moon.
> Swimming in the depths, the fish are passing on words of power;
> Perched on the branches, birds are uttering the true Tao.
> Do not say that instinctive desires are not mysteries of Heaven:
> I know that my body is one with the ten thousand things.[173]

The effortless sage

One of the most important implications of Wang Yang-Ming's emphasis on the centrality of connecting with one's *liang zhi* is what might be called the democratization of sagehood. If everyone is born with an intuitive knowledge that connects them to the Dao existing within themselves and throughout the entire cosmos, then the possibility of experiencing this sense of oneness should be available to all, not just to a few learned, spiritually advanced practitioners. Wang was well aware of the radical nature of this proposition. In his time, "the ideal of sagehood... remained the reserved goal of a few selected scholars, who always risked the danger of being considered mad for daring to have such an ambition." Wang now offered a radical reappraisal, suggesting that "every man not only *can* be a sage, but possesses within himself all the means necessary to become one, and that sagehood is not a remote, impersonal ideal, but a concrete goal, well within reach."[174] This didn't mean that there were no distinctions to be made between people, but that each person had within themselves the essential quality of sagehood. Wang compared the nature of a person to the different qualities of metals, contrasting pure gold with gold that has been mixed with copper or lead. It was possible for anyone to take whatever was within them and learn to eliminate their own impurities to find their pure gold. Some of the great sages such as Confucius might have abilities equivalent to thousands of pounds of gold, whereas an ordinary person might have abilities equivalent to a single ounce of gold, but that didn't take away from the intrinsic value of each person's cache of pure gold within themselves.[175]

Wang saw the path to each person's sagehood as one of shedding the layers of impurities that collected around a person as they grew up, allowing them to recover their "inborn capacity" to connect with their *liang zhi*, their "nature which is endowed by heaven, and the original substance of [their] mind."[176] It was an approach that required "establishing a commitment and applying effort," but Wang was careful to distinguish the kind of effort that was needed. He compared it to planting a tree:

> When the tree first sprouts there is still no trunk. Then there is a trunk, but there are still no branches. After there are branches, then there are leaves. After there are leaves, then there are flowers and fruit. When one first plants the root, one should only be concerned about nourishing and caring for it. Do not think about the branches. Do not think about the leaves. Do not think about the flowers. And do not think about the fruit. How does dreaming about these things help in any way? Do not neglect the work of nourishing and caring, fearing that there will be no branches, leaves, flowers, or fruit.

[173] Cited in Ching (1976), op. cit., 237.
[174] Ibid., 53-4.
[175] Angle, op. cit., 19.
[176] Huang, op. cit., 198-200.

Focus yourself, Wang implies, on nourishing and caring for your nature at each stage in its development, rather than pushing yourself artificially towards a predetermined goal that you might have created in your mind.[177]*

While Wang appeared revolutionary in arguing that sagehood was available to everyone, his recommended approach on connecting with one's intrinsic nature was consistent with a theme long-established in the Neo-Confucian tradition. Hundreds of years earlier, Cheng Yi had written an important essay on Confucius' favorite student, a man named Yan Hui. Cheng described how Confucius had praised Yan Hui effusively, saying that "when he got hold of something good, he clasped it firmly, as if wearing it on his breast, and did not lose it," and "if he did anything wrong, he was sure to become conscious of that; and when he knew it, he did not do the thing again." But in spite of his admirable qualities, Cheng observed, Yan Hui never became a sage. Why not? Because Yan Hui always needed to think about what he was doing and exert effort to find the right path, whereas a sage is one who "without any effort, hits what is right, and apprehends, without the exercise of thought; he is the sage who naturally and easily embodies the right way." The transformation to sagehood, Cheng explained, "is to enter into that spirit spontaneously, so that one can apprehend without thinking and hit what is right without exertion."

Towards the end of his life, in his seventies, Confucius had looked back and assigned a spiritual milestone he felt he had achieved in each decade of his adulthood. When he reached seventy, Confucius said, "I could follow what my heart-mind desired without transgressing what was right." That, Cheng Yi suggested, was the essence of sagehood: to arrive at a state of being where what you were naturally inclined to do what was right without even having to make an effort.[178]

A path to sagehood paved with *ren*

While achievement of sagehood was important to all the Neo-Confucians, the path you followed to attain sagehood was perhaps even more important and took up far more of their attention. After all, achieving sagehood itself was – Wang Yang-Ming notwithstanding – a relatively rare phenomenon, while everyone could choose to live their lives traversing somewhere on the path. And that path was paved with an attribute that they called *ren*: another of those foundational Chinese concepts that have no direct translation into English. Wing-tsit Chan has noted that for the Neo-Confucians "the highest goal of personal cultivation is to achieve *ren*," and several of their leading philosophers wrote essays specifically on the subject of *ren*, which Zhu Xi famously defined as "the character of the mind and the principle of love."[179] How could one term mean two such apparently different things? Zhu Xi went on to explain: "*Ren* as the character of the mind is comparable to wetness being the character of water and hotness being the character of fire, and *ren* as the principle of love is comparable to

[177] Ibid., 116. It should be pointed out that Wang Yang-Ming's approach to sagehood differed from the mainstream approach originally described by Zhu Xi, which relied on a balance of learning and intuition, ultimately resulting in a sudden transformative process of enlightenment. Zhu Xi summarizes his process as follows: "The first step in the education of the adult is to instruct the learner in regard to all things in the world, to proceed from what knowledge he has of their principles, and to investigate further until he reaches the limit. After exerting himself in this way for a long time, he will suddenly find himself possessed of a wide and far-reaching penetration. Then the qualities of all things, whether external or internal, the subtle or the coarse, will be apprehended, and the mind, in its total reality and in its relations to things, will be perfectly intelligent. This is called the investigation of things. This is called the achievement of knowledge." – Chan (1957) op. cit. It should be noted that while Zhu Xi and Wang Yang-Ming differed in their emphasis on learning versus intuition, they both agreed that the investigation of things was a fractal process of identifying the coherence of both the internal and external patterns of the Dao.

[178] Huang, op. cit., 109-10.

[179] Chan (1976) op. cit. 563-4.

the root of a tree and the spring of water."[180] To understand this double definition, it helps to remember the Neo-Confucian emphasis on connecting with the original nature of one's humanity, whether that is defined as *xing* or as Wang Yang-Ming's *liang zhi*. Within this framework, the double meaning of *ren* seems to arise from an implicit assumption by the Neo-Confucians that when one gets in touch with the true character of one's heart-mind, one recognizes that this character is defined fundamentally by the principle of love.

Clearly, the normal state of affairs in human society is such that love frequently seems absent, and this was just as obvious to the Neo-Confucian philosophers as anyone else. But within the Confucian tradition, stretching all the way back to Confucius, the cultivation of *ren* was considered the most important activity a person could engage in. One of the Confucian classics states that "from the Son of Heaven [the Emperor] down to the commoner, all should take self-cultivation as their foundational concern." The scholars Hall & Ames explain that traditional Confucian values emphasized the importance of cultivation in all aspects of life, whether in performing rituals, playing music, writing calligraphy or composing literature. And when this cultivation was applied to the practice of living, it led to the "fashioning and configuring of one's entire person" which was called *ren*.[181] But in the classical period of Confucianism, the concept of *ren* was primarily social in scope. Readers will remember from earlier chapters that in traditional China, the very concept of a self was established within the context of one's social identity, and as such one's ethical responsibilities "are conceived as responsibilities to particular others standing in a social relationship to the self."[182] Therefore, the ideal of *ren* was traditionally embedded in a social context, and within that domain is usually translated into English as humaneness or benevolence.[183]*

The Neo-Confucians of the Sung dynasty took this powerful, traditional idea of benevolence within one's community and expanded its scope to accommodate the entire cosmos. It is here that we see an example of the profound Buddhist influence on Neo-Confucian thought. In the practice of self-cultivation, Buddhism had introduced a highly developed set of meditation techniques to the Chinese tradition which enabled a practitioner to journey deep inside his or her consciousness; and in defining the scope of one's identity, Buddhism offered a tradition of extending one's compassion beyond one's own community and even beyond all of humanity, to include all other sentient beings. It was from this context that the Neo-Confucians achieved one of their greatest triumphs, fusing the Confucian idea of perfecting one's social identity with the Buddhist ideal of dissolving the boundaries of one's self, to create a vision of *ren* that resounds through the ages, holding every bit as much significance in today's world as it held a thousand years ago.[184]

The early Neo-Confucian thinker, Zhang Zai, who described the universe as filled with qi and first recognized li as the principle organizing the qi, focused much of his attention on the ultimate implications of what this structure of the cosmos meant for himself as a human being: a fractal entity existing within the qi of the universe around him, connected to its fractal patterns by the li which organized both him and his surroundings. He communicated this

---

[180] Chan (1955) op. cit.

[181] Hall & Ames (1988) op. cit., 31-2.

[182] Chapter 12, "Power and responsibility," pages 222-224; Chapter 14, "The defining characteristic of humanity," 267-269.

[183] Schwartz, B. I. (1985). *The World of Thought in Ancient China*. Cambridge, MA: Belknap Harvard University Press, 75-85. Schwartz describes *ren* as "an attainment of a human excellence which … is a whole embracing… all the social virtues and the capacity to perform the *li* [rituals] in the proper spirit. It is this social aspect which has led to the translation of the term as love, benevolence, and humanity." See also Munro, D. J. (1969). *The Concept of Man in Early China*. Ann Arbor, MI: The Center for Chinese Studies, University of Michigan, 71-3. Munro writes that "In Confucian thought [*ren*] usually referred to the innate affection for kin manifested in filial conduct and in obedience to parents and elder brothers. It was also considered natural for men to direct this same affection to all people, where it manifested itself in acts of kindness."

[184] See Tillman, op. cit., 17; Chan (1955) op. cit.; Huang, op. cit., 72.

vision in a brief essay known as the Western Inscription, which has deservedly become one of the most influential statements in Chinese philosophy ever since, and which begins as follows:

> Heaven is my father and earth is my mother, and I, a small child, find myself placed intimately between them.
> What fills the universe I regard as my body; what directs the universe I regard as my nature.
> All people are my brothers and sisters; all things are my companions.[185]

The entire tradition of Neo-Confucian thought on *ren* can well be understood as filling in the cognitive framework established by this profound and magnificent vision of human existence.

While this sense of the ultimate cohesive unity of the universe might seem rather mystical and unscientific to a mind trained in the Western tradition, that is certainly not the perception of perhaps the greatest modern physicist, Albert Einstein. "A human being," he wrote, "is part of a whole, called by us 'the Universe', a part limited in time and space. He experiences himself, his thoughts and feelings, as something separated from the rest – a kind of optical delusion of his consciousness. This delusion is a kind of prison for us, restricting us to our personal desires and to affection for a few persons nearest us. Our task must be to free ourselves from this prison by widening our circles of compassion to embrace all living creatures and the whole of nature in its beauty."[186] As with his colleague, Nils Bohr, a deep synergy appears to exist between the implications of the cosmos intuited by this great scientific genius and those explored by the Neo-Confucian thinkers. More recently, from an evolutionary perspective, the prominent biologist and theorist, E.O. Wilson, has proposed that humans have a biologically rooted, evolved affinity for the natural world, with an "innate tendency… to affiliate with… life and lifelike forms… emotionally," which he calls "biophilia" – providing yet another deep linkage between the modern scientific and the Neo-Confucian understanding of humanity's place within the natural world.[187]

Of course, the Neo-Confucians did not have a monopoly on the idea of a universal form of love, which has been conceptualized in one way or another in virtually every major cultural tradition. In the Western tradition, the Greek word *agape*, which referred to non-erotic love, was appropriated by Christian theologians to describe God's love for humanity, and the reciprocal human love for God that could become, by extension, a selfless love for the rest of humanity.[188] In recent times, from a secular viewpoint, it has been argued that we can gradually extend our experience of empathy to encompass all of humanity and even the entire sentient world.[189] This idea, however, is frequently dismissed as a foundation for a system of morality because of the impractical nature of seeking to love all beings in an undifferentiated manner. For example, in a recent article entitled "The Myth of Universal Love," Stephen Asma, professor of philosophy at Columbia, argues that the sense of universal love, and more specifically the human experience of empathy, is a "limited resource" which "cannot stretch indefinitely to cover the massive domain of strangers and nonhuman animals."[190] This modern debate can gain a great deal from a consideration of the Neo-Confucian conception of *ren*, which developed a sophisticated discourse for understanding the application of this type of love in every kind of circumstance.

The first thing to recognize about Neo-Confucian *ren* is that while the scope of its love extends to all things, it is also differentiated depending on where it is focused. As discussed

---

[185] Cited in Ching (2000) 26-7; Chan (1955) op. cit.; Angle, op. cit., 68.
[186] Quoted in Ricard, M., and Thuan, T. X. (2001). *The Quantum and the Lotus*, New York: Three Rivers Press, 72.
[187] Wilson, E. O. (2003). *The Future of Life*. New York: Vintage Books, 134.
[188] See http://en.wikipedia.org/wiki/Agape.
[189] See, for example, Rifkin, J. (2009). *The Empathic Civilization: The Race To Global Consciousness In a World In Crisis.* New York: Penguin.
[190] Asma, S. T. (2013). "The Myth of Universal Love," *New York Times*, January 5, 2013

earlier, Zhang Zai was the first to recognize the one-and-the-many characteristic of the li, when he stated that "the li is one but its function is differentiated into the many," and he went on to apply this principle to *ren*. "The amazing thing," writes Wing-tsit Chan, "about Zhang Zai's concept of *ren* is that, while love, because of the principle of the many, cannot be without distinctions, at the same time, by virtue of the principle of the one, love is extended to encompass the entire universe. With this he started a whole current of thought that was to characterize Neo-Confucianism thereafter."[191] Cheng Hao further refined this idea by exploring the entailments of Zhang Zai's metaphor of the entire universe as his own body. Cheng observes that the Chinese medical term for the physical paralysis of the hands and feet is *bu ren* which literally means "no *ren*." "This," Cheng says, "is an excellent description of the point":

> A man of *ren* regards heaven, earth, and myriad things as one substance, and there is nothing that is not himself. Recognizing all things in himself, will there be any boundary for him? If things are not parts of the self, naturally there will he no connection between them and himself, just as in the case of paralysis of the four limbs, the qi or vital force will not circulate through them and they no longer belong to the self.[192]

By considering the opposite of *ren* as numbness, Cheng helps us to see that our sense of separation from the world around us arises because we have become numb to that connectivity, not because the connectivity is not really there.

Centuries later, Wang Yang-Ming further developed this organic metaphor of *ren* as the recognition of the intrinsic connectedness between a human being and the entire natural world. "The great man," he said, "regards heaven, earth, and all things as one body... The reason that the great man is able to be one with heaven, earth, and all things, is not that he does it for some purpose, but that the *ren* of his mind is so natural that it makes possible his union with heaven, earth, and all things." Wang once again emphasizes the embodied nature of this experience of *ren*, as something that arises in everyone, whether they choose to act on it or ignore it. He goes back to the example of someone seeing a child about to fall into a well, who will naturally feel "alarm and commiseration." But then he takes the example further, pointing out that we naturally have similar feelings whenever we see a disruption in the intrinsic cohesion of anything around us:

> When he hears the pitiful cries or sees a frightened appearance of birds and animals, he will certainly feel unbearable to see their suffering. This shows that his *ren* is one with birds and animals. The birds and animals, like himself, are in possession of consciousness and feeling. When he sees plants and trees being destroyed and broken, he will certainly have a feeling of pity. This is because in his *ren*, he is one with the plants and trees. The plants and trees, like himself, are living things. When he sees tiles and stones being smashed and crushed, he will certainly have a feeling of concern and regret. This is because in his *ren* he is one with tiles and stones.[193]

We can see here how the experience of *ren* naturally arises out of our perception of our shared li with the coherence of the world around us. As Angle observes, "coherence does not point at individual things alone, but at their relations; the fundamental idea is of a harmonious, organic unity... It is thus not too much of a stretch to see the universe as living and responsive. When one is conscious of and embraces one's own life and responsiveness as part of this greater whole, one can be said to be *ren*."[194]

---

[191] Chan (1955) op. cit.
[192] Huang, op. cit., 93-6.
[193] Ibid., 198.
[194] Angle, op. cit., 70-1.

Action as the completion of knowledge

Wang Yang-Ming, just like the earlier Neo-Confucians, was fully comfortable accommodating his sense of universal oneness with the distinctions required in daily living. His approach has been characterized by Angle as a "warm and compassionate concern that extends, in an organic fashion, to all related and relevant aspects of one's context." Far from being a mystical or intellectualized realization of oneness, it is rather "human concern, first nurtured in intimate family relations and then extended outward. This is not a neutral, equal love for all things; it rather expresses the felt human interconnection with all aspects of our environment."[195] Wang himself explains this capacity for discernment in *ren* by referring back to the metaphor of the universe as one's own body. We automatically make distinctions, he points out, for the different parts of our body, based on our intuitive understanding of their respective li. "If we use the hands and the feet to protect the head," Wang asks rhetorically, "does that mean that we go too far in treating them as less important? This simply accords with their li." Wang goes on to explain how making these similarly appropriate distinctions in our daily life is not contrary to, but consistent with, the universal sense of *ren*:

> We love both plants and animals, yet we can bear nurturing animals with plants. We love both animals and men, and yet we can bear butchering animals to feed our parents, provide for religious sacrifices, and entertain guests. We love both parents and strangers. But suppose here are a small basket of rice and a platter of soup. With them one will survive and without them one will die; there is not enough to save both parent and stranger. We can bear preferring to save the parent instead of the stranger. In each case, these all accord with li.[196]

A true sense of *ren*, then, can infuse all the ethical distinctions and decisions one makes in one's life, since it permits a deep and ongoing harmonization with one's interconnected place in the cosmos. In Angle's formulation, "one has *ren* when one is conscious of and embraces one's own life and responsiveness as part of a greater whole."[197]

An important characteristic of *ren* arising from its interconnected nature is that it is a form of love that is fully engaged with the world. *Ren* is not the kind of "metaphysical love" that leads one to transcend the daily activities of life and remain detached from worldly affairs. Rather, in the words of Wing-tsit Chan, "*ren* finds its real meaning only in practical application. *Ren* is first and foremost an activity, not a state of mind… *Ren* is not a virtue to be contemplated on but a principle to be carried out."[198] This engaged, action-oriented attitude applied to the entire Neo-Confucian "investigation of things" which they conducted "not for its own sake, but ultimately for moral action."[199] The early Neo-Confucian philosopher, Cheng Yi, established this theme clearly when he stated: "No one has knowledge being unable to put it into action. If one has knowledge being unable to put it into action, the knowledge is superficial."[200]

Wang Yang-Ming carried this idea even further by proposing a fundamental identity between knowledge and action, proclaiming that "one can become a sage only by acting in a sagely way, and this action itself is knowledge." He was once asked by a student about a situation where someone might know what is the right thing to do, but they don't do it. In that case, Wang explains, they don't really know it with their *liang zhi*, in a way that is integrated throughout their being. Rather, it's only a partial knowledge which is fragmented by their *yu*: their excessive desires and values inconsistent with their *liang zhi*. Wang gives a

[195] Ibid., 122.
[196] Ibid., 102-3.
[197] Ibid., 122.
[198] Chan (1955) op. cit.
[199] Huang, op. cit., 115.
[200] Cited in ibid.

fully embodied example of what he means, by pointing to the knowledge of pain: "One can only know pain after having experienced it... Those who seem to know," he concludes, "but do not act simply do not know." Elsewhere, he summarizes the relationship between knowledge and action by stating: "Knowledge is the beginning of action and action is the completion of knowledge."[201]

The Neo-Confucian sense of *ren* can, therefore, best be understood as an engaged experience of living one's life in harmony with one's own inner feelings and with one's embedded existence in human society and the entire cosmos. Thus, *ren* is not only about optimizing one's own life for the greatest spiritual fulfillment, but also about humans in society existing in the most harmonious terms with each other and within their natural environment. Summarizing this characteristic of *ren* as being both inward and outward, when a student asked Wang Yang-Ming whether one should focus on inner cultivation or social reforms, Wang argued for the former, but with the following conclusion: "When equilibrium and harmony exist in perfection, a proper order prevails in the universe and all things attain their full growth and development."[202]

Philosophical implications

There have been a number of times in this chapter where the reader's attention has been drawn to similarities between insights in Neo-Confucian thought and findings in modern scientific research. But what, ultimately, is the significance of such correspondences? Do they matter more than a simple appreciation that Neo-Confucian philosophy anticipated some of the findings of our modern era? Is there any way in which the understanding gained by generations of Neo-Confucian thinkers can actually advance our own philosophical and spiritual thinking in the modern world? These are questions that we are now ready to touch on.

We live in a world dominated by two incompatible worldviews, both of which are the result of the Western cognitive tradition that is the subject of much of this book. The monotheistic worldview of Christianity, Islam and Judaism posits an intangible dimension of God and immortal souls from which derives the ultimate source of meaning. The worldview of scientific materialism, which will be discussed in later chapters of this book, sees reductionist science as the only valid way of understanding the universe and rejects the dualistic proposition of an alternative dimension of meaning. In the famous words of Nobel Prize-winning physicist Steven Weinberg, "the more we know of the universe, the more meaningless it appears."[203] Many people, however, find themselves caught in the middle, rejecting dualism but sensing something greater than reductionist science allows, and they seek non-traditional explanations for meaning in their lives, which are frequently dismissed by science as incoherent.

The Neo-Confucian tradition offers an alternative framework to finding meaning in the cosmos that does away with the artificial trade-off created by the Western cognitive model. It invites connection with a source of deep spiritual meaning in a form that is coherent with the findings of modern scientific research. In addition, it offers to modern systems theorists and complexity scientists a pathway for exploring the profound ethical and spiritual implications of their discoveries about the dynamics of the natural world. With its underlying basis of a cosmos constructed of li and qi, it provides an explanatory framework for sophisticated systems-based interpretations of age-old Western philosophical issues such as

[201] Ching (1976) op. cit., 44. 67.

[202] Angle, op. cit., 117-18.

[203] From *Dreams of a Final Theory* by Steven Weinberg, quoted in Kauffman, S. (2008). *Reinventing the Sacred: A New View of Science, Reason, and Religion.* New York: Basic Books, ix.

how mind arises from brain, theories of self and free will, the source of ethics and morality, and how to live harmoniously and sustainably in the natural world.

The Neo-Confucians themselves were cognizant of the explanatory nature of their form of understanding the cosmos. In their time, too, there were theists and materialists who either looked to another dimension for the source of meaning or denied that there was any. Some of their responses to these issues are illuminating. When Zhu Xi was asked if there was a ruler up in the heavens who dictated the events of the world, his response was clear but measured: "The blue sky," he said, "is called heaven; it revolves continuously and spreads out in all directions. It is now sometimes said that there is up there a person who judges all evil actions; this assuredly is wrong. But to say that there is no ordering (principle) would be equally wrong."[204] The ruler, Zhu Xi pointed out, was the li. Just as within a human being, there is no separate faculty which rules, but the holistic integration of the entire set of li is itself the governing force, so in the cosmos as a whole, there is no separate ruler dictating events, but the integrated *cheng* of the cosmos is what determines the flow of what happens.

The response of the Neo-Confucians was similar when people proffered the popular belief in ghosts and spirits. When Cheng Yi was asked to give his opinion on the topic, his response would have pleased the most ardent atheist of modern times. He pointed out that "those who enjoyed discussing ghosts and spirits had never seen or heard any... Even if they actually heard of saw something, they need not be believed. It could be a case of mental illness or visual illusion." And when a student asked about a natural fear of such ghosts and spirits, even when he did not believe in their existence, he answered: "You need to have your qi calmed; then you will naturally not be disturbed."[205] But of equal importance was their response to those who denied any numinous quality in the world, the early progenitors of the materialist reductionism so powerfully summarized by Weinberg. Needham points out one illustrative passage, when a student named Fu Shun-kung asked about the ritual sacrifices to the ancestors, "saying that he supposed they were simply a duty; a manifestation of great respect; it was not necessary (to believe that) any spirit was present." Zhu Xi's answered: "(No spirit, say you?) Speak of the mysterious perfection of the ten thousand things and you have spoken of the Spirit. Heaven and earth and all that is therein – all is Spirit!"[206]

What exactly did Zhu Xi mean by this? In the modern world, the words "spirit" and "spiritual" are generally used to refer directly or indirectly to the dualistic, transcendent dimension posited by monotheism. However, those caught between the two extremes of monotheism and reductionism often use the word in an undefined way to refer to their sense of something ineffable and meaningful beyond the cold, hard logic of scientific rationality. It is this sense that Zhu Xi appears to be pointing to. For Zhu, even the most mysterious phenomena of nature known as *shen* – spiritual – "are nothing but the manifestations of the activities of qi" organized by the infinite complexity of li."[207] But the fact that they arise from the interplay of qi and li doesn't take away from their mystery and spirituality. At one point, he says that "cognition or apprehension is the essential pattern of the mind's existence, but that there is something in the world which can do this is what we may call the spirituality inherent in matter."[208] This appears to be the same intuition of spirituality in the cosmos that

[204] Needham (1972) op. cit., 492-3.

[205] Ching, op. cit., 61. It is noteworthy that this rejection of ghosts and spirits was shared by other intellectuals of the Song era. One notable statesman, for example, Wang Anshi, "held that there was no supreme God nor spirits or other 'supernatural' forces. He purveyed the primacy of the natural law of yin and yang and the five phases." Source: Zhang, Y. H., & Rose, K. (1995). *Who Can Ride the Dragon? An Exploration of the Cultural Roots of Traditional Chinese Medicine*. Taos, New Mexico: Paradigm Publications, 160.

[206] Needham (1972) op. cit., 492-3.

[207] Kim, Y. S. (1984). "Some Aspects of the Concept of Ch'i in Chu Hsi." *Philosophy East and West*, 34(1), 25-36.

[208] Needham, J. (1969). *The Grand Titration: Science and Society in East and West*. Toronto: University of Toronto Press, 39.

Albert Einstein referred to when he wrote: "The most beautiful thing we can experience is the mysterious."[209] In Einstein's view, the religious feeling of the scientist "takes the form of a rapturous amazement at the harmony of natural law, which reveals an intelligence of such superiority that, compared with it, all the systematic thinking and acting of human beings is an utterly insignificant reflection."[210] This intelligence, for Zhu Xi and the Neo-Confucians, was the self-organized creation of the natural world manifesting in a form they called Dao.

In the pattern of cognition offered by Neo-Confucian thought, the great Western divide between science and spiritual meaning is nowhere to be found. Similarly, the dualistic distinctions between mind and body, knowledge and action, external and internal, reason and emotion, disappear from view. In their place, we find an organic view of the universe with sophisticated and fruitful linkages that show these disparate human experiences to arise from one integrated and coherent whole. For the Neo-Confucians, achieving a deep understanding of the workings of the universe was equivalent to attaining a highly developed spiritual wisdom. Zhu Xi's truth, writes his biographer Julia Ching, "is spiritual truth, the truth that inspires human hearts, the knowledge of the norm or value of things, which is attained through intuition or moral and spiritual sensibility." Ching, in trying to bridge the conventional separations of Western language, calls his approach "intuitive reasoning." This approach leads to the realization that, rather than trying to overcome things – whether feelings within oneself or difficulties arising in the world – one can try to harmonize with them. It is an insight achieved at times in Western thought. For example, the early 20th century philosopher, Ernst Cassirer once wrote: "He who lives in harmony with his own self … lives in harmony with the universe; for both the universal order and the personal order are nothing but different expressions and manifestations of a common underlying principle." However, these rare insights have lacked a cosmological context to support them, and thus have tended to be ignored relative to the more conventional Western philosophical debates that dominate our attention.

The Neo-Confucian way of thinking about our cosmos, constructed as it is from an utterly different foundation than our Western structure of thought, avoids many of the "either-or" pitfalls of conventional Western philosophical debates, while permitting connections to be made that are almost inconceivable under Western cognition. As discussed in detail in Chapters 13 and 14, the very structure and vocabulary of the language we speak create mental patterns that encourage our thoughts to traverse along certain pathways which become so deeply rooted in our habits of cognition that we are not even aware of their existence. The Neo-Confucian system of thought offers a way to break out of this cognitive paradigm, providing new patterns of connectivity and building blocks of thought that invite a coherent and integrated way of realizing meaning in our lives. As we've seen in this chapter, these patterns of cognition are fully consistent with the findings in recent decades of complexity science and systems biology – a consonance which opens up possibilities of achieving an understanding of the universe that can integrate the spiritual wisdom of the Neo-Confucians with the rigorous, data-driven research of complexity theorists, thus creating a new paradigm for connecting deeply and coherently with meaning in our lives. The possibilities and conceptual framework for this approach to meaning will be explored in detail in the second volume of this book.

A cosmology on the losing side

What, then, became of the great Song dynasty and the sophisticated cosmology developed by its Neo-Confucian philosophers? Even with their economic and technological

[209] Quoted in Ravindra, R. (2008). "Notes on Scientific Research and Spiritual Search." *Parabola*, 33(3: Fall 2008), 7-11.
[210] Quoted in Ricard & Thuan, op. cit., 50.

prowess, the Song dynasty was continually under military pressure from the Manchurian empire of Jin to their north, and from the incursions of the Mongols from the heartland of Asia. It was the Mongols who finally dealt the fatal blow to the Song civilization, with Genghis Khan's grandson Kublai Khan laying waste to what was left of their army and fleet in 1279.

The thought tradition of the Neo-Confucians fared a little better than the dynasty that witnessed its birth. By the time of Wang Yang-Ming, at the beginning of the 16th century, Neo-Confucianism had become the established orthodoxy of the Chinese state. However, much of the freshness and vigor of the initial Neo-Confucian philosophers had been lost along the way, and Wang Yang-Ming viewed himself as somewhat of a rebel in rejecting the conventional thinking that had already become sterile by his time. This trend only continued after Wang's death, and by the 19th and early 20th centuries, when the Western colonial powers established their stranglehold over imperial China, Chinese intellectuals of the time began to view their Neo-Confucian tradition as partly responsible for the decline and debilitated state of their civilization. Even Zhu Xi, who brilliantly synthesized three different thought traditions into one integrated system, was ultimately seen as "the paradigmatic feudal, conservative oppressor of creativity and freedom" and "representing all the negative qualities of China's early modem past."[211]

Perhaps it was for this reason that the great treasures of Neo-Confucian thought were virtually lost to the currents of global thought in more recent centuries. History, as the saying goes, is the story told by the victors, and the same holds true for cosmologies. When the first Neo-Confucian philosopher, Zhou Dun-yi was born in 1017, the glorious Song capital of Kaifeng had a population thirty times greater than London. By the time of Wang Yang-Ming's death, in 1529, the tables were turning. That year, in the New World territory of Peru, the Spaniard Francisco Pizarro was appointed governor. The Muslim incursion of Europe reached its high-water mark with a failed siege of Vienna, the beginning of a seismic shift in the balance of power between the two great monotheistic creeds. At the Diet of Speyer, a group of German rulers kicked off the Protestant movement that would shake up the Catholic hegemony over Christendom. And Spain and Portugal agreed, with the Treaty of Saragossa, to divide up the eastern hemisphere of the world between the two of them for further conquest and plunder.

Europe was stirring, and the effects of this would have dramatic repercussions across the entire globe, creating the structure of the world that we inhabit today. While the Neo-Confucian approach to meaning had led to a path of harmonization within one's consciousness and with the external forces of nature, the patterns of cognition in Europe were leading in a very different direction. The dualistic "coup of the prefrontal cortex" that was chronicled in previous chapters was setting European civilization on a course that would result in a relatively short time in total global domination. We are now ready, with the final section of this book, to investigate what it was about the European mindset that led to this drastic shift in power and to explore the implications of the monumental transformation of human civilization that would ensue.

[211] Borthrong, op. cit.