

# Cosmos and Humanity in Traditional Chinese Thought

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## 1. Introduction: the Problems of Galileo's Telescopic Observations

Around the time of the Jesuits' arrival in China in the late sixteenth century, the Europeans and the Chinese saw and knew more or less as much about the world. To be sure, there were differences in their views about some key aspects of the natural world. Most notably, they had different views about heaven and earth: for example, whether the earth was round; and whether the heavens were filled with solid spheres or by the qi 氣. There also were differences in their views as to whether the basic elements constituting the world were material substances or "phases" (xing 行); and related to this, whether the essential aspects of the human body were the basic organs or basic functions. Yet, the Europeans and the Chinese of the time noted, observed, and explained nearly all the important phenomena and objects. What were different, then, were their attitudes to those phenomena and objects. Europeans' responses to Galileo's telescopic observations highlight some such differences between the two traditional cultures' attitudes to the natural world.

When Galileo observed heavens and announced the results, they caused many problems for Catholic astronomers and Aristotelian scholars of Europe at the time. At the core of the problems was the celestial-terrestrial (superlunar-sublunar) distinction which conditioned the Aristotelian worldview that had dominated European minds for centuries. The idea of the perfect, unchanging heavens, opposed to the changing, imperfect sublunar world was challenged by Galileo's observations--in particular, the imperfect surface of the moon, and the sun spots, the imperfect dark spots on the face of the utmost heavenly body, which appeared to undergo an irregular movement. Use of the telescope, a mechanical tool devised for earthly purposes (warfares and navigation for example), for

phenomena in the heavens created further problems: not only did it violate the celestial-terrestrial distinction, but it was in conflict with another Aristotelian distinction, namely that between the natural vs. the artificial.

Whether what people see through the telescope represent the reality of the world, and not just images concocted by the tool composed of lenses in a tube, was also a problem for many of the scholastic scholars of the church and the astronomers in the universities. Reflecting the tradition with a deep concern about the problem of reality vs. mere image, real cause vs. mere effect, and the reality of what are experienced by senses, etc, many of them even refused to accept the reality of what Galileo observed by the telescope. Of course, there also was the problem of the conflict between the Copernican world system allegedly supported by Galileo's observations and the Aristotelian-Ptolemaic world system supported by the Church and Biblical passages. What enabled Galileo, a devout Catholic, to get over the problem seems to have been his conviction that studying the world created by God and uncovering the laws hidden in the natural phenomena was a service to God. But the conflict between what is observed and what is believed must have been a problem for him and for his opponents.

These problems were so serious to the Europeans of the time that to many of them the advantage that could be brought by the telescope, the great increase of man's ability to see things at a great distance, was not sufficient to enable them to overcome such problems. Yet, none of these would have been a problem in China. There was no such sharp distinction between the celestial and the terrestrial worlds, or between natural and artificial things. There was no tradition, either, at least in the dominant Confucian school, of persistent questioning and doubting the reality of the actual world, the reality of what are perceived by senses. In fact, the neo-Confucianism, the philosophical school that dominated Chinese, and later the whole East Asian, intellectual world for the last several centuries of the pre-modern period, arose in reaction to the Taoism and the Buddhism that rejected the reality of the actual world. What were observed were usually accepted in the way they were perceived by man.

In this paper, I will discuss the basic attitudes of the traditional Chinese to the natural world, and to the objects and phenomena in it. I will show the ways these attitudes influenced their views about the relation between man and the world, or between "the cosmos and humanity". Before setting out to do this, however, I have some words of caution. Although I will use the expression "traditional Chinese", my discussions cannot do

justice to the extreme diversity in their views, assumptions and attitudes concerning the natural world. They were not uniform, and often contradicted one another. I will concentrate mostly on the views and attitudes of Confucian scholars, especially those of the Neo-Confucian school. And since even the Neo-Confucians themselves had quite diverse views and attitudes, I will frequently focus on those of Zhu Xi 朱熹 (1130-1200), who, as the author of the so-called "Neo-Confucian synthesis", exerted an overwhelming influence on the Chinese intellectual world for many centuries.

## 2. "Cosmos" and Humanity: the world of heaven-and-earth, man, and the myriad things

There was no word in traditional China equivalent to the Western word, "cosmos". The word, "yuzhou" 宇宙, usually chosen as modern translation of "cosmos," did not exactly have the meaning of "cosmos" in the sense of "an orderly, harmonious universe."<sup>1</sup> It is not that for the Chinese the world, the universe, was not orderly or harmonious. It was. But the order, or harmony, that can be seen in the world was a part of an order or harmony of a much greater scope, covering everything--men and the myriad things, as well as the whole physical world.

What was close to the notion of cosmos is the expression "heaven-and-earth" (tiandi 天地). The expression, "heaven-and-earth" frequently designated the whole natural world, and as word referring to the natural world, it was often contrasted with the human world. The relation between man and the world of heaven-and-earth had many sides. For one, there was the idea of the parallelism of macrocosm-microcosm, i.e. the notion that man as the small world is an epitome of the great world, heaven-and-earth. A more pronounced aspect of the relationship between man and heaven-and-earth for the traditional Chinese was the idea of the triad of "heaven - earth - man", i.e. the notion of the world in which man lives harmoniously between heaven and earth. The basic component of the triad was the idea that man and heaven and earth complement each other. Heaven-and-earth does not do everything alone; there are some things that heaven-and-earth cannot do, which man does for heaven-and-earth.

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<sup>1</sup>) In the standard commentaries on the expression "yuzhou" in such ancient books as the Zhuangzi 莊子 and the Huainanzi 淮南子: the character "yu" 宇 was rendered as "heaven, earth and the four directions" (天地四方), and "zhou" 宙 as "the past and the present" (古往今來).

It was not only man that inhabited the world of heaven and earth; there were the "myriad things" (wanwu 萬物). Heaven-and-earth, the myriad things, and man thus represented the three basic constituents of the natural world for the traditional Chinese. And the three stood in various relations to one another. For example, heaven-and-earth produces men and the myriad things. Thus produced by heaven-and-earth, men and things live--or exist--between heaven and earth. They receive the qi and the mind (xin 心) of heaven-and-earth and have them as their qi and minds.

The world made of these three constituents covered everything, not merely the things that can be characterized as "physical" or "material". Objects and phenomena involving life and mind, and even morality, were included in this world of heaven-and-earth, the myriad things, and man; there was no clear distinction between the "natural" and the "non-natural" realms in that world. This lack of distinction was evident also in such basic concepts as qi, yin-yang 陰陽, and the five phases (wuxing 五行), which were endowed with characteristics of life, mind, and morality as well as matter. One consequence of this was that the "natural" world existed in harmony with the "non-natural"--human and social--world. The "natural" world was an integral part of the larger world that also contained human and social realms, with no boundary between them. Nothing was excluded from this world. Thus, there was no sharp boundary that separates man from the natural world of heaven-and-earth.

More pronounced was the distinction between man and the myriad (nonhuman) things. For the traditional Chinese, man was unique among all living beings. Man was not even considered as part of "the myriad things". With the character wu 物 (thing), they never referred to man. Man is endowed with qi that is correct, clear, complete, penetrating, balanced, numinous and excellent, whereas the "things" are endowed with qi that is turbid, one-sided, dark, obstructed, and screened. Because of these differences, man is bright, numinous and complete, whereas the "things" are dark, muddled, ignorant, and one-sided. The key difference that distinguished man from non-human "things" lay in the human ethical virtues. For example, the five human relationships (wulun 五倫) was what distinguish man from animals. Animals can have some ethical virtues, but they cannot have all of them. Similar onesidedness could also be seen in the knowledge and the mental qualities of animals. Other features distinguishing man from animals were the ability to speak, the stance, etc.

### 3. The Heavenly Li: Natural World and the Morality

The concept of tian 天 (heaven) went through a long and complicated historical development. Originated as a term designating the ancestor-deity of the early Zhou 周 royal family, the development proceeded in two different lines.

One line of the development centered around the aspect of deity. It can be characterized by gradual weakening of the anthropomorphic character of the concept, which came to represent gradually more general, abstract, and even conceptual deity. But tian continued to mean something that controls, rules, and presides over everything in the world. As the development along this line proceeded further, tian was also thought to be something that produced men and things of the world. Tian even referred to “decree” (ming 命: fortune, life-span, mandate) and “nature” (xing 性), which were endowed to men and things when they were produced. And in all this, the term retained the moral aspect present in its original meaning.

Another line of development resulted from the association of the word with the supposed site of the original ancestor-deity, the sky. It proceeded with the separation of the moral character from the concept. But this meaning was also expanded gradually, first to the whole natural world including the sky, then to events and processes of that world, and eventually to the li 理<sup>2</sup> underlying the workings of the natural world.

When proceeded this far, the outcomes of the two lines of development converged, and the naturalistic aspect and the moralistic aspect of the concept of heaven were connected again. This connection of the two aspects came to provide a basis for the belief in the moral character of the natural world. Because of this connection, the concept of heaven could function as something that supplements the morally neutral character of

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<sup>2</sup>) Li is a term difficult to define. It is difficult even to translate the term. There is no single word in Western languages that would cover all facets of what it meant to traditional Chinese mind. The existence of many translations for the term--“principle”, “reason”, “law”, “pattern”, etc., which often leaves transliteration as the only viable option, bespeaks the difficulty. What is closest to a definition is the following remark by Zhu Xi: When it comes to things under heaven, for each [of the things] there must be “a reason (gu 故) by which [a thing is] as it is” (so yiran zhi gu 所以然之故) and “a rule (ze 則) according to which [a thing] ought to be” (so dangran zhi ze 所當然之則). [These are] what are called “li”.<sup>4</sup> But he did not elaborate on these two different aspects of the concept. He only spoke of them in terms of particular examples. For instance, In treating one's parents one ought to be filial, and in treating one's elder brother one ought to be brotherly. Such are “the rules according to which [one] ought to be.” But in treating one's parents why should one be filial, and in treating one's elder brother why should one be brotherly? These are “the reasons by which [a man is] as he is.”<sup>5</sup>

the world composed of qi; processes of the natural world, covered by the term “heaven”, could be taken even for a standard upon which human ethical behavior should be based. There could be no possibility of tension between the morally neutral “natural” world and the human world that is governed by morality. On the contrary, the “natural” world was frequently invested with moral qualities. This, then, is what lay at the basis of the frequently-found idea of a moral order underlying the natural world and providing a kind of “cosmic basis” for morality.

In the course of these developments the term "tian" came to have various meanings, which can be classified in the following four categories: 1) the physical sky; 2) the natural world, including things and events in it; 3) the li, of both natural and human realms; 4) a concept or a being that rules or presides over the world.

Of these categories, the most problematic--both for us and for the traditional Chinese--is the fourth, namely heaven as what “rules” or “presides over” the world: “zhuzai” 主宰 in Chinese characters. We can find some hints about the meaning of the term, "zhuzai" from Zhu Xi. He said, after mentioning the regularities of the natural world like the succession of the four seasons, alternation of day and night, and the way plants flourish on the sunny side and wither on the shadowy side, “This is clearly as if a person were in [heaven] and ‘presided over’ [these regularities].” But he was explicit that actually there is no such person up there: “If one now says that a person is in heaven and blames crimes, it certainly is not acceptable;” “... it is as though a person were up there like that. ... But [the truth] is simply that the li is like this.” What Zhu Xi emphasized instead was that the “presiding” (zhuzai) aspect of heaven is somehow responsible for the “naturalness” and spontaneity of phenomena and processes of the natural world. This aspect of zhuzai, then, is not very far from the idea of heaven as li. Eventually the idea of “heavenly li” (tianli 天理) emerged as the ultimate aim of the Confucian endeavor.

The heavenly li is a kind of “universal” li that covers, and is manifest in, all the individual li of things and events. In fact, an important aspect of the concept li is that there are many individual li for individual objects and phenomena and the one li for the whole of these objects and phenomena. Every object and phenomenon of the world--“a grass, a tree, or even an insect,” to use Zhu Xi's expression--has its individual li; all individual li are manifestations of the one li.

The heavenly li is what the original human nature manifests in the form of such ethical virtues as humaneness (ren 仁) and righteousness (yi 義); it is because the

heavenly li is obstructed and blocked by “human desires” that man loses the virtues and shows evil traits. This dichotomy of “heavenly li” vs. “human desires” was the basis of Confucian moral philosophy, and thus, the state of mind free from human desires was, for the Confucian scholars, the ultimate goal of man's self-cultivation. When that goal is attained, man's mind fully manifests the heavenly li.

It is not only the original human nature that manifests the heavenly li; every thing and event in the world has its li, which is but a manifestation of the one universal, “heavenly”, li. Therefore, man can aim at the heavenly li through the method of “gewu” 格物 also, because the term, translated usually as “the investigation of things”, meant, for many Neo-Confucians, reaching the li in “things”. The gewu endeavor, however, did not primarily involve intellectual procedures. In fact, man's understanding of the li of things, achieved as the result of gewu, was considered a kind of “resonance” between the mind's li and the things' li. This was so because the heavenly li resides both in man's mind (as the mind's li) and in things and events (as their li). Thus, when a man has reached the li of a thing or an event, it was described usually as “seeing” the li rather than as “knowing” it. In other words, what he has gained was not so much a knowledge of the li as an insight into it. Also, for such “resonance” to take place, the mind needs to be “empty”, “bright”, and “tranquil.” This is the original states of man's mind, manifesting the heavenly li fully, free from blockings by human desires. In such a state, the mind spontaneously sees the li in things and events, which are nothing but manifestations of the heavenly li contained in the mind itself.

Moreover, gaining insight of the many li of individual things and events was not the real aim of the gewu endeavor, the ultimate purpose of which was to reach the heavenly li via the many individual li. The key step in the gewu, then, lay in moving from those individual li to reach the one heavenly li. Yet, the connection between the many individual li and the one heavenly li was not quite traceable. It was never clear exactly how the grasp of many individual li can lead to the apprehension of the one heavenly li.

All seemed to agree, however, that the step must involve something more than a purely intellectual process. In Zhu Xi's words, one needs “laborious efforts” (gongfu 工夫) and “nourishing” (yang 養) in addition to “knowing” and “understanding.” The mental state described by the term “reverence” (jing 敬) was important, for when a man is reverent, his mind is “bright,” “transparent,” and “alive,” all li are in the mind, and the heavenly li becomes “brilliant”. Thus moral and intellectual endeavors of man converged in his

search of li--the many individual li and the one heavenly li--through gewu. And in this convergence the moral side was clearly the more important. To be sure, the intellectual aspect could not be ignored altogether, but, on the whole, the intellectual elements of the gewu endeavor were fused into its ultimately moral aims. It was to uphold morality and to avoid errors that one investigates things.

#### 4. Yin-yang, the Five Phases, etc.: The "Correlative" Mode of Thinking

While the combined expression "heaven-and-earth" designated the entire world as we have seen in Section 2, its two parts, heaven and earth were contrasted by pairs of opposite qualities: clear-turbid, light-heavy, movement-rest, bright-dark, etc. Heaven and earth were characterized by various dichotomies: clear heaven vs. turbid earth; light heaven vs. heavy earth; moving heaven vs. still earth; bright heaven vs. dark earth, and so on. These dichotomies, however, are a part of the yin-yang dichotomy that characterized everything of the world, and thus the contrast of heaven and earth reflected features of the yin-yang dichotomy. The distinction between heaven and earth were not absolute, which reflected the fact that opposition of the yin and yang characteristics was not absolute.

For example, yin and yang undergo continuous cyclical repetition. Yin and yang alternate and follow each other continuously: At the extreme of yin emerges yang; as yang grows and reaches its extreme yin reemerges; and this process alternates continuously, and is referred to as "the circulation" (xunhuan 循環) of yin and yang: Since yin and yang keep following each other, there cannot be a distinction of what is earlier or later between the two. It is frequently said that "Movement and rest have no ends; yin and yang have no beginnings," and that yin and yang, "like a ring, has no endpoint."

Indeed, for the traditional Chinese, alternation of opposites was the most important characteristic of phenomena in the natural world. They frequently spoke of cyclical alternations of movement and rest, going and coming, opening and closing, contracting and expanding, growing and vanishing, day and night, the sun and the moon, life and death, hot and cold weather, rainy and fine weather, exhalation and inhalation, and even of bending and stretching movements of the measuring worm. One consequence of such cyclical alternation was that one side of the pair was not devoid of the other side.

There cannot be yin or yang completely devoid of each other: Yin has to contain at least a trace of yang mixed with it, and vice versa.

Traditional Chinese also used other sets of categories in their discussions of natural phenomena, the five phases in particular. As categories, they are associated with various sets of characteristics. Different characteristics associated with a given category are connected to one another, thus giving rise to a network of mutual associations. In fact, this kind of association was a key mode of explanation in the traditional Chinese discussion of natural phenomena, and indeed, such categorical and associative character was a universal feature of the traditional Chinese discourse about the natural world, which many commentators have noted and referred to as “correlative thinking.”

We can see many examples showing this character of the traditional Chinese worldview. For one, the four seasons and the four cosmic qualities--yuan 元, heng 亨, li 利, and zhen 貞--formed a network of four-fold sets of mutually associated characteristics, through their respective five-phase associations with weather, compass directions, and the constant human virtues. Some sets of characteristics were associated directly with each other, without bringing in, as intermediaries, associations with the basic categories like yin-yang and the five phases. Thus, the five musical notes (wusheng 五聲) were directly associated with a group of five different things: the kung 宮 note with rulers, shang 商 with ministers, chiao 角 with people, chih 徵 with events, and wu 羽 with things. The twelve musical pitches (shier lu 十二律) were associated with the twelve months. There were also associations of man's perceptual organs with visceral organs, eyes with liver and ears with kidneys for example.

These categorical and associative basic concepts are also cyclical: they come in cycles that repeat fixed sequences. Not only the yin-yang characteristics, but many sets of five-phase characteristics, the four seasons, the four cosmic qualities, the life-cycle of plants, for example, also repeat their fixed sequences endlessly. Such endless cyclical repetition was a universal feature of natural phenomena, which is not surprising because the cyclical nature of many natural phenomena--movement of the luminaries in the sky, change of the seasons, the tides, and the plant life-cycles--must have been obvious even to a most casual observer. In fact, the cyclical repetition became another key feature of traditional Chinese perceptions of natural phenomena.

## 5. Stimulus and Response: Cause and Effect?

In this kind of correlative mode of thought, there was no cause-effect relationship of a mechanical sort. What we find instead is the concept of "stimulus and response" (gan-ying 感應). There were two kinds of stimuli and responses.

First, there was the stimulus-response interaction between things, events and concepts that belong to a single category and are associated with one another. Things of the same category but in different cosmic realms were supposed to affect one another by virtue of a mutual sympathy, to resonate like properly attuned pitchpipes: for example, the same sounds respond to each other; the same qi seek each other. This kind of stimulus-response interactions were not restricted to things and events that can be called natural. More frequently mentioned cases of mutual interactions and influences were between men or between men and natural things and events. The most frequently mentioned example, however, is the idea that man's conduct can affect the course of natural events, which is referred to as "mutual stimulation of heaven and man" (tianren xianggan 天人相感). For example, Zhu Xi approved a disciple's remark that "if the ruler of people accumulates sins and mistakes, these stimulate and beckon inauspicious events, and bring about the calamities of eclipses of the sun and moon, collapse of mountains and drying of rivers, and drought and famine."<sup>3</sup>

The second kind of stimulus-response relation occurs between things, events and concepts that repeat continuously in fixed sequences, especially the dualistic ones that undergo continuous alternations. This kind of stimulus-response relation was far more frequently mentioned than the first kind. For example, the successive appearance and disappearance of the sun and moon, and of the cold and hot weather as well, was viewed as resulting from their mutual actions as stimuli and responses. Other alternating pairs were also viewed as stimulus and response upon each other: for example, expanding and contracting, movement and rest, vanishing and growing, going and coming, exhaling and inhaling, day and night, life and death, rainy and fine weather. Since stimulus and response follow each other continuously in this manner, there is no end to their cyclical alternation. What has acted as a response to a stimulus acts, in turn, as a new

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<sup>3</sup>) Of course, the traditional Chinese did not believe that all natural calamities are caused by men. Zhu Xi said, for example, that "there are times when human conduct brings them about, and also when they occur accidentally [i.e. by accident of natural events]." Nor did they believe that all natural events can

stimulus, which brings another response; and this cycle goes on without end.

This second type of stimulus-response relationship was not restricted to what happen in the natural world, either. The frequent examples included alternations of sleeping at night and waking up in the morning, activity during the daytime and rest at night; speaking and silence of man, goodness and badness of man's nature, flourishing and decaying, peaceful and troubled, periods in history, and even of the mutual reinforcement of the father's love and the son's filial piety.

It is possible to figure out the nature of the first kind of stimulus-response relation from its most typical example of the same musical notes responding to each other--or "resonating", to use a modern expression. On the other hand, it is difficult to see how pairs of continuously alternating things, events and concepts act as stimulus and response to each other, in other words, how what comes first in a stimulus-response sequence "causes" that which follows to occur. Again, there were some hints in Zhu Xi's sayings. For example, in explaining the bending and stretching movement of a worm, he said: "If the measuring worm does not bend, then it cannot stretch." He also said, "If the sun does not go, the moon does not come; if the moon does not go, the sun does not come. Cold and hot weather is also like this." He even said that going down of the sun can stimulate the moon to come up, and vice versa, and that "when the cold [weather] becomes extreme, it produces (sheng 生) the warm [weather]."

Sometimes Zhu Xi discussed more general aspects of stimulus-response relations. For example:

Owing to this one event, there also comes about another event. They simply are stimulus and response. Owing to this second event, a third event also comes about. The second event is also a stimulus, and the third event is also a response.

He also pointed out that a great or small stimulus brings about a great or small response respectively. Expressed in this manner, the relationship between stimulus and response sounds very much like that between our modern ideas of cause and effect. In fact, of the pairs that Zhu Xi called "stimulus and response", some do appear to us as cause and effect. He said: "For example, coming [i.e. blowing] of the wind is a stimulus; moving of the tree is the response. Shaking the tree is also a stimulus; moving of the things below is also the response." He viewed sowing of seeds and appearing of sprouts similarly as stimulus and

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be affected by human conduct.

response. His examples even included acquiring a concubine acting as a stimulus to which the response is purchasing silver utensils. But he did not seem to be aware of differences between these examples and the pairs that are simply sequences. For instance, after mentioning the stimulus–response relation of the wind and tree, he added the stimulus and response of day and night, as if the relation were the same kind: "When the day reaches the extreme, it must stimulate and get the night to come; when the night is at its extreme, it also stimulates and gets the day to come."

It cannot be said, however, that the concept of cause and effect was absent in traditional Chinese thought. It is merely that their notions of how cause and effect act in the world were different from the modern concept of causality: They were never understood in mechanical terms; nor were they rigorously defined. Their ideas about stimulus and response, then, could be seen as the traditional Chinese version of the cause–effect relation, different from the modern version in content, emphasis and scope.

## 6. Regularities in Nature: Law of Nature?

Many of the examples of "stimulus–response" interactions we have seen above were cyclical repetitions occurring regularly in the world. These could be called natural–or social and historical–“regularities”. Traditional Chinese knew and spoke of many other regularities that are not cyclical but just occur constantly. They frequently used the words "constant" (chang 常) or "constant li" (changli 常理) to refer to them. For example, “the constant li” that winter should be cold and summer should be hot, and “the constancy” (chang) in the frequency and magnitude of the tides; the constancy of heaven's movements; even the constancy in the deviations of heavens' movements. The frequently–quoted passage from the Record of Rites, “All living things must die. Having died they must return to earth,” which were quoted repeatedly, can be seen as a similar example. Zhu Xi characterized the upward growth of a tree and the downward flow of water as “following the li” (shun li 順理) and the opposite cases as “against the li” (ni li 逆理), implying a constant li that the tree should grow upward and water should flow downward. The regularities mentioned by Zhu Xi also included certain social and historical instances. For example, “where the [political] power is heavily [concentrated], there are harmful effects.” He even mentioned what sounds like the Gresham's law, i.e.

that “pure (good) coins are always rare; impure (bad) coins are always abundant.”

Yet, these regularities, often called “the li” or “the constant li”, was altogether different from the Western concept of laws of nature. The way the traditional Chinese treated these regularities was also different from the attitude of Western thinkers toward laws of nature. A regularity was considered by the traditional Chinese as a particular fact, and not as a general law or principle covering many particular facts. They did not need to analyze the regularities or attempt to abstract simple, general laws from them. Even when they spoke of the regularities, what they were interested in were that such li exist, not in the detailed content of the li. Moreover, the regularities were frequently mentioned not for their own interest, but for analogies to similar regularities in human conduct and norms. For example, the fixed, and unchangeable, order of the four seasons was mentioned to make the point that the three basic human relations (san'gang 三綱) and the five constant virtues (wuchang 五常) cannot be changed. Zhu Xi made the remarks about the li of the growth of tree and the flow of water while discussing the point that the teachings of Yang Zhu and Mo Di were “against the li.” The Gresham-law-like remark was made by him to illustrate that great men are always rare while small men are always abundant. At times this tendency led him even to offer a basically human-centered explanation for regularities in the natural world:

If there is day, there must be night. If it were day for a long time and there were no night, how could [one get] rest? And if there were no day, how could there be this brightness? ... If there were spring and summer but no autumn or winter, how could things be completed? If there were just autumn and winter with no spring and summer, then again, how could [things] come into being?

We might consider in this connection a passage from the Book of Poetry, containing the word “ze” 則, meaning “a rule”: “When heaven produces masses of people, if there is a thing there is a rule.” This passage appears to imply not only laws of nature but also a supreme being responsible for them. But that impression does not survive a closer examination. For most of the examples considered for such rules were about norms of moral conduct, i.e. “the rules according to which one ought to be so” (dangran zhi ze 當然之則): for example, the rules according to which rulers and subjects ought to behave, the eyes ought to see and the ears ought to hear. Moreover, it was never said explicitly that these rules were laid down by heaven. Indeed, it is far more likely that

what the traditional Chinese had was the idea of a rule to be followed by heaven in producing men and things rather than that of a law provided by heaven to be followed by men and things.

We might also consider Joseph Needham's thesis that the concept of law of nature did not develop in Chinese scientific thought because of the absence of the idea of Creator who also laid down "laws of nature" to be obeyed by His creatures. Needham reviewed occurrences of the term ze in various early Chinese texts and concluded, for reasons similar to those given above, that ze cannot mean law of nature. My conclusion is also that the term was different from the law of nature, but I cannot go along with Needham when he concludes, based on his survey of the terms like ze and li, that the idea of laws of nature was absent in China. For it cannot be denied that the traditional Chinese did recognize regularities in natural phenomena. We have seen that some regularities even led a man like Zhu Xi to speak of the possible existence of a person in heaven presiding over them, though in the end he rejected the notion. To be sure, traditional Chinese ideas about these regularities were different from the Western concept of laws of nature (and they did not use such a term), but it is still possible to say that they represent their versions of laws of nature.

## 7. Nature as "Natural": Accepting What Is Seen

The natural world--what exists in it, what happens in it--was "natural" for the traditional Chinese mind. Most of the objects and phenomena in the natural world were, to them, obvious. They took them for granted, in a "matter-of-fact" manner, and did not feel any need to explain them. In fact, the natural phenomena and objects were so "natural" and obvious to them that they frequently alluded to some common and familiar natural phenomena in the course of discussing moral and social problems, by adducing analogies between the obvious natural phenomena and the latter problems that were considered more problematic. Only rarely did they mention such common natural phenomena for themselves.

For example, Zhu Xi spoke of the fact that once a cart has started to move, no great exertion of force is needed to keep it moving; he argued that, in study also, a great exertion of effort is needed only at the beginning, after which it becomes easy. Similarly,

to explain that when impurities enter the mind it loses “sincerity” (cheng 誠) and falls into self-deception, he used the analogy that when gold is mixed with a small amount of silver the whole bulk of gold loses its worth as gold. It is not impossible to learn from these examples something about Zhu Xi's views on natural phenomena--tendency of moving objects, and properties of mixture of metals. But his real concern lay elsewhere--to argue for strong exertion of effort at the beginning stage of study, for the importance of sincerity and purity of the mind, by showing that these points were analogous to the natural phenomena. In neither of the examples were the phenomena themselves what Zhu Xi was really interested in. Many concrete natural phenomena and objects came up in this context in traditional Chinese discussions.

Thus, in their discussions of the natural world, the traditional Chinese did not go deeper than phenomenal surface of the reality. Questions delving deeper into what one sees and accepts were not raised. Zhu Xi, for example, confessed that his influential friend, Zhang Shi 張拭(1133-1180), did not approve his wish to write a commentary on Shao Yong's 邵雍(1011-1077) theory about the outside of the world. The orthodox neo-Confucians shunned discussions of questions like these. Such attitude can be seen in Zhu Xi's comment on the famous dialogue between Cheng Yi 程顥 (1033-1107) and Shao Yong on where thunder comes from: On Cheng Yi's saying, “Thunder comes from where it comes from,” which had been given in response to Shao Yong's question, “Where do you think [thunder] comes from?”, Zhu Xi's comment was: “Why must one know where it comes from?”

To be sure, Zhu Xi did allow himself to discuss imaginary, theoretical situations. For example, he could imagine what a man, a "divine man" (shen ren 神人), placed outside heaven and earth, or between the sun and the moon, would see. While discussing the Buddhist doctrine of the other worlds, he speculated about a consequence of it, namely that the night would then have to be very long because the sun in its daily rotation would have to traverse around the other three worlds, all below the earth's horizon. For another example: a seventeenth-century Korean Confucian scholar, Chang Hy n-kwang 張顯光 (1554-1637), in a treatise called the Theory of the Universe (Ujus 1 宇宙說, 1631), also speculated about such problems as the size of the heaven-and-earth, whether the world is only one, and whether the world can be destroyed.<sup>4</sup> But in these examples Zhu Xi and

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<sup>4</sup>) Although he was persistent in pursuing these questions, his basic position was that such things cannot be known.

Chang Hy n-kwang were not thinking of an actual possibility.<sup>5</sup> Moreover, even this much was an exception. On the whole, the traditional Chinese avoided abstract, theoretical--and useless--speculations. And at any rate, even these exceptional cases could hardly match their discussions of moral and social problems, in the levels of elaboration, seriousness and sophistication.

One can see some key aspects of the traditional Chinese basic ideas and assumptions that made them consider natural phenomena to be so "natural"--obvious, matter-of-fact.

For instance, qualities and activities of qi were considered innate, and thus once certain phenomena had been attributed to certain qualities and activities of qi, they were deemed sufficiently accounted for--without any need to look for external causes or hidden mechanisms. Zhu Xi's account of the formation of the earth, for example, will illustrate the point.

In the beginning of heaven and earth there was only the qi of yin and yang. This qi moved and turned around continuously. When the turning became very rapid, a large quantity of the sediments of qi was compressed. And as there was no outlet [for the sediments] these consolidated to form the earth in the center.

He referred to rapid rotation of qi as responsible for the formation of the earth, but he never paid attention to the cause of such rotation. It was almost as if rotation were the natural activity for qi.

The concept li also had an effect. Li of an object or phenomenon was merely something because of which the object exists or the phenomenon takes place as it actually does: when and only when there is li for it, does it exist or take place. Thus, li was not conceptually simpler or more fundamental than the object or phenomenon itself. Li referred to a given object or phenomenon as a whole in its totality; it was not what can be used in the explanation or analysis of the object or phenomenon in simpler terms. When li was mentioned, it was merely invoked to assure the existence or occurrence of the object or phenomenon. Nor was the content of li analyzed; it is grasped as a whole. Thus, when the traditional Chinese noted regularities in nature, he was concerned only with their existence, but not with concrete details, of those regularities which he sometimes referred to as li.

The dichotomy of what is "above physical form" (xing er shang 形而上) vs. what

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<sup>5</sup>) I am not comfortable in calling them even a "thought experiment", though I do not have a convincing

is “below physical form” (xing er xia 形而下) also facilitated ready acceptance of natural phenomena. Abstract and sublime concepts without manifest “physical forms” (xing 形)--the Way (Dao 道), li, mind and human nature, for example--belong to the former while concrete things with tangible physical forms are the examples of the latter. Naturally, what is without physical form was difficult to understand and was thought to be important and worthy of further consideration, whereas what has physical form and is visible was easy to understand, and was considered obvious and even trivial. Since most common natural phenomena are accompanied by tangible qualities and physical effects and are “below physical form”, they were thought to be obvious and were simply accepted in the way they were perceived; no further investigation was attempted beyond the surface of the phenomenal realities of empirical data.

The perennial Confucian emphasis on the reality of the external world also seems to have reinforced the readiness in accepting commonly-observed natural phenomena. Confucians considered their acceptance of the reality of the world to be what distinguished them from Taoists and Buddhists. They were not actively engaged in concepts like “void” (kong 空, xu 虛) and “nothingness” (wu 無), which were too easily associated with Taoists and Buddhists who tended to lead men to concentrate on introspection without paying attention to the actual world. This made Confucians to simply accept natural phenomena rather than to engage themselves in abstract, theoretical discussions about them.

Nor did problems involving the concepts like element, mixture, infinite, indivisibility, space, time, void, causality, law, and so on, receive much attention from the traditional Chinese. These concepts were too easily associated with Taoists and Buddhists who tended to lead men to concentrate on introspection without paying attention to the actual world. To the Confucians these concepts could at best be imaginary. Nor could they appear to be of any help in reckoning with the reality of the actual world. They were not useful in dealing with the moral and social problems of the world, either. And for that matter, problems involving such other notions as motion, change, element, and indivisibility could be hardly any better. It must have appeared useless, for most Confucians, to be engaged in abstract, theoretical speculations involving them.

Yet, these were the problems that were pursued in great depth in the Western

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explanation for why they cannot be.

scientific tradition and generated intense debates and controversies. And it was such controversies and consequent close examinations that eventually led to the resolution of these problems during the European Scientific Revolution. Indeed, contrast with the situation in the Western scientific tradition is both striking and interesting. Much of the medieval European discussion of the same concepts--“motion”, “mixture”, “space”, “void” and “infinite”--was undertaken in theological-philosophical contexts. But while similar contexts did exist in Chinese Buddhism and Taoism, they were not picked up because both were opposed by the dominant Confucian literati. And it was an irony that a basis of this rejection was the emphasis on the actual world, and shunning of “useless” theoretical speculations. For abstract, theoretical speculations about such basic concepts could have contributed to a fundamental understanding of phenomena in the actual world. In the West at least, continuing debates over interpretation of precisely such concepts helped bring modern science into being during the Scientific Revolution, and ultimately, the “useful” science that we have today. On the contrary, excessive emphasis on the reality of the actual world, and on the necessity of the usefulness of discussions, made it difficult for men like Zhu Xi to consider in detail those very concepts that could have proved useful in understanding, and living in, that actual world.