

The Origin and Significance of the Twenty-Four Solar Terms in China

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Abstract: The “Twenty-Four Solar Terms” is an integrated knowledge system and functional social practice initiated and developed by ancient Chinese. Applying to their daily lives and agricultural production, based on records of the periodic motions of the sun, this knowledge system echoes seasonal and climate changes, phenological variation and reflects the features of ancient agricultural activities. As a comprehensive demonstration of their lives and production, it is a phenomenal achievement thanks to the ancient Chinese people’s experience and wisdom. The “Twenty-Four Solar Terms” is also a cultural phenomenon unique to China, geographic location, the Yellow River Basin being at a mid-latitude zone with distinctive seasonal climate changes; its long-existing agrarian tradition, advanced agricultural philosophy and a harmonious lifestyle. In the meantime, while China’s superior knowledge on astronomy made its formation technically possible, the “agriculture first” governmental policy and the “prefectures and counties” administrative system, introduced by governors from Qin and Han Dynasties, cultivated its formation institutionally. Besides, the “Twenty-Four Solar Terms” is the outcome of the harmonious civilization progress and traditional Chinese culture, which is different from Western Europe’s aggressive and predatory industrial expansion. The “Twenty-Four Solar Terms” is still of great cultural and practical significance in China even today. It highlights the “unity of mankind and nature” philosophy and serves as another signature symbol of the Chinese culture. While China is more and more engaging in international affairs, the “Twenty-Four Solar Terms” facilitates the rest of the world to understand China from another angle.

Keywords: “Twenty-Four Solar Terms”; agrarian gene; concept of harmony; system of prefectures and counties

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China's "Twenty-Four Solar Terms" was inscribed on the Representative List of the Intangible Heritage of Humanity during the 11th session of the UNESCO's Intergovernmental Committee for the Safeguarding of the Intangible Cultural Heritages on November 30, 2016. The "Twenty-Four Solar Terms" is an integrated knowledge system and functional social practice initiated and developed by ancient Chinese. Applying to their daily lives and agricultural production and based on records of the periodic motions of the sun, this knowledge system echoes seasonal and climate changes, phenological variation and reflects the features of ancient agricultural activities. This is a knowledge system closely combining astronomy with agronomy and is recognized as the "Fifth Great Invention of China" by the international meteorological community. The "Twenty-Four Solar Terms," expressed in a total of 48 Chinese characters, is a summary of numerous farming proverbs and knowledge of region-specific climate and phenology. In ancient China, it had been playing an important role in people's agricultural production and daily lives. What brought this unique cultural phenomenon into being? While this topic is rarely discussed by the Chinese academics at present, this paper attempts to unravel its origin and significance.

1. A brief review of the "Twenty-Four Solar Terms" development

The development of the "Twenty-Four Solar Terms" was a long process. The sun plays such a decisive role throughout the evolution of species (including humans), none of the existing civilizations has ever overlooked the sun's significance when it comes to human knowledge of nature. And this is particularly true for farming-intensive nations. It is acknowledged that human progress in understanding

the sun's function varies among different civilizations. Human insights are determined by accumulation of experience, learning abilities and specific needs of a certain knowledge. In China, even prior to the "two kids' discussion of the sun" as described by Confucius, the Chinese ancestors had already established a highly developed solar knowledge system and had been eager to learn more about the sun. According to some scholars, the concept of "solstice" can be found on the oracle of Shang Dynasty, which means probably there already were recordings of the Summer/Winter Solstice back then (Wen & Yuan, 1983). Based on the research conducted by Chen Jiujin and Xia Weiying, Shen Zhizhong (2001) states that it is possible, but not certain, that the precise date of "solstice" was determined in Shang Dynasty. Theoretically, if Shang Dynasty relied heavily on animal husbandry, and Zhou Dynasty, known as founded on an agrarian context and inheriting Shang people's solar observation results, then the idea of Summer/Winter Solstice and Spring/Autumn Equinox must have already been known to all during Western Zhou Dynasty. In the middle of Spring and Autumn Periods, the terms of "Four Beginnings" (the Beginning of Spring/Summer/Autumn/Winter) was added in. By the end of Warring States Period, the system of "Twenty-Four Solar Terms" basically took shape. But the complete names for the "Twenty-Four Solar Terms" did not appear until Western Han Dynasty in *Huainanzi*. Since then, the use of "Twenty-Four Solar Terms" has never been departed. (Shen, 2001) The names of the "Twenty-Four Solar Terms" signify multiple meanings, from seasonal changes, temperature, rainfalls to phenology. The naming principle is to provide guidance for agricultural production and people's daily lives. It is worthy to strengthen that since its formation in Western Han Dynasty, the content of the "Twenty-Four Solar Terms" has continuously been enriching.

In addition to the literal meaning of the 48 Chinese characters, the “Twenty-Four Solar Terms” is also associated with many farming proverbs and region-specific experiences.

2. The origin of the “Twenty-Four Solar Terms” in China

A review of the history of world civilization indicates that the “Twenty-Four Solar Terms” is a cultural phenomenon unique to China. The knowledge system attached to it has never been found in any other civilization. It is the outcome of the harmonious civilization progress and traditional Chinese culture. The “Twenty-Four Solar Terms” was initiated under specific conditions including actual climate changes, people’s desire for better harvest and better daily life, corresponding astronomical knowledge, as well as governmental policy support. These four conditions together formed the basis of such cultural phenomenon capable of facilitating agricultural production and upgrading daily life. The four conditions are to be elaborated as follows.

2.1 Favorable natural environment

The “Twenty-Four Solar Terms” is a knowledge system only applying to regions with distinct seasonal changes. That is because only people living in this kind of regions require persistent adjustments in their daily activities. In addition, local climate and weather changes, as well as phenological changes, has to be recurring on yearly basis. Without persistent observations of repeating changes, the “Twenty-Four Solar Terms” would be groundless, therefore lose its significance in guiding agricultural activities. Globally, only mid-latitude zones feature four recurring distinct seasons. In China, both the middle and lower reaches of the Yellow River and part of the Yangtze River Basin fall into the mid-latitude category.

The distinct seasonal climate and weather conditions in the middle and lower reaches of the Yellow River laid a foundation for the development of the “Twenty-Four Solar Terms.” Moreover, this region is also a cradle of primitive agriculture. During the Pleistocene era, pressured by severe coldness, ancestors there gradually developed conceptual agriculture. After the Holocene era, with better actual and mental prerequisites, primitive agriculture came into being in this region (Xu, 1994).

The middle and lower reaches of the Yellow River, being the birthplace of the “Twenty-Four Solar Terms,” is located in a mid-latitude zone with four distinct seasons, or rather at about 30°N. The 30°N-31°N zone has given rise to a series of enigmatic cultural phenomena. With video programs exploring the cultural phenomena unique to this zone such as the movie 31°N Video Clip and documentary 30°N, Across China, one cannot help wonder whether there is any connection between the “Twenty-Four Solar Terms” developed at a 30°N region and the enigmatic temperament of the 30°N-31°N zone. Obviously, further investigations are in need. Regions outside the mid-latitude zone, such as the equator and the Arctic, feature limited temperature fluctuation, thus similar climatology concepts are less likely to germinate.

2.2 Profound cultural basis

The “Twenty-Four Solar Terms,” with the aim of guiding agricultural activities, is far more likely to form in an agrarian society, unlikely in a nomadic one. Apparently, not all agrarian societies process the possibility of developing cultural phenomena as the “Twenty-Four Solar Terms.” People living in developed agrarian societies, with advanced agrarian philosophy, long agriculture-intensive tradition and a “unity of man and nature” cultural notion, had better chances.

2.2.1 Long agrarian history

The ancient Chinese civilization can be categorized to cultivation culture. And China is one of the few birthplaces of agrarian civilizations worldwide. Back to the Neolithic era, some ten thousand years ago, China had already been engaged in agricultural production, cultivating a ranges of crops such as millet, soybean and rice; besides, it was already the world leader in terms of mulberry planting and sericulture, as well as animal domestication such as pigs and dogs. The formation of the agrarian model gradually facilitated a crop planting-based agricultural production and living, which continued up to Qin and Han Dynasties, when it was thoroughly established. For the following thousands of years, China has always been an agriculture-reliant civilization, and has uninterruptedly been using the same spoken and written language nationwide. In such an uninterrupted civilization and with growing population, villages and towns were gradually formed, paving the way for the formation of a country. By contrast, it was a quite different picture for nomadic people, who roughly fall into two categories, i.e. primitive hunting people and medieval nomadic people. Primitive hunting people in cold regions, such as the Inuit in the Arctic, were unable to develop similar concepts as the “Twenty-Four Solar Terms” in early human history due to small population size. Medieval nomadic people, such as the Mongolians, did not have their nomadic way of life developed until their agricultural cultivation reached a certain level. For this reason, they only needed to grasp a rough time sequence of spring, summer, autumn and winter. And there was no real need for them to excessively subdivide seasons to time slots.

2.2.2 Highly developed agricultural civilization

Originating from an early stage of the Neolithic era and, by virtue of the deep and fertile loess layer, the Chinese agriculture fostered an advanced

agricultural civilization during the age of class society. The loess layer, having undergone a long forming process, was deep and fertile and relatively easy to cultivate with simple and crude tools and reap a satisfying harvest. Consequently, Chinese people were able to support a large population and quickly form a prominent civilization. After all, judging from per unit area yield, crop planting could feed more people than nomadic herding and therefore could help to forge cities and nations in earlier stage. The rich loess layer and advanced agriculture techniques quickly boosted agricultural production development and civilization progress. Thanks to the loess-based agriculture development, Qin and Han Dynasties witnessed fast social development which then paved the way for further development.

Highly developed agrarian society cultivates culture accumulation and transmission, and further enables the inheritance and development of knowledge. In this regard, much credit should be given to the carrier — the Chinese writing, (i.e. Chinese characters), who's square shape and pictographic representation is easy to inherit. By contrast, alphabetic writing, with frequent variation, was prone to be interrupted as time went by. The formation of the “Twenty-Four Solar Terms” was a long process. “Two Equinoxes” (Spring/Autumn Equinox) and “Two Solstice” (Summer/Winter Solstice) did not come into being until Western Zhou Dynasty. During Spring and Autumn Period, “Four Beginnings” (the Beginning of Spring/Summer/Autumn/Winter) were added. Eventually, the complete names for the “Twenty-Four Solar Terms” were included in *Huainanzi* in Western Han Dynasty. Without the great consistency of Chinese characters, the “Twenty-Four Solar Terms” would not be developed and carried forward in such a sustained manner.

2.2.3 The philosophy of harmony and inclusiveness

High production capacity was a prerequisite, but not necessarily a sufficiency for the creation of the “Twenty-Four Solar Terms”. Its formation also required incorporating corresponding agricultural ideology and philosophy. During the “Axial Age” (roughly about the Spring and Autumn Period and Warring States Period in Chinese history), the Chinese civilization was highly developed, with contention of a hundred schools of thought. One key school was agriculturalism, which formed its unique philosophy of unity of heaven and man during the process of contention. Holding in awe and making the most out of nature, agriculturalism facilitated the formation of the “Twenty-Four Solar Terms” concept. More specifically, the Taoist philosophy of Laozi and Zhuangzi had a far-reaching impact on the society. Laozi emphasized “following nature,” while Zhuangzi advocated nature, non-interference and the spiritual realm of “Heaven, Earth and I come into being together, and all things and I are one.” Such a philosophy had a natural influence on agriculturalism which emerged later. There were four representative agriculturalist essays included in Master Lü’s Spring and Autumn Annals, i.e. *Shangnong* (well-off farmers), *Rendi* (utility of land), *Biantu* (identification of soil type) and *Shenshi* (observation of seasonal changes). They invariably stressed the unity of man and nature, a concept echoing the Taoist philosophy of Laozi and Zhuangzi. For example, *Shenshi* explained the process of agricultural production and principle of certainty by highlighting the close links among Heaven, Earth and humans, arguing, “crops are sowed by man, nourished by Earth and destined by Heaven.” Such ideas helped to develop a technical system of intensive cultivation, which contained the “Twenty-Four Solar Terms” and other rich connotations and was geared to farming seasons. The concept of “Heaven, Earth and human,” which was also contained in this technical

system, highlighted the importance of grasping farming season; while the “Twenty-Four Solar Terms” specified detailed measures on rational use of farming season and demonstrated advanced agronomic back then.

In a harmonious context of “Heaven, Earth and human,” the ancient Chinese believed earth was the foundation of all and more importantly the organism of living things. The well-known Earth-vein Theory regards soil as a living body with “blood vessels” adaptive to climate change. In ancient times, the Chinese people advocated harmony both in agricultural production and family life. When it comes to harmony in family life, the Chinese adopted a multiple inheritance pattern (legacy sharing among all sons), as opposed to the European’s single inheritance (primogeniture). Unable to follow a colonial expansion model, the Chinese people tended to densely dwell in certain regions, where they relied on multiple cropping to make a living. That is why they adopted a harmonious production model and sought to live in harmony with nature. In terms of technical approaches, they were primarily engaged in land-efficient agricultural production, spending all available time on cultivation activities such as deep plowing, mid plowing, and fertilization. Having made huge efforts to improve the cultivated land, they managed to form a technical system of intensive cultivation. More specifically, north China developed a plowing-harrowing-leveling cultivation system; while south China formed a plowing-harrowing-pulverizing system, both of which successfully fed a large population.

2.3 Necessary technical conditions

The formation of the “Twenty-Four Solar Terms” had to be based on a good knowledge of astronomy, without which, the identification of solar motion law would be impossible. The ancient Chinese astronomy was quite advanced, and was mentioned in a same

breath with agronomy, medicine and mathematics as one of the “four major natural sciences.” Prior to the Renaissance, China had been the world’s most accurate observer of astronomical phenomena and kept the best records in this regard. Earth sundial, also known as gnomon, is China’s earliest and simplest astroscope. It was designed to measure the length of the shadow cast by the sun and hence help to identify the dates of the Summer and Winter Solstice. Based on that and through mathematical analogy, the ancient Chinese divided the “period of revolution” into 24 equal parts and established the exact date of every solar term. Without a profound understanding of astronomy, they simply could not have identified the Summer and Winter Solstice, let alone the rest of the “Twenty-Four Solar Terms.”

However, this does not mean that a developed knowledge of astronomy could naturally bring about the “Twenty-Four Solar Terms.” After all, ancient Greece was known for being astronomically advanced, but it did not foster such a concept as the “Twenty-Four Solar Terms.” Regarded as the cradle of European civilization, ancient Greece had an astronomical concept distinctive from that of ancient China. The Greek astronomy attached more importance to the mechanism and law of stellar movement, and did not serve for the purposes of guiding daily life. According to some scholars, it is of a scientific category, aiming to conclude the law of celestial movement. The emergence of modern astronomy in Western Europe was closely associated with its rational scientific system. By contrast, ancient Chinese astronomy was more of a ritual study, which considered “Heaven” to be a supreme existence with will and emotion, “who” interacts with humans and things on earth in a mysterious way. Consequently, studying astronomical phenomena and interpreting their implications became a political need for successive supreme rulers and an etiquette demand of all Chinese people in ancient times. It is true that ancient Chinese astronomical

calendar also involved the calculation of planetary and stellar positions (e.g. positions of the sun and the moon) and had a calculation method of its own. However, it was not developed to generalize laws of celestial movement; nor did it acknowledge the existence of such laws (Wu, 2015). It was in Greece, rather than China, that modern astronomy came into being. Ancient China did not take such a path of astronomical modernization. Instead, it was more interested in examining the connection between Heaven and man from political perspective, which later evolved into reliance on “interaction between Heaven and man” to rule the rationality of everything in human world. Ancient Chinese people mainly focused on generating the law of interaction between the sun and the earth and divided the “period of revolution” (365 days) into 24 equal parts, known as the “Twenty-Four Solar Terms” to guide agricultural production and daily life.

2.4 Key institutional factors

Apart from the aforementioned factors, the birth and pervasion of the “Twenty-Four Solar Terms” were also decided by an non-negligible and important force—institutional factors. The system of prefectures and counties, a highly centralized political system implemented during Qin and Han Dynasties, stepped up the shaping and spreading of the “Twenty-Four Solar Terms”. It is safe to presume that there would be no ensuing attendant common sayings and farming proverbs popularized across the country, nor the geography-based adjustments to the content of each solar term.

Firstly, the system of prefectures and counties during Qin and Han Dynasties led to the highly influential policy of “Emphasizing Agriculture and Restraining Commerce,” which proved itself a solid support for the prevalence of the “Twenty-Four Solar Terms.” With the implementation of this policy during Qin and Han Dynasties agriculture became the pillar for national economy and commerce was

repressed. Crop production topped the industrial list, while breeding and commercial business were discouraged. Regulations of Qin Dynasty particularly stipulated that arbitrary farm cattle slaughter would be punished with death penalty. The “Twenty-Four Solar Terms,” if it were not for the idea of “Emphasizing Agriculture and Restraining Commerce,” would never have found their way into each sorted sector of production and living of the Chinese nation. Secondly, agricultural production and living had already been well arranged in accordance with different seasons, especially in early Han Dynasty, even before the “Twenty-Four Solar Terms” were established. Agriculture was hugely valued then and the main responsibility of the local authorities were devoted to promote and instruct their people in agricultural production and life. Thus, it came as no surprise that the “Twenty-Four Solar Terms” first appeared in Han Dynasty. It was finally popularized under the reign of Emperor Wu of Han Dynasty after the calendar was uniformed and standardized together with carriages and Chinese characters in Qin Dynasty.

It is known that, despite distinctive seasonal climates in most areas, the production activities including plowing in spring, cultivation in summer, harvest in autumn and storage in winter does not necessarily apply everywhere. People in southern China began very early to free their production from the northern tradition that seeds must be sown in spring, seemingly threatening the prevalence of the “Twenty-Four Solar Terms” throughout China. Thus, government must have played a part in ensuring implementations of the “Twenty-Four Solar Terms” even in unsuitable areas. There is solid evidence. The unified system of Qin Dynasty was inherited by its successor—Han Dynasty, and a standardized calendar—the Zhuan Xu Calendar, was widely adopted. Earlier in pre-Qin era, different calendars were used by different kingdoms. They were the

universally known “six ancient calendars;” Huangdi Calendar, Zhuan Xu Calendar, Xia Calendar, Yin Calendar, Zhou Calendar and Lu Calendar, from which Qin Shi Huang, the first emperor of Qin Dynasty, decided the Zhuan Xu Calendar as the only official calendar henceforth. The Zhuan Xu Calendar predominated and persisted through early Han Dynasty to the first year of the Taichu period under the reign of Emperor Wu of Han Dynasty, when Emperor Wu, following advice from Gongsun Qing (an occultist), Hu Sui (an occultist) and Sima Qian (145 or 135 BC - 86 BC, a Chinese historian of Han Dynasty), recruited a number of eminent astronomers including Tang Du, Luoxia Hong and Deng Ping to create a new calendar. Luoxia Hong created the armillary sphere to assist the observation of the stars, based on which he invented the Taichu Calendar together with Tang Du and Deng Ping. The new Calendar, which divided solar year into twenty-four solar terms, was later officially released by Emperor Wu in the first year of the newly-valid Taichu period (Siqinbilige, 2004), hence the calendar was called the “Taichu Calendar.” Only under government efforts did the “Twenty-Four Solar Terms” become universal in Chinese agriculture and living, and so it can be concluded that the “Twenty-Four Solar Terms” is rightly a direct result of the prefectures and counties system.

The middle and lower reaches of the Yellow River pre-dominated strong agricultural development in ancient China. Distinct seasons, profound farming culture, advanced agricultural thoughts, mature farming culture system that pursued harmony with nature and highly developed astronomy knowledge storage, which, along with institutional supports of the time, had all together contributed to the birth to the “Twenty-Four Solar Terms” in Han Dynasty. Other civilization systems either missing the above key factors, or lacking direct incentives, failed to thrive such Terms.

3. The uniqueness of the “Twenty-Four Solar Terms” compared with different civilizations

The early Western European civilization has also indeed developed agriculture culture, except that its agriculture models were strongly influenced by the nomadic living style. In his book *The Origin of the Family, Private Property, and the State*, Frederick Engels posed that European agriculture stemmed from the necessity of the Aryans to prepare fodder for their livestock. It indicates that prior to the formation of agriculture, Western European was mainly ruled by nomadic races. Agriculture was spread to Western Europe and Northern Europe from Western Asia, and it has been proved by archaeologists to have close ties with the start of the Neolithic culture. In southeastern Europe,

including the Aegean Region and the Balkans, stood as the forefront that was the prior to embrace the agricultural culture from Western Asia, which branched out into two routes as it developed in Europe: the Linear Pottery Culture along the middle reaches of the Danube and the Stamped Pottery Culture along the Mediterranean Sea (Huang, 1987).

Early European agriculture functioned more as an auxiliary part to breeding or livestock production. Its model of production and living was unlike that of China. Driven by the strong nomadic genes and the desire to conquer, European agriculture was generally in favor of manipulating nature. Though there were some different voices, for example, Hesiod(1996) of ancient Greece, advocating “never missing the best farming time” In his book *Works and Days*, Europeans never agreed to stay in harmony with nature, but rather



Great cold

went further in the opposite direction that, finally led to modern experimental science (He siod, 1996). Evidences have shown that Western European civilization inherited the Greek civilization, based on which they developed modern science and technology. All this is a mere process of conquering and trying to control nature by gripping its secrets inside. Their culture, centering on Christianity, controlled the population through primogeniture, forbade land transactions and resisted immigration, explaining why the American Indians were conquered by and fell prey to the Europeans later. Western Europe culture had never hesitated to show its intention to conquer in its Roman Colosseum, where they tried to tame all kinds of animals. In contrary to the Chinese agricultural culture which pursue harmony with nature pursuit of, Western European were certainly unlikely to generate the concept of the “Twenty-Four Solar Terms.” Here is a comparison chart between the two:

The biggest difference displayed in the chart above lies in agriculture: Western Europe resorted to chemical fertilizers and pesticides, while China brood the “Twenty-Four Solar Terms.” Conquering nature was reflected in the use of chemical fertilizers, pesticides and machinery, which were

the result of the industrial civilization. Chemical fertilizers and pesticides were a substitute for labor force and were intended to serve the conquering career, for they stood to spare labor and time for Europeans to conquer nature and other human races. The Americans, inheriting the European civilization, misused the land they had taken from the American Indians in the 1930s, which had caused the notorious “black storm.” Some experts from academia, considered it a result of not knowing how to get on harmoniously with nature. Therefore, the concept of organic agriculture and the pursuit of human’s harmonious co-existence with nature was proposed. Nowadays, chemical fertilizers and pesticides, the result of the conquering European civilization, become more and more harmful, especially for the natural environment.

The “Twenty-Four Solar Terms” is not destined for the European civilization, nor is it destined for other civilizations. India, for example, had not have distinct seasons and had long been dominated by the Aryan civilization, which was strongly nomadic, let alone its astronomy level. In Japan and South Korea, China’s close neighbors, agriculture was not native and their astronomy development were less advanced. Generally, Japan and Korea’s agriculture

Table 1 Comparison of Core Cultures Between China and Western Europe

Western Europe	China
Christianity	Polytheism (primitive religions, God of Land)
Maths, Physics and Logic in ancient Greece	Multi-school ethics philosophy
The legitimacy of the imperial court was specified in advance	The legitimacy of the imperial court was justified afterwards
Aristocratic society, a small population with relatively broad (arable) land;	Small-peasant society, a large population with relatively little (arable) land;
the three-field system	Multiple cropping
Single inheritance (primogeniture), exclusive	Multiple inheritance, inclusive
Land transactions forbidden	Land transactions allowed
Nomadic gene; conquer nature	Agrarian gene; unity of heaven and mankind
Invented chemical fertilizers, pesticides, and machinery	Used waste as fertilizers; Inter-cropping and inter-planting
Life style: conquer and colonize	Life style: harmonious co-existence

were imported from and highly influenced by China, and thus lack of solid foundations for generating the “Twenty-Four Solar Terms”. Not to speak of Africa, whose agriculture in early times was relatively backward and who was deficient in astronomy and agriculture knowledge.

In Western Asia, only the ancient Egyptian and Babylonian civilizations were among the rare candidates who were capable of producing the “Twenty-Four Solar Terms” in early days. In 2787 BC, the ancient Egyptians created the first solar calendar in human history, setting the day when Sirius and the sun simultaneously rose on the horizon (and the Nile flooding began) as the start of a year. One year had three seasons, twelve 30-day months, thus 365 days in total (inclusive of the five festive days towards the end). This Egyptian calendar, with a mere 1/4-day gap between two neighboring years, provided a prototype for today’s widely-used solar calendar. However, the Egyptians ceased to go further. The reason might be that their sole purpose was to define the flooding time of the Nile, while the Chinese had to depend on the “Twenty-Four Solar Terms” to arrange their agricultural production and living. Meanwhile, evidence has shown that several civilizations had not have adequate astronomy knowledge; unfortunately yet, obviously, not all civilizations had intentions to invent the “Twenty-Four Solar Terms.”

So it was with the ancient Babylonian Civilization. Despite its advanced astronomy knowledge and agriculture experience, it had been suffering from political instability resulting from unceasing battles between different clans and different civilizations, and it was successively dominated by the earlier Sumerians, the Amorites, the Assyrians, the Semitics and finally the Persians. Civilization accumulation was impossible during the time. Furthermore, similar to the Egyptians, the Babylonians also only needed to figure out the time

of flooding, casting aside the idea of “Twenty-Four Solar Terms”.

As for the American continent, it is true that it had relatively advanced agriculture and four distinct seasons in some areas. The early Indians had even established a rather civilized Inca Empire. They constructed four round towers to the east and west of the City of Cuzco in a bid to define the dates of the Winter Solstice and the Spring Equinox by watching the sun’s position. They also erected a stone column on the large square of central Cuzco to measure time by analyzing shadows of the sun. However, their agriculture did not synchronize with their astronomy, the idea of “harmony between man and nature” was not formed and there was no efficient civilization accumulation, therefore the “Twenty-Four Solar Terms” did not come into being there.

4. The importance of the “Twenty-Four Solar Terms” in history, and its value for present and future

4.1 The importance of the “Twenty-Four Solar Terms” in history

It is known that at least during Spring and Autumn and Warring States Period, China had already established its farming-dominant style of production and living and gradually formulated its intensive and meticulous farming technology system, which was mostly about precise timing of farming. Appropriate timing was crucial as plant cultivation was a slow long process and was vulnerable to natural factors, and hence the idea of “unity of heaven and man” and the theory of “fate consisting of heavenly factors, environmental factors and individual factors” were widely accepted. No abstract philosophy could realize its value unless it was carried out in substantial operational measures. In agriculture, for example, timing, emphasized in ancient Chinese agricultural philosophy, was a

key factor during the whole farming process from seed sowing to harvest. Then the question is how to achieve harmony between man and nature through agricultural production without sacrificing crop harvests. The answer lies in building a reliable route by using the “Twenty-Four Solar Terms” as a guide to arrange the time for farming, to fight drought and keep the moisture in soil through plowing, harrowing and leveling, assist with land loosening and weeding, and finally feed a large population even with only a small portion of land. It can be certain that agrarian gene decided the nature of ancient Chinese civilization. It ushered in the philosophy of “unity of heaven and man,” then the concept of the “Twenty-Four Solar Terms” and the drought-resisting soil-moisture-preserving system combining land plowing, harrowing and leveling (in south China the three were plowing, harrowing and pulverizing), had all contributed to the ancient intensive and meticulous farming technology system.

4.2 The value of the “Twenty-Four Solar Terms” for the present

Today, agriculture is still an economic pillar in China. By introducing Western European agricultural methods, the traditional Chinese agriculture has benefited from several industrial factors, eg. chemical fertilizers, pesticides and machinery, yet unavoidably marred by the former two, suffering from a number of side effects; deteriorating arable soil, thinner black soil layer, soil acidification, shallower cultivation layer, worsening quality of rivers, environmental pollution, increasingly challenging task of guaranteeing the quality and safety of agricultural products, ecological degeneration, and increasingly difficult task of building eco-friendly conservation agriculture etc. To address these problems it is necessary that we follow the philosophy of “unity of heaven and man” and inherit the profound meaning behind the

“Twenty-Four Solar Terms,” by using traditional organic fertilizers and eco-friendly agricultural models, tailoring agricultural plans according to different seasons and geographies, combining crop cultivation and livestock breeding and pursuing recycling. The “Twenty-Four Solar Terms” will continue to serve Chinese agriculture in the future, by transforming itself to suit the modern society’s needs.

The “Twenty-Four Solar Terms” emphasizes the importance of timing for farming and respects the laws of nature by stipulating the exact time for plowing, sowing, land loosening and weeding, harvesting and storing. The “Twenty-Four Solar Terms” system will never be outdated, for however advanced the agriculture may get, the most fundamental law—production depends on nature—will never change. The process of agriculture production must always be carried out in a way that is in line with the ever-lasting knowledge system based on respecting nature.

The “Twenty-Four Solar Terms” also plays its role in the Beautiful Countryside Construction initiative. The countryside, however industrialized, will always be the majority part of China. We have acknowledged that rural ecological harmony must go in parallel with industrialization, that the interaction between the countryside and the urban area is designed to be mutually beneficial, and that industrialization should never be realized at the cost of traditions. The “Twenty-Four Solar Terms” would allow urban people to get a glimpse into the countryside and serve as a frequent reminder of how the cities can never be disentangled from the countryside, where green mountains and fresh waters lie in the very bosom of nature, inspiring endless nostalgia.

4.3 The value of the “Twenty-Four Solar Terms” for the future

As China develops into a key player globally,

the “Twenty-Four Solar Terms” evolves into a signature cultural symbol, representing the Chinese philosophy of “unity of heaven and mankind” and bringing China closer to the world.

Due to China’s large population, its GDP increase influences the entire global landscape to some degree. Chinese people now have a saying in the world’s supplies and demands, and their mentality and activities naturally affecting sectors of the global economy. When the Belt and Road Initiative was proposed, some Western countries stressed out and even suspected that it reflects China’s ambition to dominate the world—a misunderstanding, of course. In terms of cultural gene, Chinese culture has always featured harmony, as symbolized by the “Twenty-Four Solar Terms,” instead of addictions to conquering. The Belt and Road Initiative aims for

friendly interactions and communications. China has never went for colonization in the history, unlike Europe conquering the American continent nor will it in the future. On November 30, 2016, when China’s “Twenty-Four Solar Terms—Chinese Time Knowledge System Based on the Periodic Motion of the Sun and Its Practices” was thrillingly inscribed on the Representative List of the Intangible Heritage of Humanity during the 11th session of the UN Educational, Scientific and Cultural Organization’s (UNESCO) Intergovernmental Committee for the Safeguarding of the Intangible Cultural Heritages, it pushes China to further drive the global infrastructure construction and improve the welfare of the whole human race.

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