

Series 1: A Textual Research on the Relationship between Göbekli Tepe and Huaxia Civilization— Discussing the Origin of Huaxia Civilization, the Exact Dates of Major Historical Events, and the Relationship with Göbekli Tepe in Light of the Characteristics of Ancient Astronomy and Calendar Recorded in Chinese Historical Materials

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Translated by Xunzhe

16th.Dec.2022

Abstract

This article introduces the accurate knowledge of the ecliptic sky divisions made by ancient Huaxia civilization, such as the 12 Ci / 12 Signs of the Zodiac , the 28 Mansions, and the 64 Hexagrams, as well as the basic knowledge of astronomical observation and calendar setting in pre-Qin times. As a result, the astronomical and calendar characteristics recorded in ancient Chinese historical documents can be used to identify the exact times of the major events in Huaxia history and world history.

This article also discusses why “Yi Jing” is divided into the upper and lower sections, how the sequence of the 64 Hexagrams is arranged, and the relationship between the arrangement of the 64 Hexagram and the major historical events. It can be argued that “Yi Jing” is the astronomical record of the two stages of ancient Huxia civilization, which indicates the chronologies of the extraterrestrial objects impacting the earth and the recovery of human civilization.

By virtue of the precise demonstrations on the chronologies of the major historical events and their relationship with “Yi Jing” and Göbekli Tepe, it can be inferred that Göbekli Tepe is closely related to the origin of Huaxia civilization.

Key words

Huaxia civilization, Göbekli Tepe,, Yi Jing, ancient astronomy and calendar, Younger Dryas event, the 12 Ci, the 12 Signs of the Zodiac, the 28 Mansions, the 64 Hexagrams

Göbekli Tepe has been a hotspot in the international archaeological and historical community. Since its stratigraphic age is dated back to about 9,000 BC, and the Harran site in the nearby valley is believed to be one of the earliest human settlements, it involves the "ultimate" topic of the origin of human civilization. However, academia will not expect that Göbekli Tepe is closely related to the origin of Huaxia civilization.

The origin of Huaxia civilization is also a major topic in both Chinese and international archaeological and historical academia. Academia usually discusses it based on the method of "dual evidence" of historical documents and field excavations. However, due to the lack of the correct knowledge of astronomy and calendar in pre-Qin times, the characteristics of astronomy and calendar recorded in ancient Chinese literature and historical materials cannot be used for the research on the chronology of ancient times.

Now the situation has changed revolutionarily. The basic knowledge and technology of the astronomy and calendar of Huaxia civilization in pre-Qin times have been almost completely reproduced and accurately elaborated. With the strong support of the high-precision astronomical software “Stellarium”, and combined with the astronomical vector coordinate diagram invented by the author (Figure 4), including the 12 Ci (12 zodiac signs), the 64 Hexagrams, the 28 Mansions /the 27 Mansions, etc., the studies on ancient chronology and the origin of human civilization have made decisive progress.

Both Chinese and international academia have not realized that the "Shu Zhi"(蜀志, Records of Shu Kingdom) of "Huayangguo Zhi" (华阳国志, Records of Huanyang Kingdom), an important Chinese historical document, records the four major astronomical and calendar characteristics at the time when “Shu” Kingdom was initially founded (As highlighted in Figure 1, 2):

Figure 1

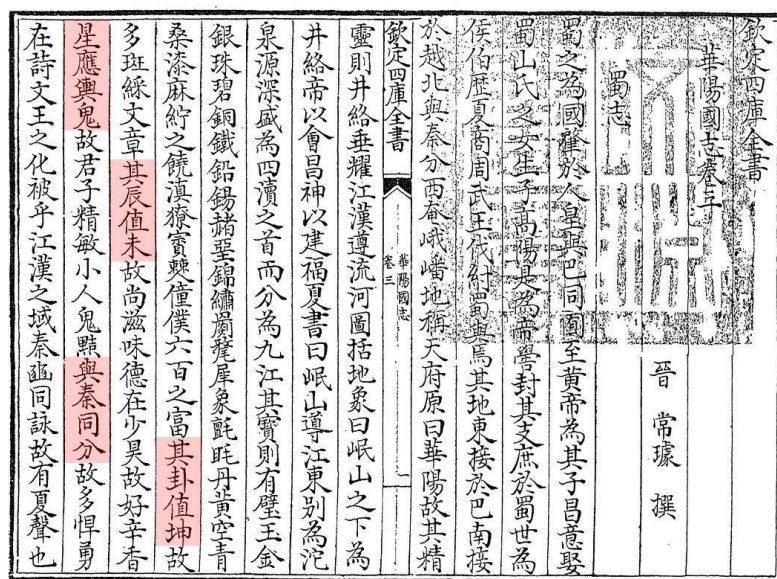
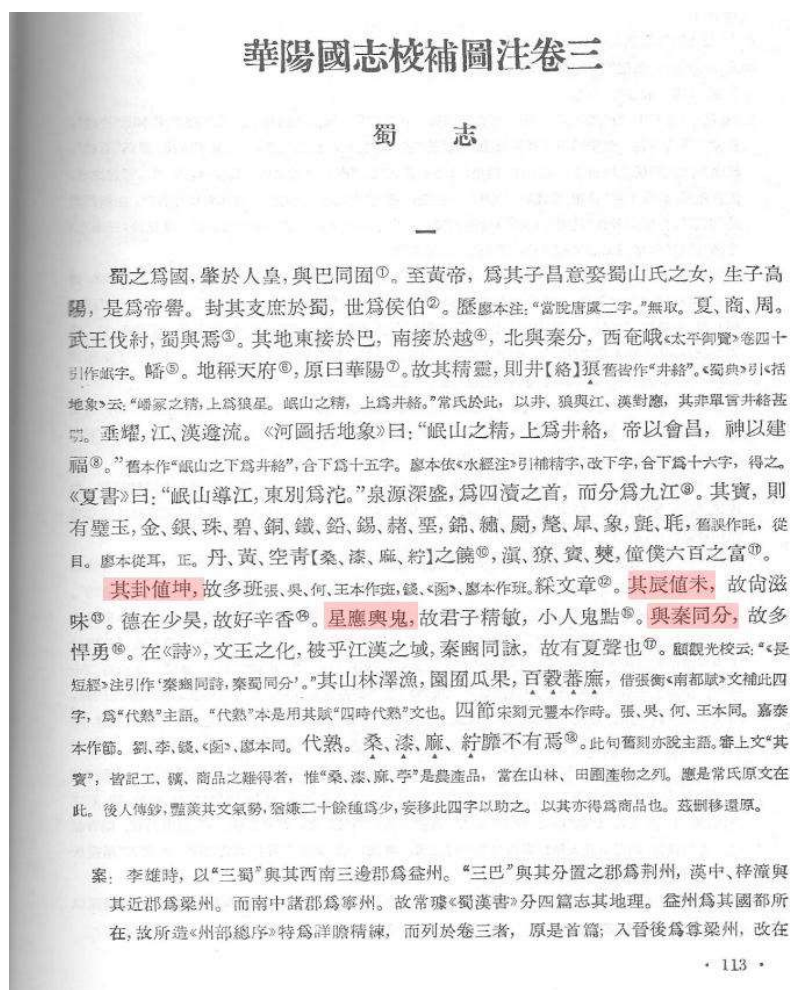


Figure 2



In order to accurately understand the recorded four major astronomical and calendar characteristics at the time when the ancient Shu Kingdom was initially founded, and further discuss its relationship with the origin of Huaxia civilization and even the world civilization, firstly, let us see how Huxixa ancients did astronomical observations and set their calendars in pre-Qin times.

Lingzhoujiu (伶州鳩), an important minister in the Western Zhou (西周) Dynasty, wrote that Zhuanyu (顓頊, one of the great ancient Huaxia emperors) created “the 12 Ci”, “the 28 Mansions”, and the astrological system. (As highlighted in Figure 3)

Figure 3

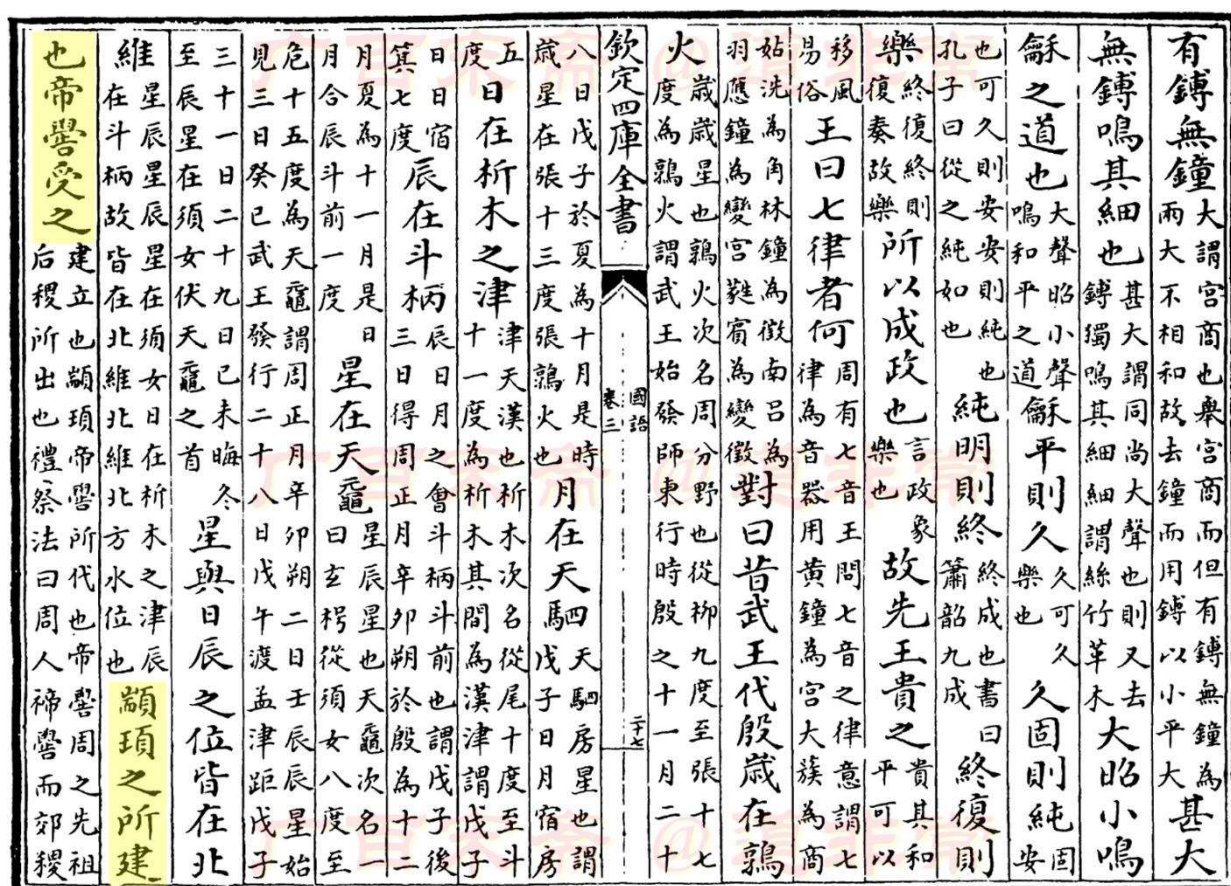


Figure 5 is a coordinate diagram of the southern ecliptic sky zone division, and Figure 6 is a coordinate diagram of the northern ecliptic sky zone division. From the ancient times to

pre-Qin period, ancient Huaxia astronomers divided the ecliptic sky into different types of coordinate systems (Figure 4), each with different functions, such as “the 12 Ci”, “the 28 Mansions” / “the 27 Mansions”, and “64 Hexagrams”. It is rarely known that the 28 Mansions and the 27 Mansions are not equatorial coordinates, but in fact ecliptic coordinates.

Notes:

The 12 Ci (12次) : Ancient Huaxia astronomers divided the Ecliptic sky zone into 12 equal segments. (Marked in blue lines in Figure 4)

The 28 Mansions (28宿) : Ancient Huaxia astronomers divided the ecliptic sky zone into four regions. Each region contains seven mansions, a total of 28 mansions. Their names and corresponding major stars: 1. Horn Mansion (α Virginis) 2. Neck Mansion (κ Virginis) 3. Root Mansion (α Librae) 4. Room Mansion (π Scorpius) 5. Heart Mansion (σ Scorpius) 6. Tail Mansion (μ Scorpius) 7. Basket Mansion (γ^2 Sagittarii) 8. Dipper Mansion (ϕ Sagittarii) 9. Ox Mansion (β Capricorni) 10. Girl Mansion (ϵ Aquarii) 11. Emptiness Mansion (β Aquarii) 12. Rooftop Mansion (α Aquarii) 13. Encampment Mansion (α Pegasi) 14. Wall Mansion (γ Pegasi) 15. Legs Mansion (η Andromedae) 16. Bond Mansion (β Arietis) 17. Stomach Mansion (γ Arietis) 18. Hairy Head Mansion (γ Tauri) 19. Net Mansion (ϵ Tauri) 20. Turtle Beak Mansion (λ Orionis) 21. Three Stars Mansion (ζ Orionis) 22. Well Mansion (μ Geminorum) 23. Ghost Mansion (θ Cancr) 24. Willow Mansion (δ Hydrae) 25. Star Mansion (α Hydrae) 26. Extended Net Mansion (ν^1 Hydrae) 27. Wings Mansion (α Crateris) 28. Chariot Mansion (γ Corvi). (Marked in brown lines in Figure 4)

The 27 Mansions (27宿) : Basically, the same as the 28 Mansions with only one Mansion less.

Note that the degree of the 28 / 27 Mansions is unique and different from the degree of ecliptic longitude and equatorial longitude.

Eight Trigrams (八卦, Bagua) and the 64 Hexagrams (64卦) : The Bagua, referred to as Eight Trigrams in English, are a set of eight symbols that originated in ancient Huaxia civilization, seen as a range of eight interrelated concepts. Each consists of three lines, each line either "broken" or "unbroken", respectively representing the level of Yin (阴, Cold) or Yang (阳, Heat).. Each Trigram is divided into eight parts of "Hexagrams", 64 Hexagrams in total. (Marked in yellow in Figure 4,5,6).

Figure 4

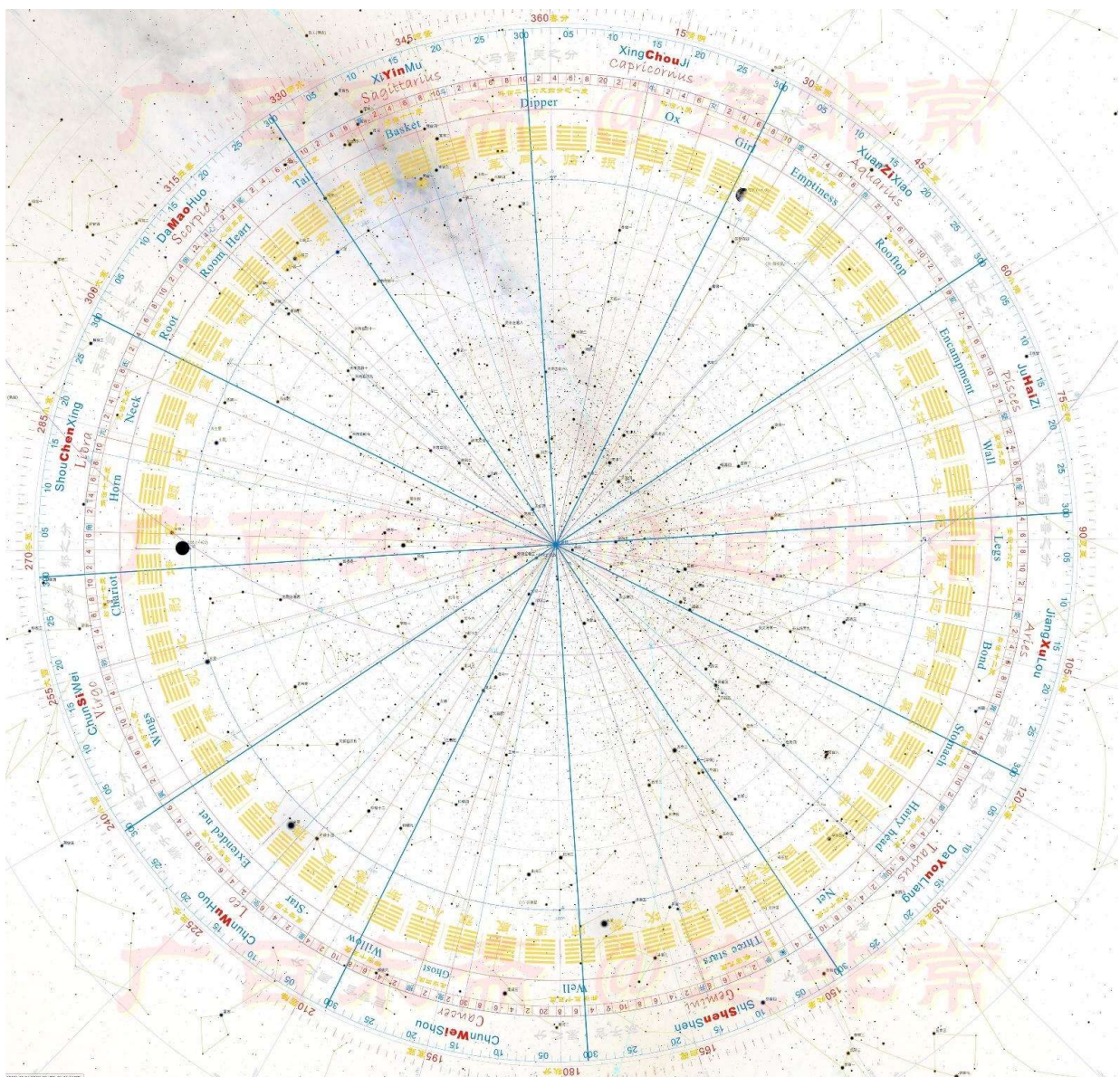


Figure 5

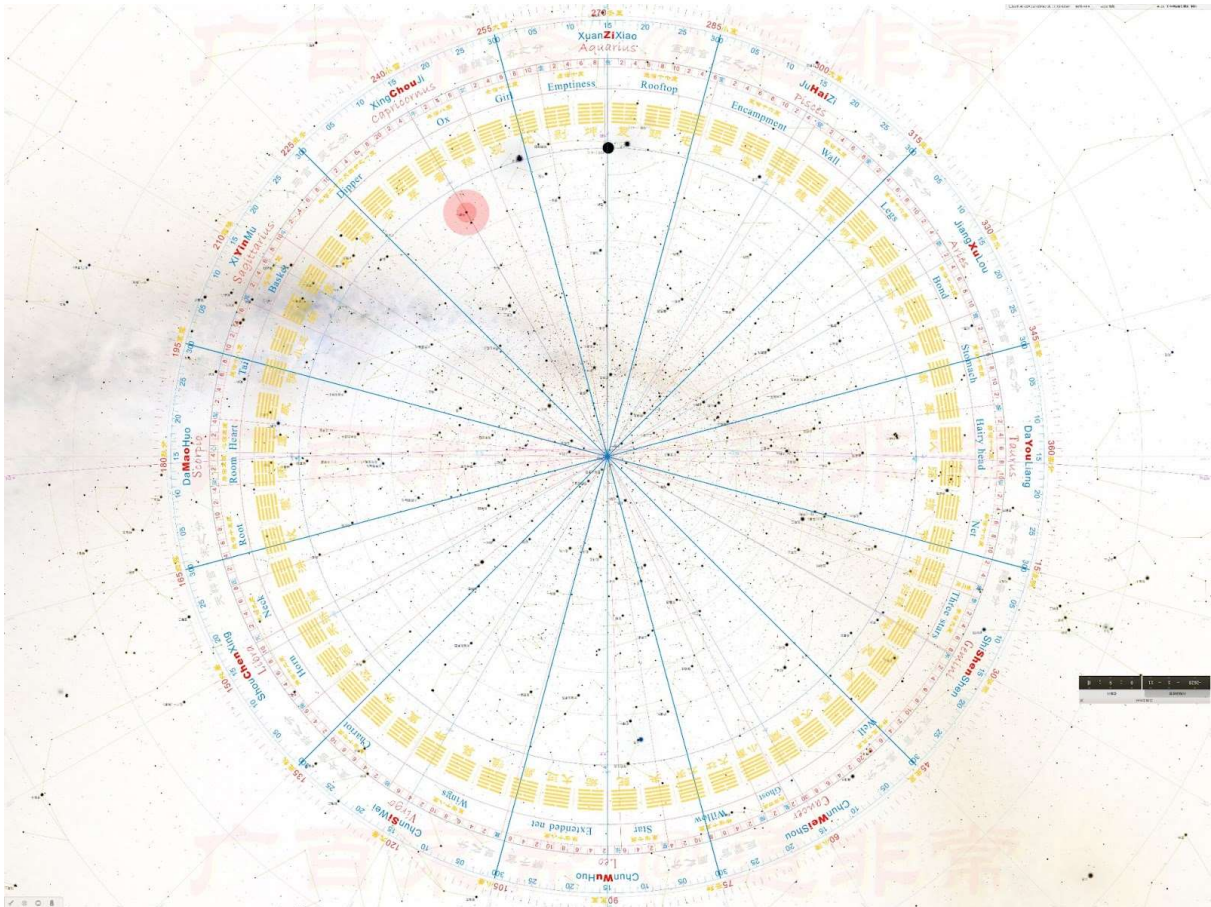
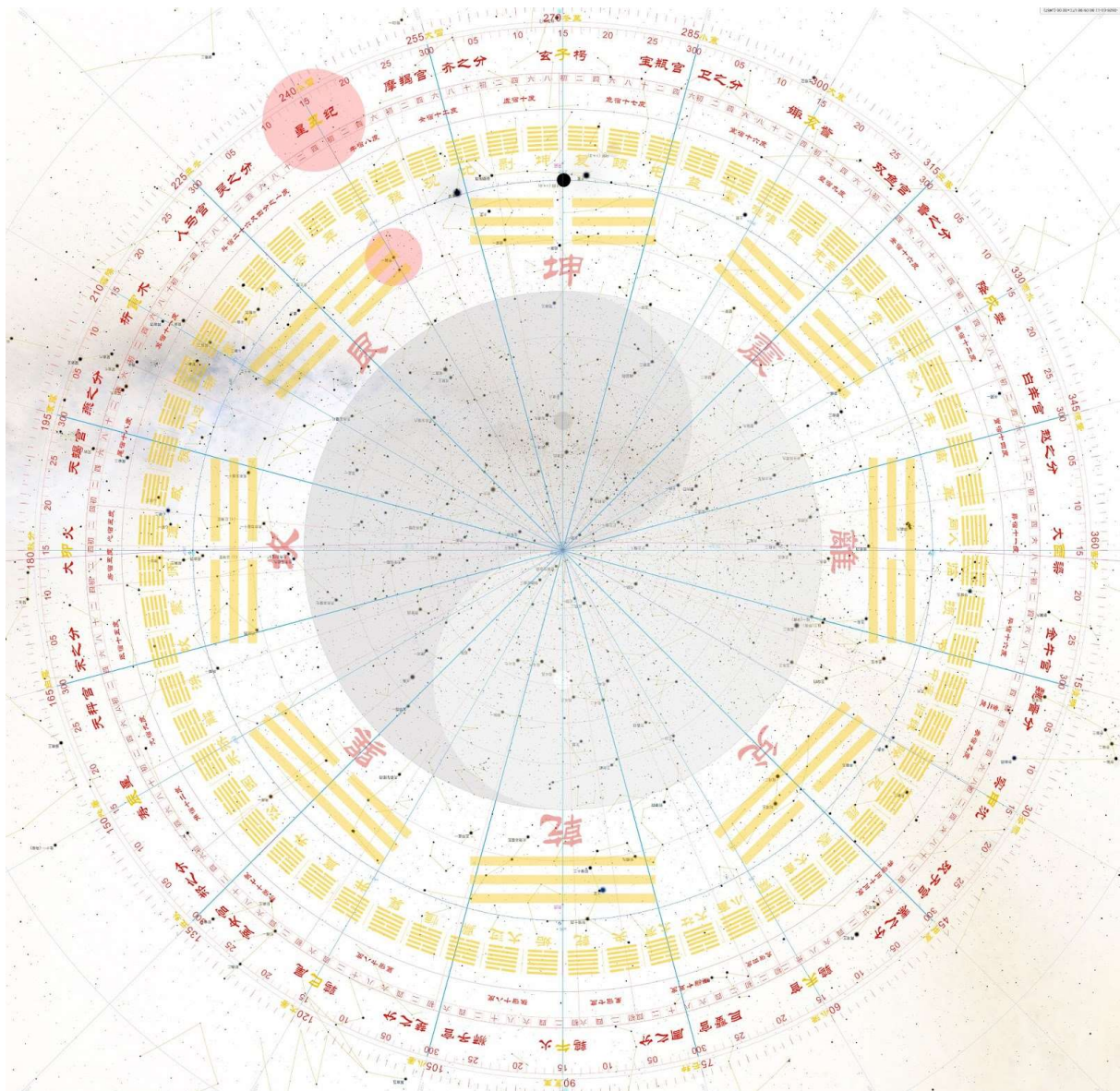


Figure 6

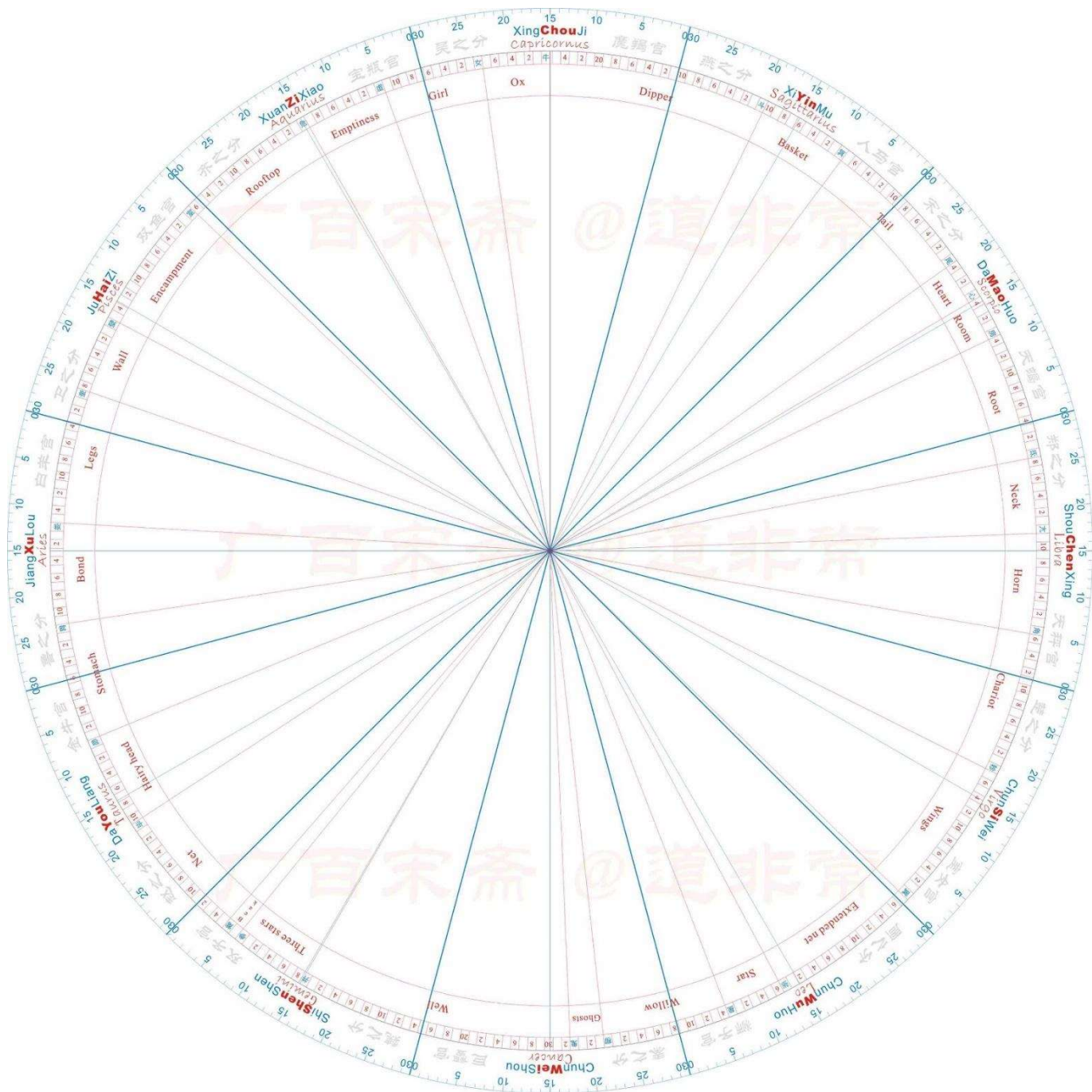


The "Ci" of the "12 Ci" originally means "dormitory", and the ecliptic sky zone is equally divided into 12 Ci with each 30° ecliptic longitude. This is mainly to mark the annual apparent motion of Jupiter. Jupiter passes by a "Ci" annually and returns to the "Ci" it first started about every 12 years.

"The 12 Ci" are coordinated with the degrees of "the 28 Mansions". For example, the first "Ci", "Xing Ji" (星纪, corresponding to Capricorn of the 12 zodiac signs), starts at Dipper Mansion 11° and ends at Girl Mansion 7° (Figure 7).

In the southern elliptic sky, the 12 "dormitories" start from "Xing Ji" and are distributed equally in counterclockwise order: Xing Ji (星纪), Xuan Xiao (玄枵), Ju Zi (娵訾), Jiang Lou (降娄), Da liang (大梁), Shi Shen (实沈), Chun Shou (鹑首), Chun Huo (鹑火), Chun Wei (鹑尾), Shou Xing (寿星), Da Huo (大火), Xi Mu (析木). Among them, "Chun Shou" region starts from Well Mansion 5° and ends at Willow Mansion 8°. (Marked in blue lines in Figure 7)

Figure 7



According to ancient Chinese historical records, “the 12 Ci” has another major feature: whenever the solar annual apparent motion reaches the beginning point of a “Ci”, it comes a “Solar Term” (节) of “the 24 Solar Terms”, such as “Beginning of Spring” (立春),

“Beginning of Summer” (立夏), “Beginning of Autumn” (立秋), “Beginning of Winter” (立冬), etc.; Whenever the solar annual apparent motion reaches the midpoint of a "Ci", it comes a "Mid- Solar Term" (中气) of “the 24 Solar terms”, such as “Spring Equinox” (春分), “Summer Solstice” (夏至), “Autumn Equinox” (秋分), and “Winter Solstice” (冬至), etc.

Notes:

The 24 Solar Terms, based on the sun's position, were created by ancient Huaxia civilization to reflect the changes in climate, nature phenomena, agricultural production, and other aspects of human life. In each month there are two Terms, the first one is called “Solar Term” and the other one “Mid-Solar Term”. They are: 1. Beginning of Spring 2. Rainwater 3. Awakening of Insects 4. Spring Equinox 5. Pure Brightness 6. Grain Rain 7. Beginning of Summer 8. Grain buds 9. Grain in Ear 10. Summer Solstice 11. Minor Heat 12. Major Heat 13. Beginning of Autumn 14. End of Heat 15. White Dew 16. Autumn Equinox 17. Cold Dew 18. Frost's Descent 19. Beginning of Winter 20. Minor Snow 21. Major Snow 22. Winter Solstice 23. Minor Cold 24. Major Cold. Among them, the odd numbers are “Solar Terms”, and the even numbers are “Mid- Solar Terms”.

Since “the 12 Ci” is divided according to “the 28 Mansions”, they are both ecliptic coordinates and two "rulers" used to measure the apparent motions of the sun, the moon and the five stars, especially to measure the “24 Solar Terms”. They are further used to formulate the combined solar and lunar calendar and implement the intercalation of the lunar calendar.

Usually, a lunar year is divided into 12 lunar months, with an average of 29.53 days per month and 354 days in a whole year, about 11 days less than a solar year with 365.25 days.

The 12 lunar months correspond to the 24 Solar Terms, as long as each lunar moth has a

corresponding "Mid-Solar Term", such as "Rain Water", "Grain Rain", "Grain Buds", "Major Heat" (marked in yellow in Figure 8), each lunar month can accurately indicate the seasons and terms. (Figure 8)

However, a lunar year is about 11 days less than a solar year, if the correspondence goes on continuously, there will always be a situation where a certain lunar month does not correspond to any "Mid-Solar Term" and only corresponds to a "Solar Term". In this case, it is necessary to set this month as the "leap month" of the previous month, by doing so, "Mid-Solar Terms" can still be corresponding to the lunar months in sequence. After setting the leap month, there are 13 lunar months and the total days in this lunar year are 384 days.

Figure 8

The relationship between the 24 Solar Terms and the 12 lunar months

Solar Month / Lunar Month	Yin Month / the first month	Mao Month / the second month	Chen Month / the third month	Si Month / the fourth month
Solar terms	Beginning of Spring, Rain Water 立春, 雨水	Awakening of Insects, Spring Equinox 惊蛰, 春分	Pure Brightness, Grain Rain 清明, 谷雨	Beginning of Summer, Grain buds 立夏, 小满
Solar Month / Lunar Month	Wu Month / the fifth month	Wei Month / the sixth month	Shen Month / the seventh month	You Month / the eighth month
Solar terms	Grain in Ear, Summer Solstice 芒种, 夏至	Minor Heat, Major Heat 小暑, 大暑	Beginning of Autumn, End of Heat	White Dew, Autumn Equinox 白露, 秋分

			立秋, 处暑	
Solar Month / Lunar Month	Xu Month / the ninth month	Hai Month / the tenth month	Zi Month / the eleventh month	Chou Month / the twelfth month
Solar terms	Cold Dew, Frost's Descent 寒露, 霜降	Beginning of Winter, Minor Snow 立冬, 小雪	Major Snow, Winter Solstice 小雪, 大雪	Minor Cold, Major Cold 小寒, 大寒

Other than the three ecliptic coordinates of "the 12 Ci", "the 28 Mansions", and "the 27 Mansions", both Chinese and international academia have not realized that in pre-Qin times, the ancestors equally divided the ecliptic sky zone into 64 Hexagrams, with each taking 5.625° ecliptic longitude, that is $5^\circ 37' 30''$.

The division of the 64 Hexagrams strictly corresponds to the 24 Solar Terms. For example, the Summer Solstice point (at 90° ecliptic longitude) corresponds to the boundary between Qian Hexagram (乾卦) and Gou Hexagram (姤卦), and the Winter Solstice point (at 270° ecliptic longitude) corresponds to the boundary of Kun Hexagram (坤卦) and Fu Hexagram (复卦). (Figure 9)

Figure 9

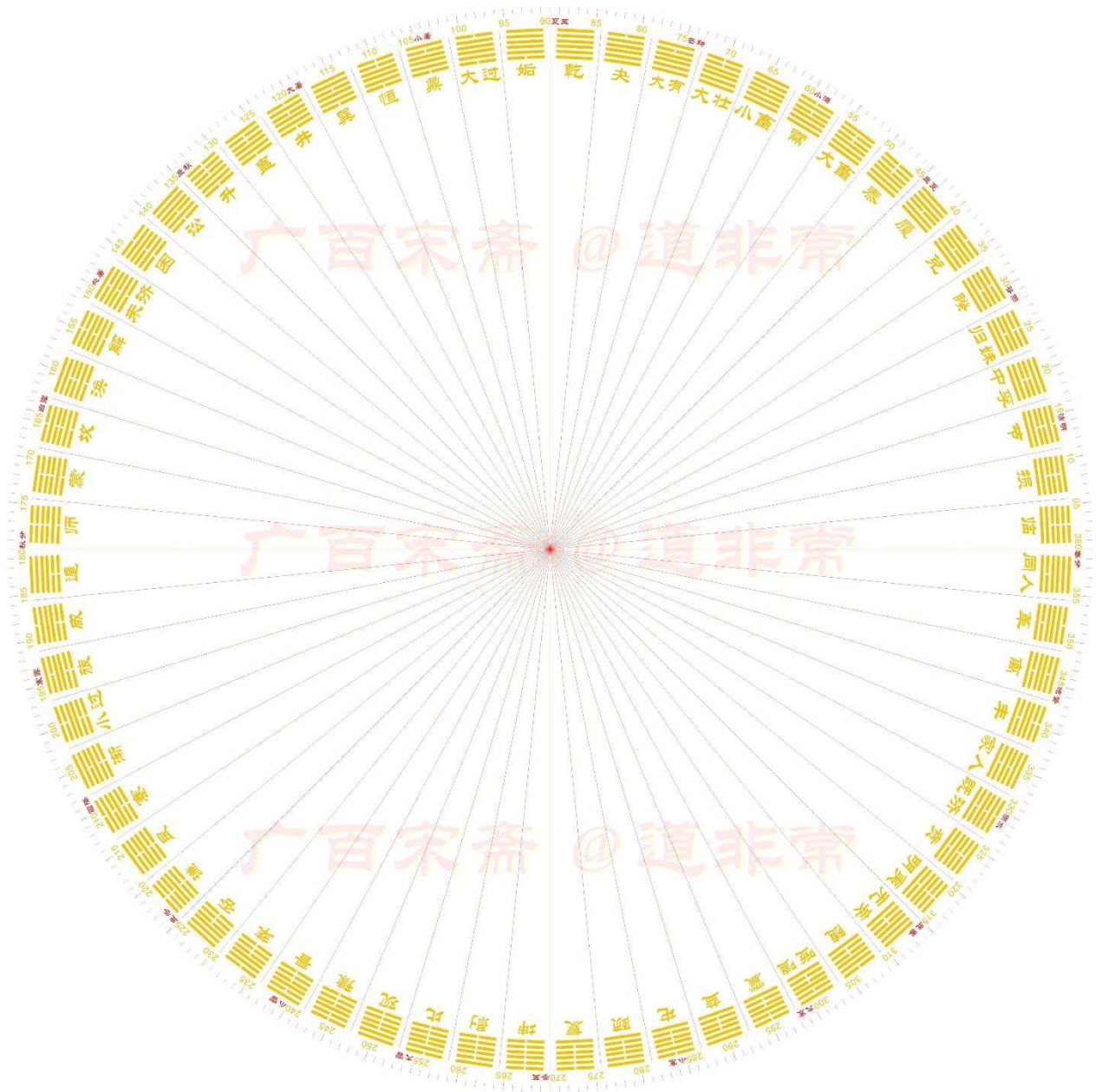
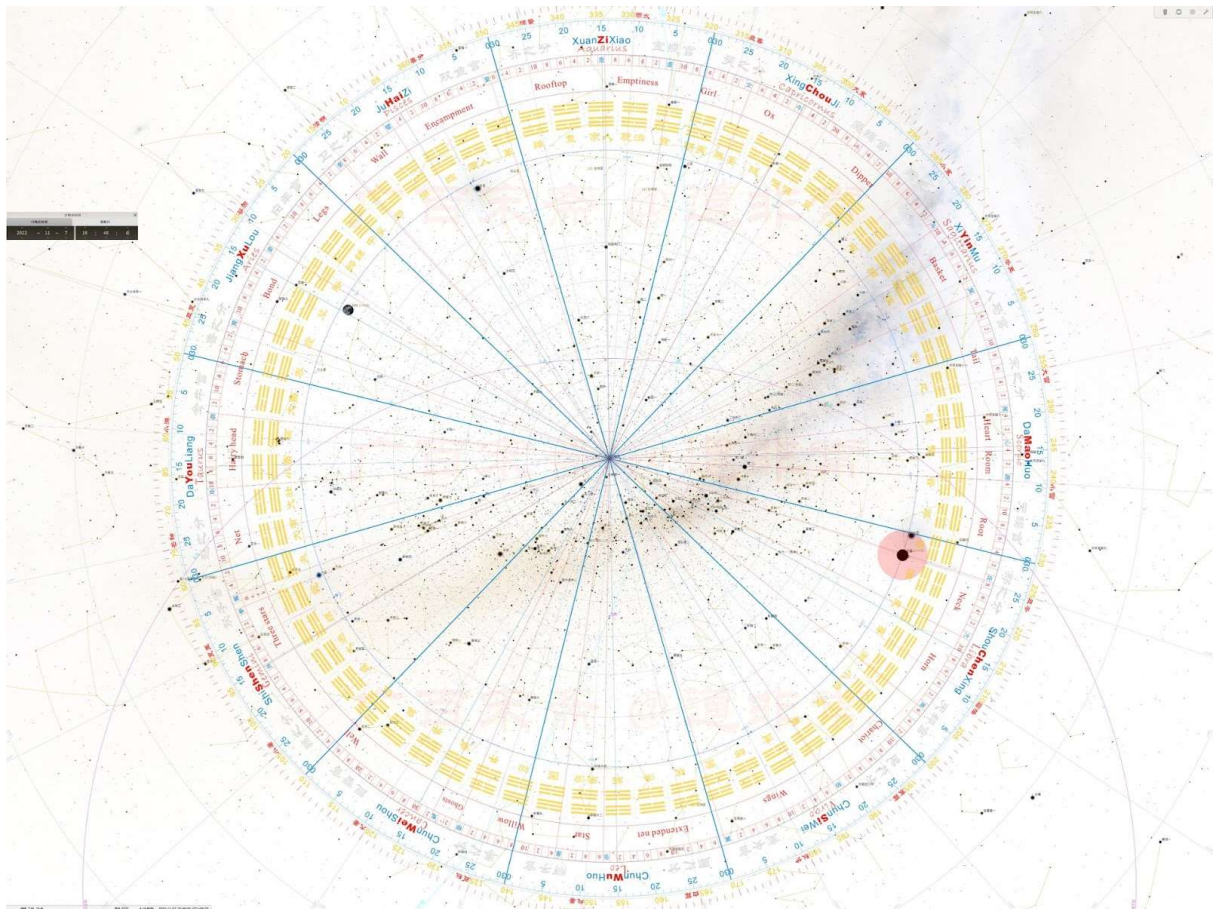


Figure 10 is an example of the combined divisions on November 7, 2022, the Beginning of Winter.

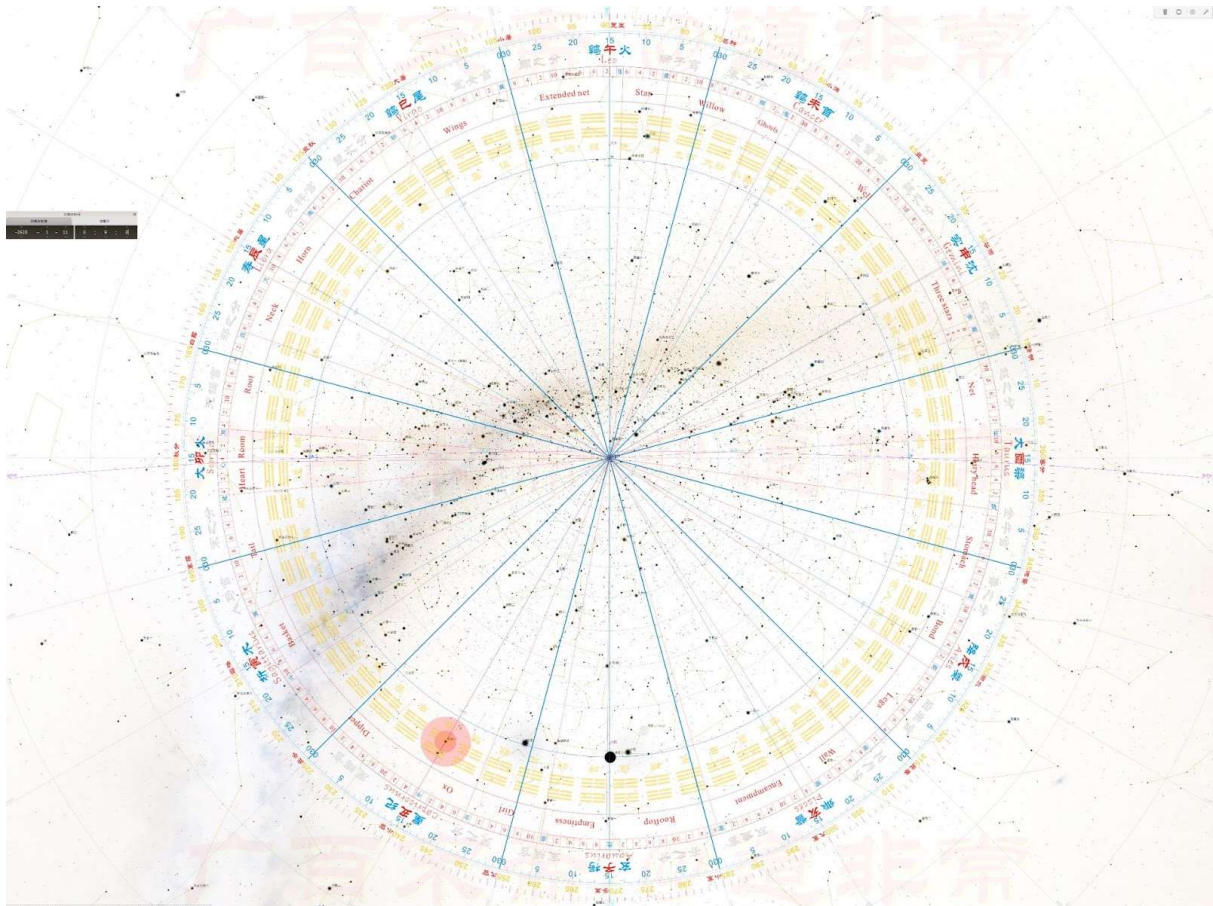
Figure 10



Dividing the ecliptic sky zone into 64 Hexagrams is an incomparable achievement in the astronomy and calendar of Huaxia civilization. Each Hexagram is composed of 6 "Lines", a total of 384 Lines in the 64 Hexagrams, exactly equal to the total number of days in a lunar year with intercalation. Therefore, "the 64 Hexagrams" are not only the ecliptic coordinates, but also can mark the daily apparent motions of the sun, the moon and the five stars, which make it easy to determine which lunar month only has a "Solar Term" and needs to be intercalated. (Figure 11)

Figure 11 (a coordinate diagram of the southern sky at midnight on the winter solstice in 2,629 BC)

Figure 11



Without realizing the important fact that the 64 Hexagrams is more a coordinate of ancient astronomy and calendar than anything else, both Chinese and international academia will not be able to solve the important subject of “textual research on the exact date of the Battle of Muye”. On the “Jiazi Day” (甲子日) of the decisive battle, a major astronomical phenomenon “Sui Ding” (岁鼎) appeared. But they do not understand what “Sui Ding” means. It means that Jupiter (岁星, Sui Xing) is located in the ecliptic sky zone of “Ding Hexagram” (鼎卦), namely between $101^{\circ}15'$ and $106^{\circ}52'30''$ ecliptic longitude.

A Bronze “Ding” (The picture is from Internet)



Knowing "Sui Ding" means that Jupiter (Sui Xing) is located in the ecliptic sky zone of "Ding Hexagram" and when a series of characteristic astronomical phenomena appeared on the day of the Battle of Muye according to the Chinese historical record, such as “Sui is in Chun Huo, the moon is in the Tiansi (Room Mansion), the Sun is in Xi Mu, and Chen (an important planetary or celestial event that indicates a seasonal events) at the handle of ‘Dipper’ (Figure 12,13)”. Based on the above description and with the fact that Jupiter

appears in the same "Ci " about every 12 years, it is easy to identify the date by using the astronomical software , and it turns out the day can only be December 9, 1,059 BC (astronomical year-1,058), perfectly matched (Figure 14).

Figure 12

利
殷

武征商，唯甲子朝，歲
鼎克聞（昏），夙又（有）商，辛未，
王在闡（管）師（次），賜又（右）事（史）利
金，用作（作）旛公寶尊彝



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Figure 13

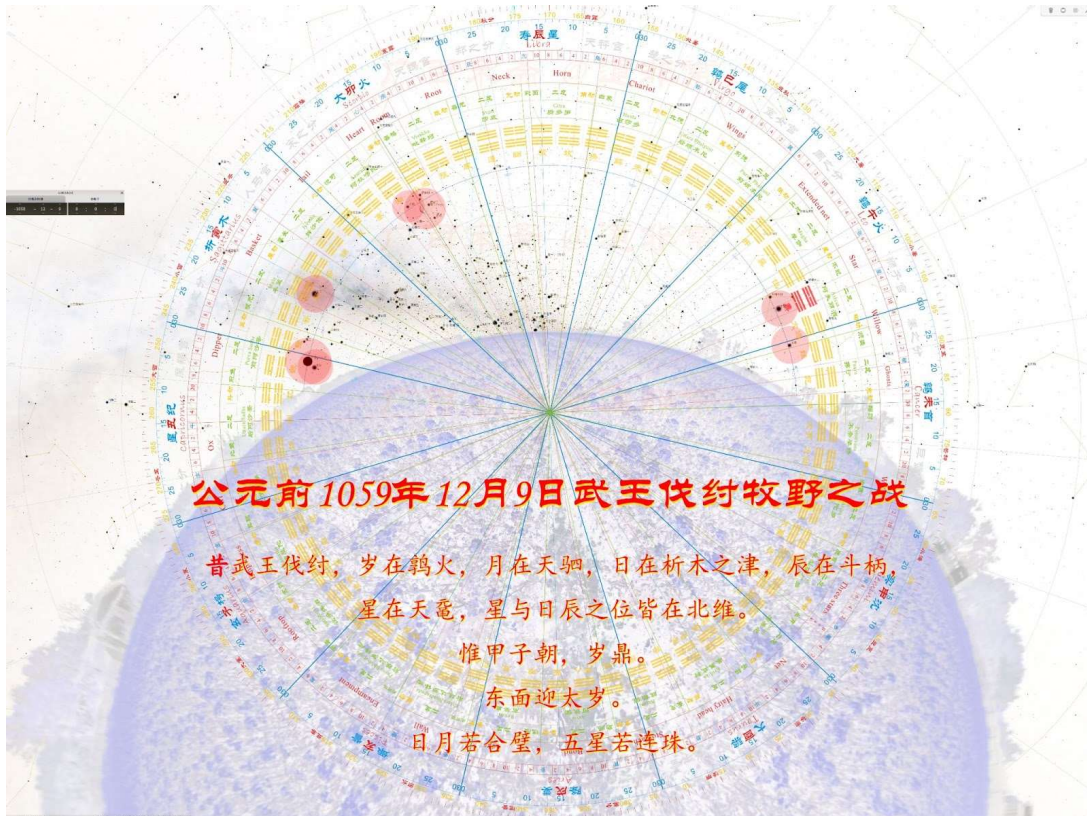
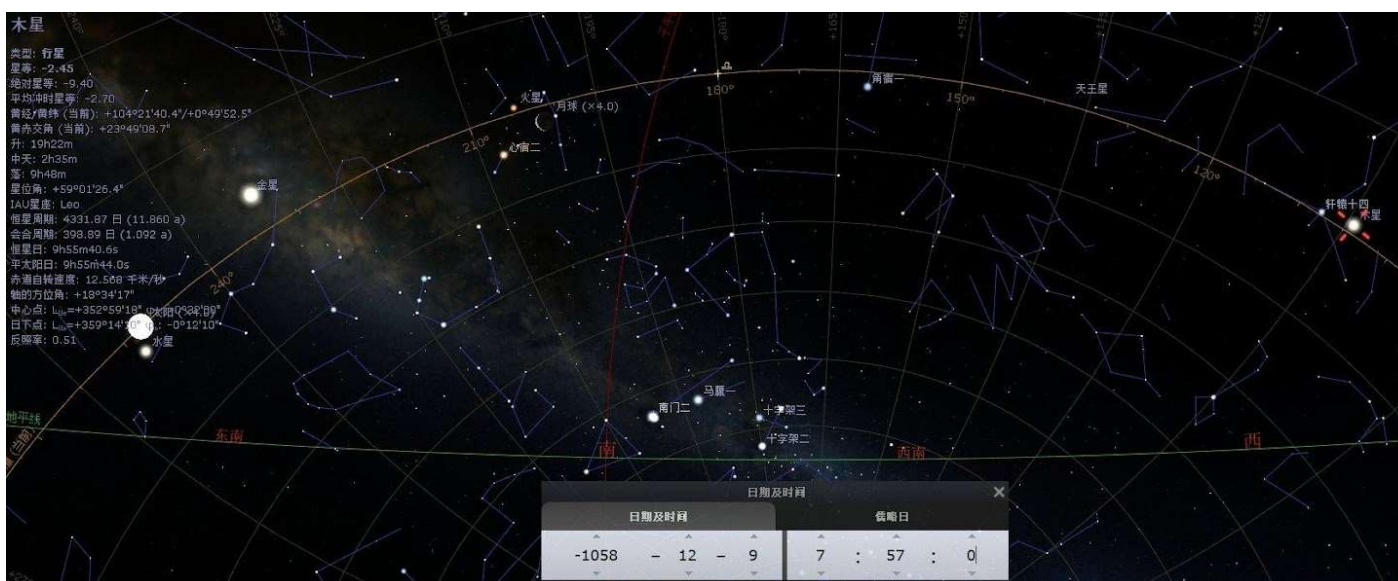


Figure 14



The 64 Hexagrams can mark the apparent motions of the sun, the moon and the five stars by day, meanwhile, the 28 Mansions can mark their motions with the "degrees" (宿度). The span of each Mansion is different, but the total degrees of the Mansions in pre-Qin times were exactly 365.25 degrees, and the solar annual apparent motion is "one degree per day" on average. Starting from the Winter Solstice point and going through the ecliptic sky circle, it happens to be 365.25 days. Therefore, the 12 Ci, the 28 Mansions, and the 64 Hexagrams constitute a precise combined system of measuring the ecliptic sky.

As mentioned above, the 12 Ci was created by Zhuanxu. The first Ci is "Xing Ji", its beginning point is at "Dipper Mansion" 11° , its midpoint is at "Ox Mansion I / (β Capricorn)", and its ending point is at "Girl Mansion" 7° .

Zhuanxu invented the "Zhuanxu Calendar" which is called "Tenth Month Calendar" as the lunar tenth month is the beginning of the lunar year and "Beginning of Winter" is the beginning of the solar year. Therefore, the first Ci "Xing Ji" starts at the "Beginning of Winter" point, namely at 225° ecliptic longitude, accordingly, its midpoint is at the "Minor Snow" point which is at 240° ecliptic longitude. Its midpoint is also at Ox Mansion I, which means Ox Mansion I (β Capricorn) is at 240° ecliptic longitude in the era of Zhuanxu. So, the year with these characteristics can be found only 2,629 BC (astronomical year-2,628) (Figure 15).

Figure 15

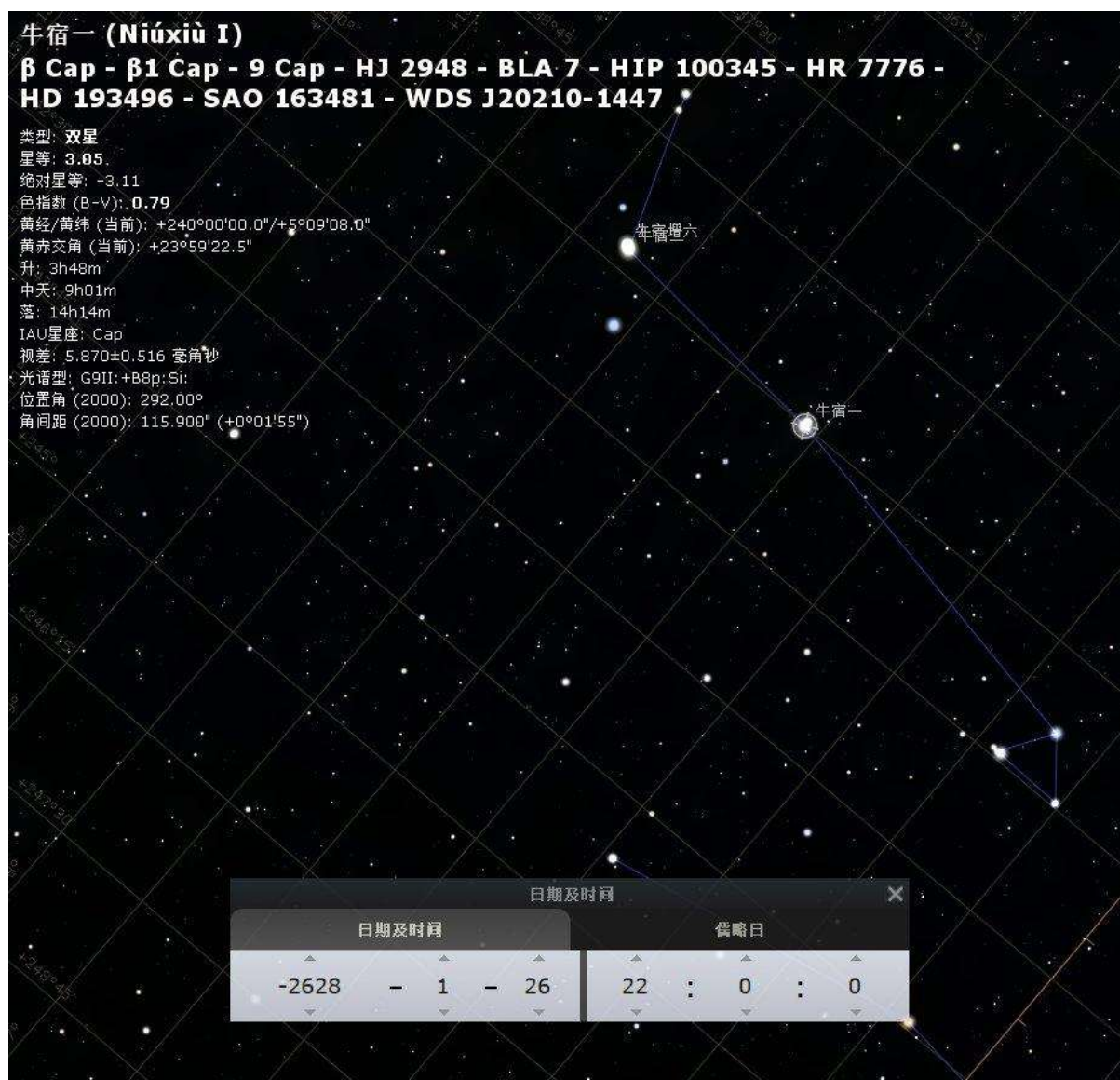


Figure 16, the 14th century stone inscription "Cheonsang Yeolcha Bunyajido" (天象列次分野之图, the division of the celestial zone) collected in South Korea is a map of the northern sky, centered on the Northern ecliptic pole. No one has ever known the mystery of this star map. The marks on the outer circle show that "the 12Ci" and "the 12 Signs of the Zodiac" are exactly the same thing. The "Zi" position (子) in the middle of the top represents the Winter

Solstice point and is at 270° ecliptic longitude; the “Chou” position (丑) 30° apart represents the “Minor Snow” point and is at 240° ecliptic longitude. (Figure 17)

Figure 16 (The picture is from Internet)

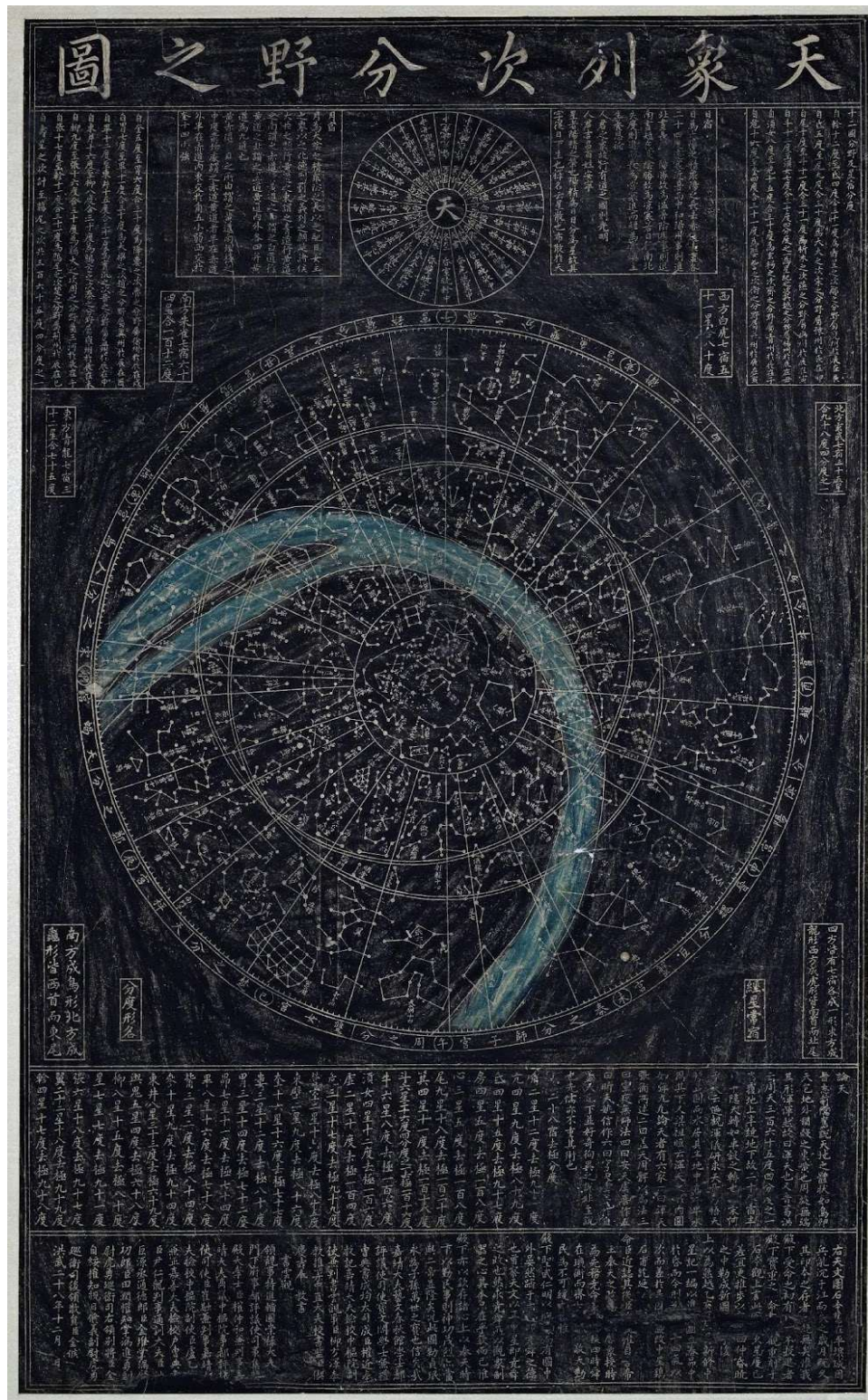
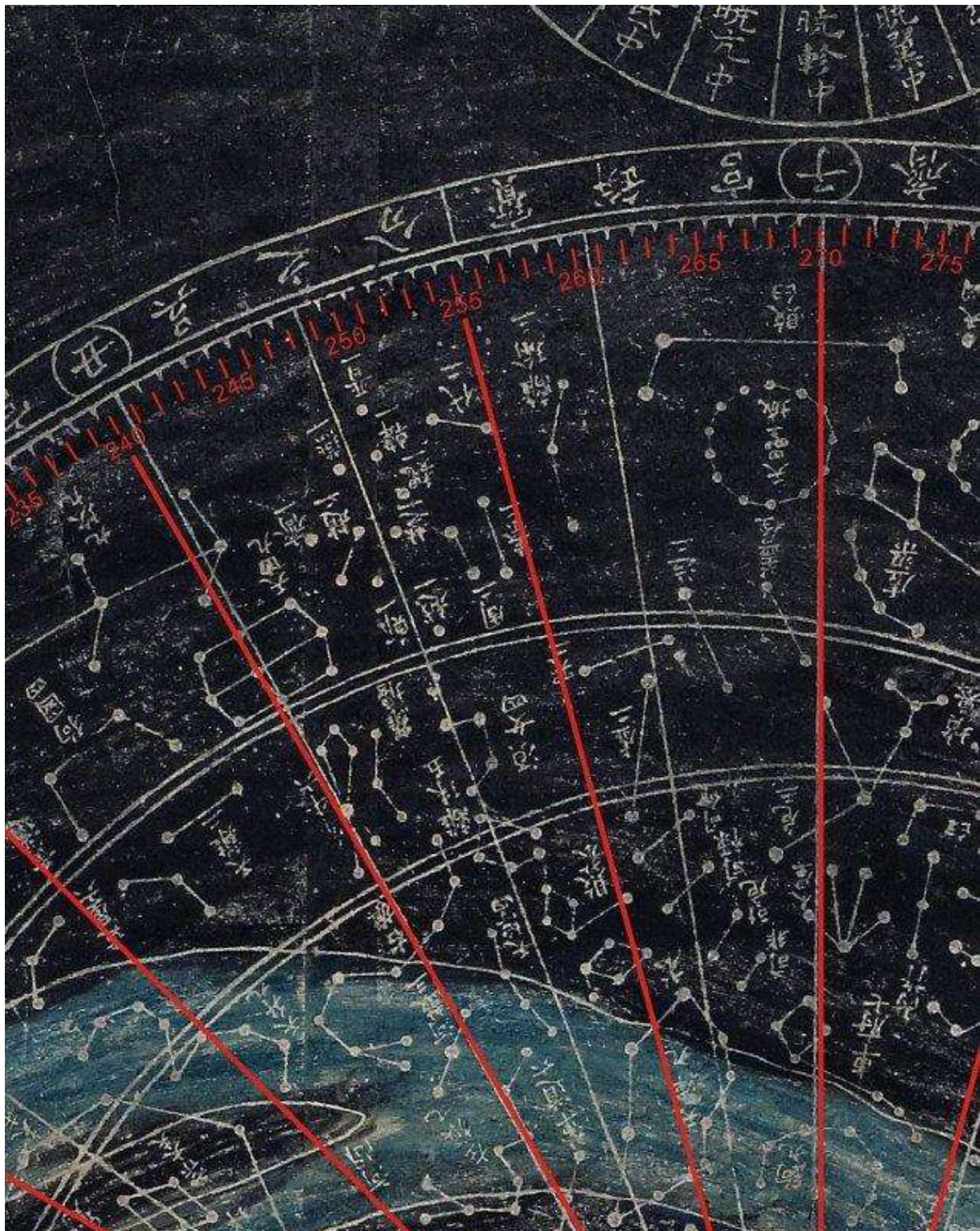


Figure 17



Note that the 240° ecliptic longitude from the North ecliptic Pole to the "Chou" (丑) position is crossing the star "Ox Mansion I" (β Capricorn), which exactly indicates that Ox Mansion I (β Capricorn) is the beginning point of Ox Mansion. Therefore, this star map, as a historical artifact evidence, once again indicates the Zhuanxu era was as far back as 2,629 BC.

Figure 18 & 19, the Song Dynasty stone inscription "Astronomical Map" (天文图) collected in Suzhou, China, is of the same character as the Korean artifact. Although it is rougher than the Korean one, the boundaries between each Mansion show clearly that Ox Mansion I (β Capricorn) is the beginning point of Ox Mansion. The confirmation of this fact is of great significance for the precise division of the 28 Mansions since both Chinese and international academia do not know how the 28 Mansions are divided and where each mansion starts and ends in the ecliptic sky zone.

Figure 18 (The picture is from Internet)



beginning point and the ending point of Xing Ji, separately 15° apart from its mid-point, can be determined as well. Xing Ji starts at Dipper Mansion 11° and ends at Girl Mansion 7° . In this way, a combined vector coordinate diagram precisely dividing the 12 Ci and the 28 Mansions can be obtained. (Figure 20)

Figure 20

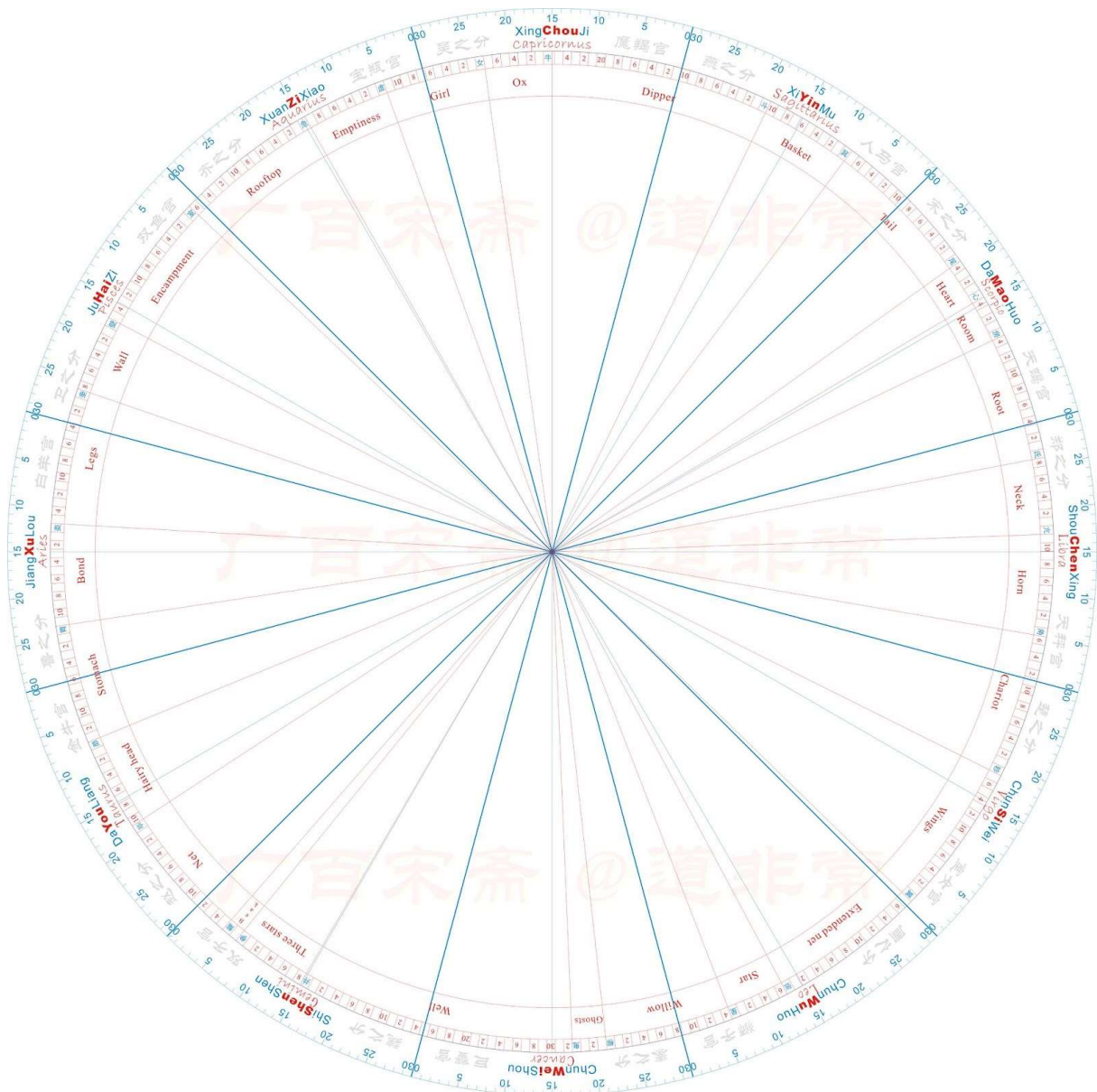
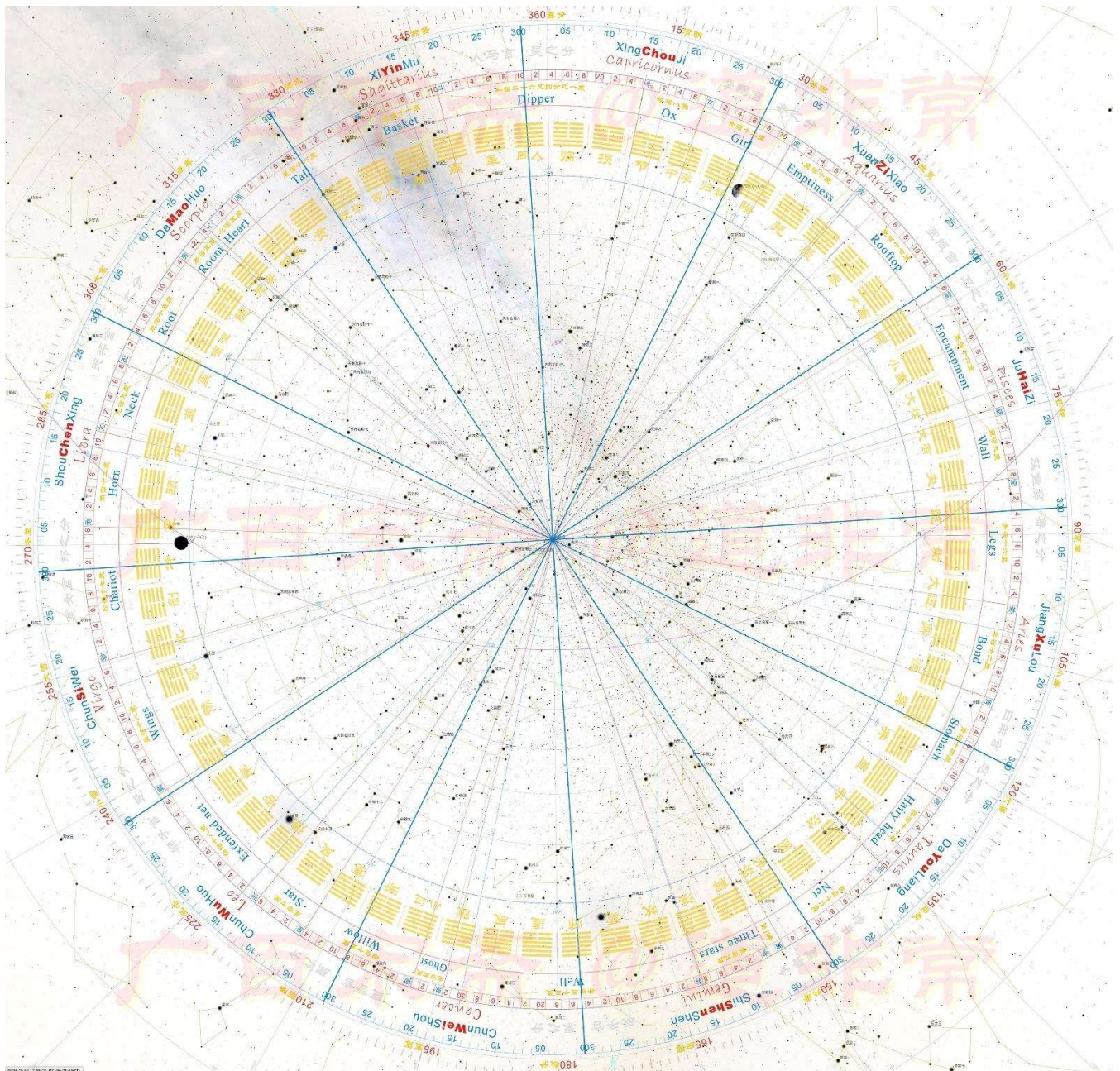


Figure 21(invented by author), the vector coordinate diagram combined with the 12 Ci/ 12 Zodiac Signs, the 28 Mansions / 27 Mansions, the 64 hexagrams, and the ecliptic longitude values of 24 Solar Terms is a revolutionary breakthrough in ancient astronomical research. Once mastering this tool, many mysteries of astronomy and calendar in the pre-Qin period and even more ancient times can be easily decoded. In fact, with this combined vector coordinate diagram, it is easy to accurately reproduce the characteristic astronomical phenomena recorded in ancient Chinese literature and historical materials.

Figure 21



Zhuanxu's reign was 78- years (as highlighted in Figure 22), he died when "Sui was in Chun Huo", which means he died in the year when Jupiter was in the ecliptic sky zone of "Chun Huo". If the first year of Zhuanxu was 2,629 BC, then plus 78 years, it would be 2,552 BC and in this year Jupiter was exactly in " Chun Huo". This confirms the dating of Zhuanxu's

Reign. Therefore, it can be further confirmed that during the era of Zhuangxu, Huaxia must not be in the current territory of China. (Figure 22, 23)

Figure 22

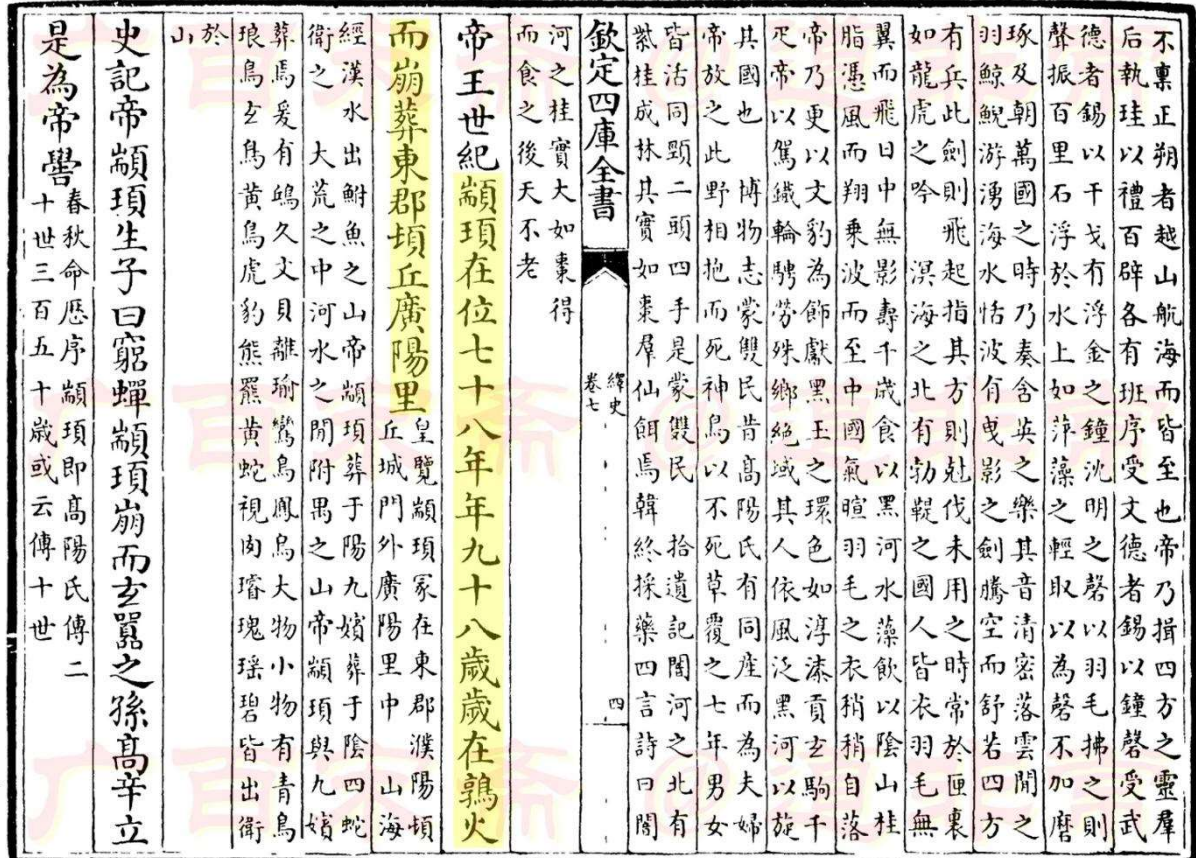
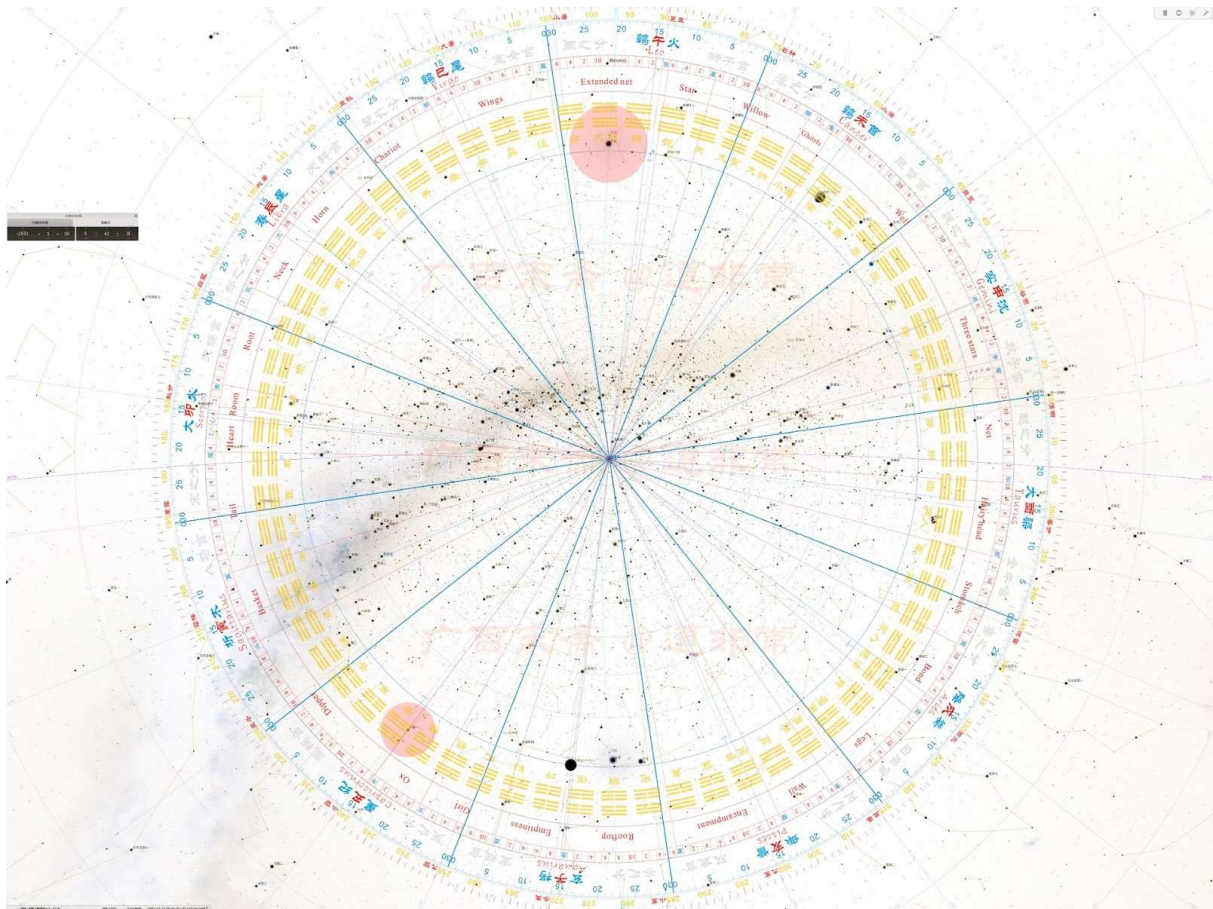


Figure 23



Huaxia ethnic groups in the era of Zhuanxu were not in the current territory of China, and nor were the legendary ancient Huaxia emperors such as Fuxi (伏羲), Emperor Yan (炎帝), and Emperor Huang (黄帝) before Zhuanxu. Early Chinese bronzes contain an extremely rare and highly radioactive lead isotope. There is no mineral source in China at all, and it is far away in the ancient Rooiberg tin-lead mine in South Africa. Therefore, it also proves that the early Xia (夏), Shang (商) and Zhou (周) Dynasties were not in the current territory of China at all. (Figure 24, 25, charts and data taken from “Mineral. Deposita 30, 188-195 (1995)” and “Journal of Archaeological Science”)

Figure 24

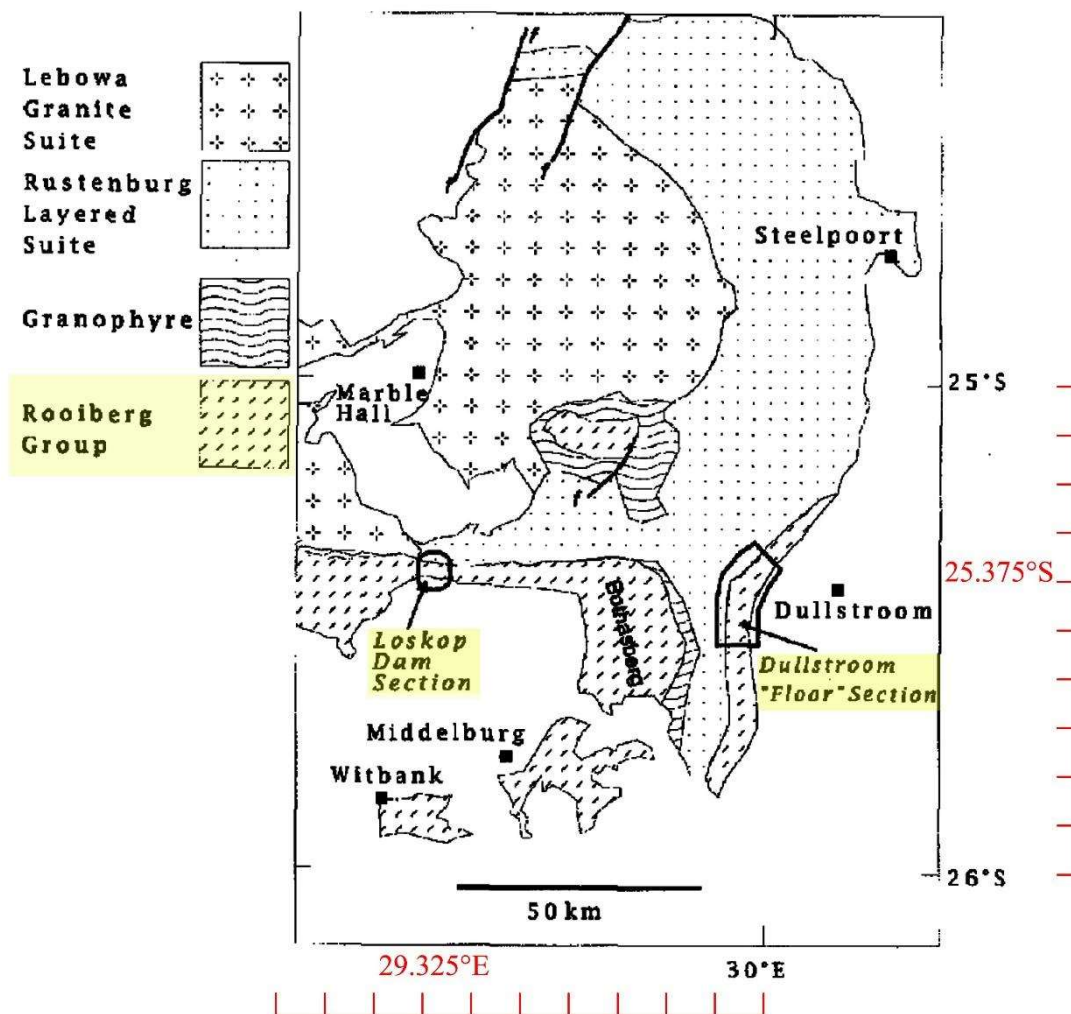


Fig. 1. Geological sketch map showing the Rooiberg Group occurrences discussed in the text

Figure 25

Mineral. Deposita 30, 188–195 (1995)

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An isotopic study on the volcanics of the Rooiberg Group: age implications and a potential exploration tool

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Received: 6 May 1994 / Accepted: 9 December 1994

Abstract. Many geochronological studies on silicic magmatic rocks associated with the Bushveld Complex (rhyolitic lavas of the Rooiberg Group and granites of the Lebowa Granite Suite) have shown evidence of open-system behaviour of the Rb–Sr and Pb–Pb isotopic systems until 1600–1000 Ma, many hundreds of million years after crystallisation of these rocks. This pervasive open-system behaviour has been attributed to sustained hydrothermal circulation driven by the high heat productivity of the Bushveld granites. New Sr and Pb isotopic data are presented for basaltic to rhyolitic volcanics from the Rooiberg Group of the Transvaal Sequence in the Dullstroom-Loskop Dam area of the eastern Transvaal. These data show little evidence of open-system behaviour after

and subsequently by granitic magmas which formed the sheeted granite of the Lebowa Granite Suite (LGS).

Several isotopic studies on the Rooiberg rhyolites and the LGS granites have yielded anomalously young dates. Low ages in the LGS rocks have been variously ascribed to post-crystallisation metasomatism by heated groundwaters producing selective loss of radiogenic ⁸⁷Sr (Walraven et al., 1985) or the maintenance of long-lived hydrothermal systems in the granites because of elevated K, U and Th concentrations (McNaughton et al., 1993). These post-solidification modifications are thought to have had an important influence in the mineralisation of the LGS granites (e.g. Walraven et al., 1990b; Robb et al., 1994).



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A novel approach to lead isotope provenance studies of tin and bronze: applications to South African, Botswanan and Romanian artifacts



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ARTICLE INFO

Article history:
Received 24 April 2014
Received in revised form
1 August 2014
Accepted 3 August 2014
Available online 10 August 2014

Keywords:

Provenance
Tin
Bronze
Lead isotopes
Isochron
South Africa
Botswana
Romania

ABSTRACT

Lead isotopic ratios of cassiterite, the dominant ore of tin, evolve after crystallization through decay of uranium (U) and thorium (Th) to lead (Pb), due to the relatively elevated U/Pb ratios of this mineral. We show that the Pb isotopic ratios of smelted tin at Rooiberg, South Africa, form an isochron with a model age that matches the known geological age (~2 Ga) of the host granite for the Rooiberg cassiterite deposits. Since the Pb isotopic ratios of many prehistoric tin and bronze artifacts throughout southern Africa also fall on this isochron, we deduce that they were made with tin from either the Rooiberg deposits or similar age deposits that exist nearby. In addition, we show that bronze artifacts from Romania define an isochron corresponding to a Variscan age (~0.3 Ga), suggesting a central or western European tin deposit as its source, since no Variscan tin is known from the neighboring Carpathian Mountains. Implications of this approach for provenance studies of tin and bronzes around the world are examined given various major tin deposits and their age distribution.

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Table 2. Isotopic data for the Rooiberg Group Volcanics from the Dullstroom-Loskop Dam area

Sample	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{204}\text{Pb}$	$^{207}\text{Pb}/^{204}\text{Pb}$	$^{208}\text{Pb}/^{204}\text{Pb}$
Damwal Formation (Loskop Dam: Unit #4)				
DF-1	0.7869	20.390	16.044	40.981
DF-2	0.7645	20.990	16.047	41.590
314/81	0.7025	23.264	16.342	44.378
Schrikkloof Formation (Loskop Dam: Unit #9)				
RB-193	0.7624	20.827	15.879	40.251
RB-201	0.7641	20.826	15.914	41.543

Group	Sample name	Sample type	Site where recovered	$^{207}\text{Pb}/^{206}\text{Pb}$	$^{206}\text{Pb}/^{204}\text{Pb}$	$^{207}\text{Pb}/^{204}\text{Pb}$	$^{208}\text{Pb}/^{204}\text{Pb}$
1	21/39/1	Sn ingot	Rooiberg valley (surface)	0.7442	21.787	16.213	40.237
2	Sa-14A	Sn prill	Elandsberg Ledge (Rooiberg Va	0.7230	22.404	16.199	42.049
	Sa-3	Tuyere	Smelterskop (Rooiberg Valley)	0.7682	22.890	17.583	45.380
	Sa-4	Tuyere	Smelterskop (Rooiberg Valley)	0.7538	22.596	17.033	45.883
	Sa-5R	Tuyere	Smelterskop (Rooiberg Valley)	0.7673	20.862	16.007	41.601
	Sa-10	Vitrified Tuyere	Smelterskop (Rooiberg Valley)	0.7551	33.141	25.026	63.320
	Sa-11B	Slag paired with Sa-11A	Elandsberg Ledge (Rooiberg Va	0.7533	21.575	16.253	42.849
	Sa-14B	Slag paired with Sa-14A	Elandsberg Ledge (Rooiberg Va	0.7026	30.770	21.619	58.570
	B406	Sn—Cu Bronze	Bosutswe	0.7286	22.349	16.283	40.150
	Z10	Cu Artifact	Great Zimbabwe	0.7860	20.909	16.434	41.729

Notes:

The above data combines the data provided by the two papers, and specifically calculates the ratio of lead isotopes 207 and 206. Early Chinese bronzes contained a special component called "highly radioactive lead isotope". This extremely rare and abnormal lead cannot be found in China at all. Tracing the source of this unusual lead is of great significance for an accurate and in-depth understanding of the historical process of the birth and migration of Chinese civilization. In short, this abnormal lead has a set of data ratios: the ratio of lead isotopes 207 and 206 is between 0.70-0.78, the ratio of lead isotopes 206 and 204 is ≥ 20 , and the ratio of lead isotopes 208 and 204 is ≥ 40 . For the bronzes with this set of data, the abnormal lead must be cast from the same ore source. This set of data is the "fingerprint" of the abnormal lead, which can be used to determine the source of the abnormal lead.

"The theory of the local origin of Huaxia civilization" is a "myth" that has not been proved by any archaeological excavation and has misled generations of Chinese and international scholars. Now that having figured out the basic knowledge of the astronomy and calendar in pre-Qin times, and mastering the effective tool of the combined vector coordinate diagram, let us focus on the topic at the beginning of this article - the "Shu Zhi" of "Huayanguo Zhi", in which recorded the four major astronomical and calendar characteristics at the time when "Shu Kingdom" was initially founded: (Figure 26, 27, 28)

(1) The Kun Hexagram of the 64 Hexagrams corresponds to the "Winter Solstice", so **“Its Hexagram is at Kun”** means that the founding time of the kingdom was on the Winter Solstice.

(2) **“Its Chen is at Wei”**: a distinctive astronomical phenomenon occurred in the ecliptic sky region of "Wei" (未, corresponding to “Chun Shou” of “12 Ci”).

(3) **“Same Division as Qin”**: The original meaning of "Division" refers to when an ancient country was initially founded, Jupiter was located in a “Ci” of the 12 Ci. Qin's "Division" is in "Chun Shou" (corresponding to "Wei" region), which means Jupiter happened to be in “Chun Shou” and “Wei” region when “Shu kingdom” was initially founded.

(4) **“The star corresponds to Ghost”**: A certain planet is in the region of the "Ghost Mansion" of “the 28 Mansions”. It may refer to that Jupiter or a certain planet is located in the four stars of Ghost Mansion.

Figure 26

華陽國志校補圖注卷三

蜀 志

一

蜀之爲國，肇於人皇，與巴同固^①。至黃帝，爲其子昌意娶蜀山氏之女，生子高陽，是爲帝嚳。封其支庶於蜀，世爲侯伯^②。歷廖本注：“當脫唐虞二字。”無取。夏、商、周。武王伐紂，蜀與焉^③。其地東接於巴，南接於越^④，北與秦分，西奄峨^⑤。太平御覽卷四十引作峨字。嶓^⑥。地稱天府^⑦，原曰華陽^⑧。故其精靈，則井【絡】狼^⑨。舊皆作“井絡”。蜀典引括地象云：“岷山之精，上爲狼星。岷山之精，上爲井絡。”常氏於此，以井、狼與江、漢對應，其非單言井絡甚明。垂耀，江、漢遶流。《河圖括地象》曰：“岷山之精，上爲井絡，帝以會昌，神以建福^⑩。”舊本作“岷山之下爲井絡”，合下爲十五字。廖本依《水經注》引補精字，改下字，合下爲十六字，得之。《夏書》曰：“岷山導江，東別爲沱。”泉源深盛，爲四瀆之首，而分爲九江^⑪。其實，則有璧玉、金、銀、珠、碧、銅、鐵、鉛、錫、赭、堊、錦、繡、罽、毼、象、氈、氍、毹，舊誤作氍，從目。廖本從耳，正。丹、黃、空青【桑、漆、麻、紵】之饒^⑫，滇、獠、賈、焚，僮僕六百之富^⑬。

其卦值坤，故多班張、吳、何、王本作班，錢、函、廖本作班。綵文章^⑭。其辰值未，故尚滋味^⑮。德在少昊，故好辛香^⑯。星應輿鬼，故君子精敏，小人鬼黠^⑰。與秦同分，故多悍勇^⑱。在《詩》，文王之化，被乎江漢之域，秦幽同詠，故有夏聲也^⑲。顧觀光校云：“《長短經》注引作‘秦幽同詠，秦蜀同分’。”其山林澤漁，園囿瓜果，百穀蕃廩，借張衡《南都賦》文補此四字，爲“代熟”主語。“代熟”本是用其賦“四時代熟”文也。四節宋刻元豐本作時。張、吳、何、王本同。嘉泰本作節。劉、李、錢、函、廖本同。代熟。桑、漆、麻、紵靡不有焉^⑳。此句舊刻亦說主語。審上文“其實”，皆記工、礦、商品之難得者，惟“桑、漆、麻、苧”是農產品，當在山林、田園產物之列。應是常氏原文在此。後人傳鈔，豔羨其文氣勢，猶嫌二十餘種爲少，妄移此四字以助之。以其亦得爲商品也。茲刪移還原。

案：李雄時，以“三蜀”與其西南三邊郡爲益州。“三巴”與其分置之郡爲荊州，漢中、梓潼與其近郡爲梁州。而南中諸郡爲寧州。故常璩《蜀漢書》分四篇志其地理。益州爲其國都所在，故所造《州部總序》特爲詳贍精練，而列於卷三者，原是首篇；入晉後爲尊梁州，改在

Figure 27

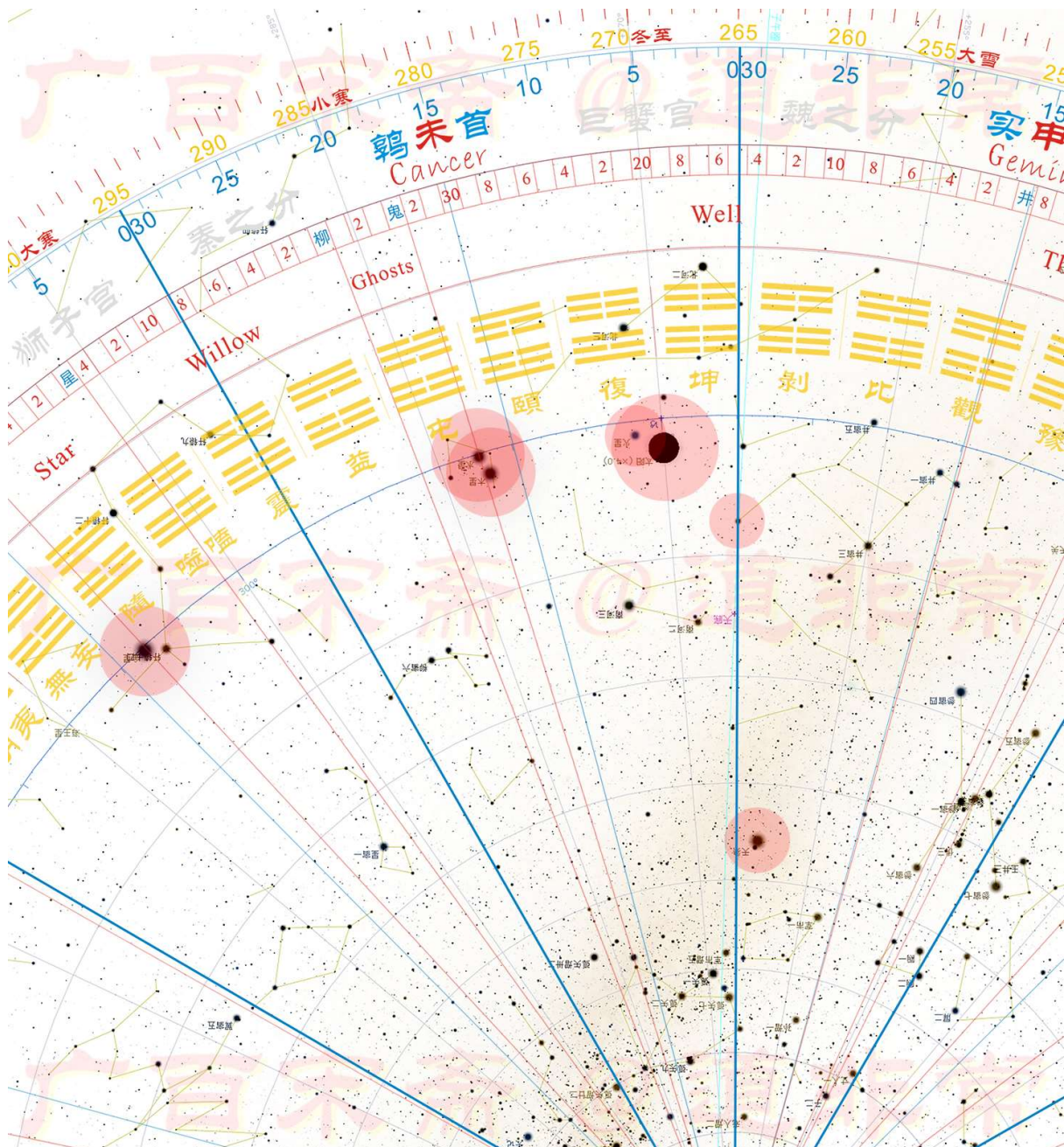
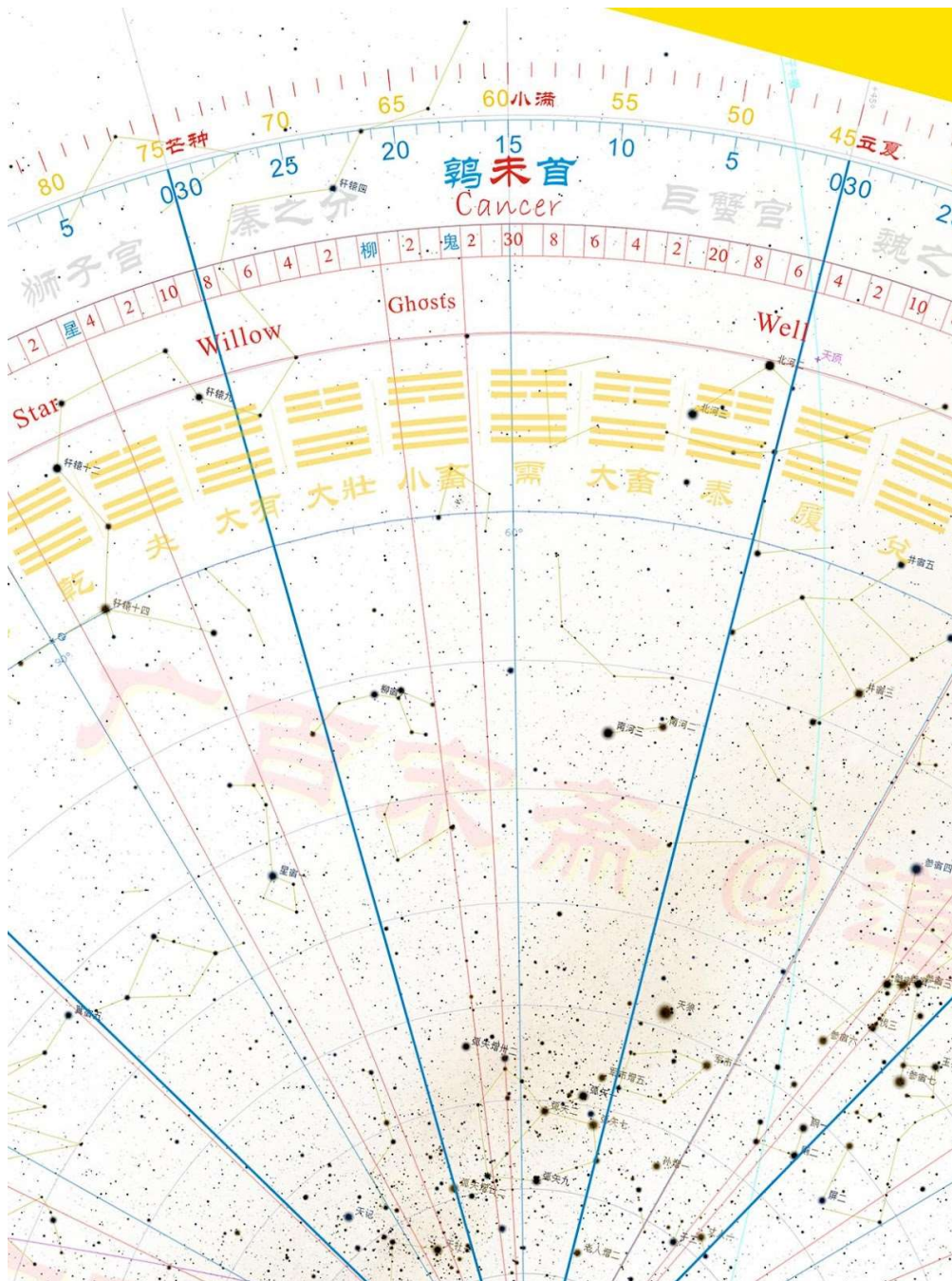


Figure 28



It is known that there is "Precession" in astronomy, meaning the points of Solar Terms continue to move westward. Figure 29, when the Winter Solstice point firstly appeared in Chun Shou (鶉首) region, it was at the ending point of Chun Shou and 270° ecliptic longitude; Figure 30, when the Winter Solstice point lastly appeared in Chun Shou region, it

was at the beginning point of Chun Shou region, crossing the star “Well Mansion VIII” (井宿八, λ Gem), and at 270° ecliptic longitude.

Figure 29

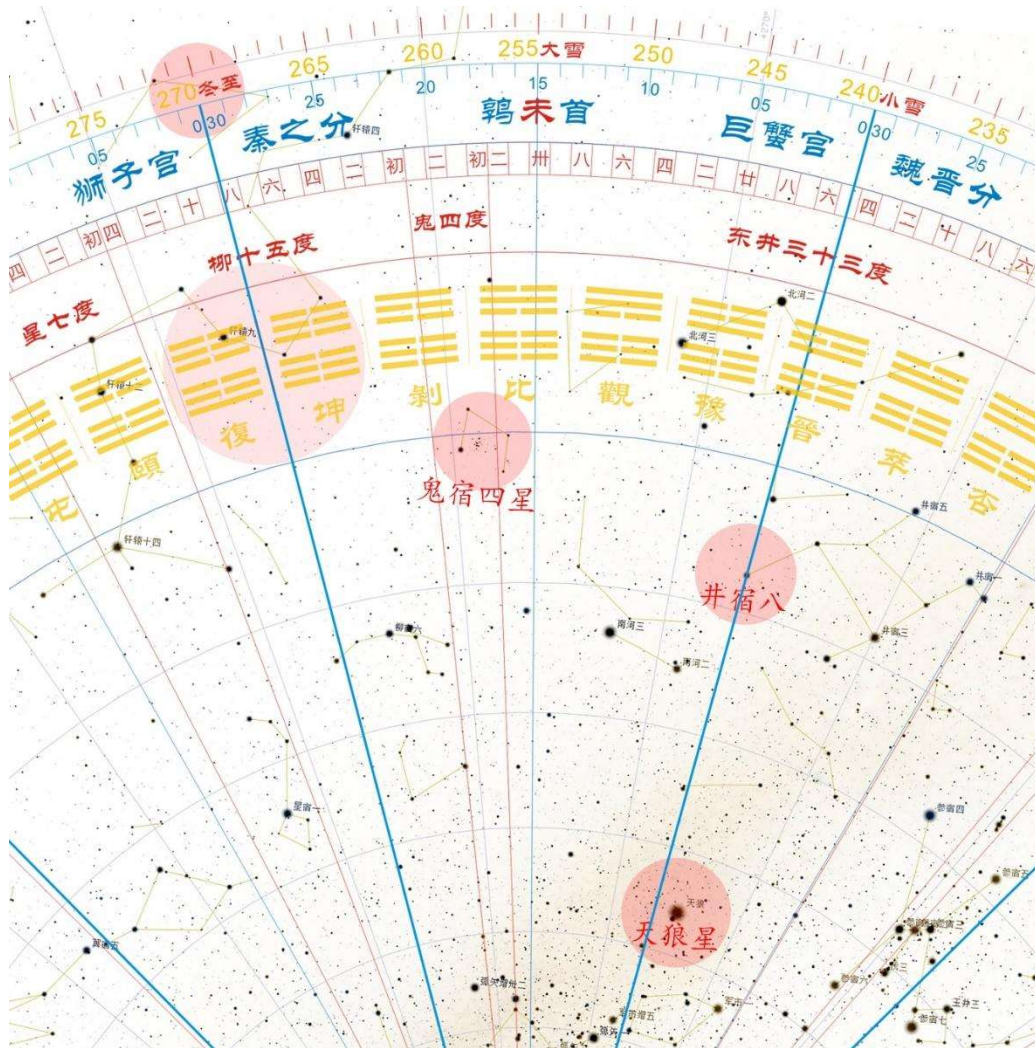
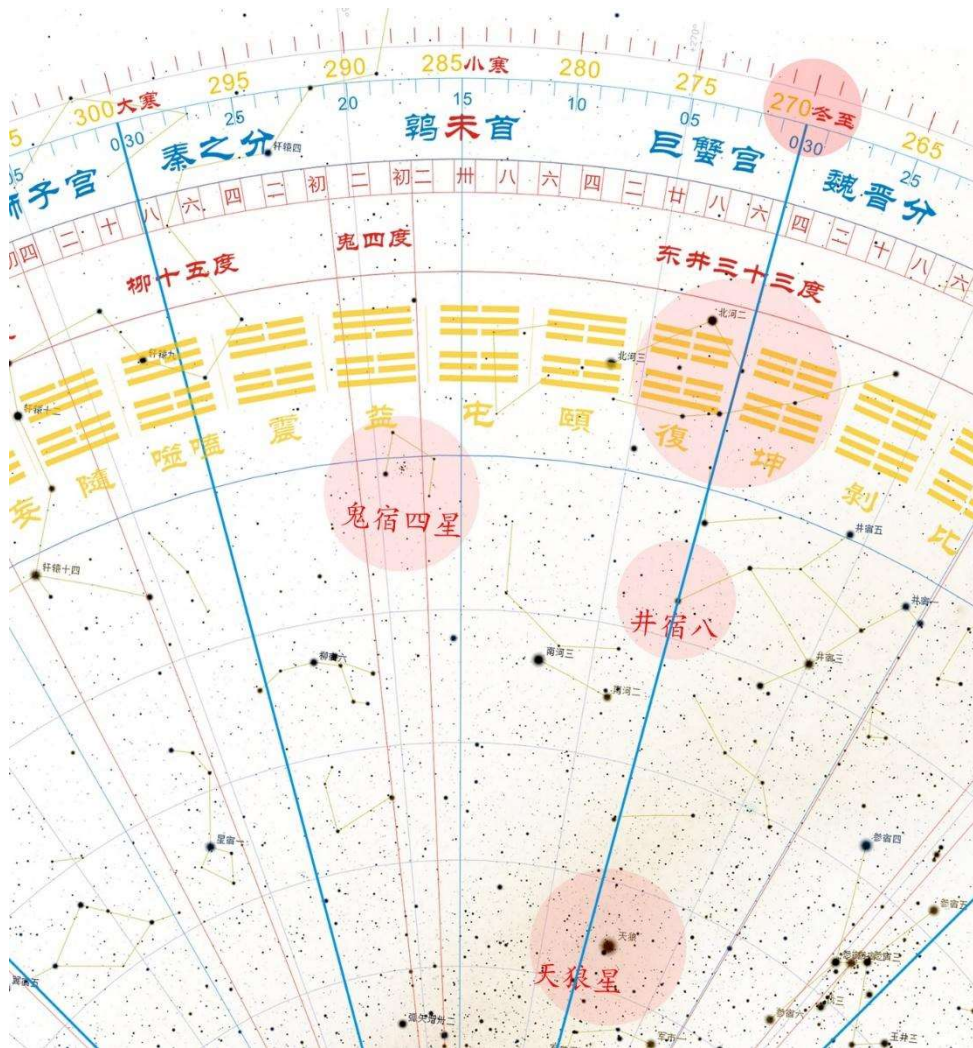


Figure 30



Knowing that Well Mansion VIII (λ Gem) is the starting point of Chun Shou region, and relying on the recorded four astronomical and calendar characteristics, the author can identify the founding time of “Shu Kingdom” with the tool of the software. The the author set the observation site at Göbekli Tepe to see what kind of astronomical phenomena appear in Chun Shou region on Winter Solstice (at 270° ecliptic longitude) in each year, and whether Jupiter (or other planets) has a corresponding relationship with the four stars of Ghost Mansion.

The screenshot shows a software window with a title bar at the top right containing the text "重置地点列表". Below this is a section titled "当前地点信息". It contains several input fields and checkboxes:

- 纬度:** N 37° 13' 23.00" (with up/down arrows)
- 经度:** E 38° 55' 21.00" (with up/down arrows)
- 海拔:** 606米 (with up/down arrows)
- 地名/城市:** 哥贝克力石阵遗址
- 区:** 西亚 (dropdown menu)
- 行星:** 地球 (dropdown menu)
- 时区:** Asia/Shanghai (dropdown menu)
- Buttons:**
 - 从GPS获取位置
 - 从网络定位 (checkbox)
 - 使用当前地点为默认观测地点 (checkbox)
 - 使用自定义时区 (checkbox)
 - 启用夏令时 (checkbox)
 - 加入列表
 - 删除
 - 返回默认地点

When the author searched backward by year, many interesting astronomical phenomena did happen on the days of winter solstice. But the author especially wanted to look at the situation when Jupiter was close to or located in the four stars of Ghost Mansion on winter solstice.

When the author retrieved the date March 23, 12,897 BC (astronomical year - 12,896), a more interesting situation appeared: Mercury is in the four stars of Ghost Mansion, Jupiter is close to the four stars of Ghost Mansion (Figure 31), and the Winter Solstice point is at 23:44:50 on March 22, 12,897 BC and at 270° ecliptic longitude (Figure 32).

Figure 31

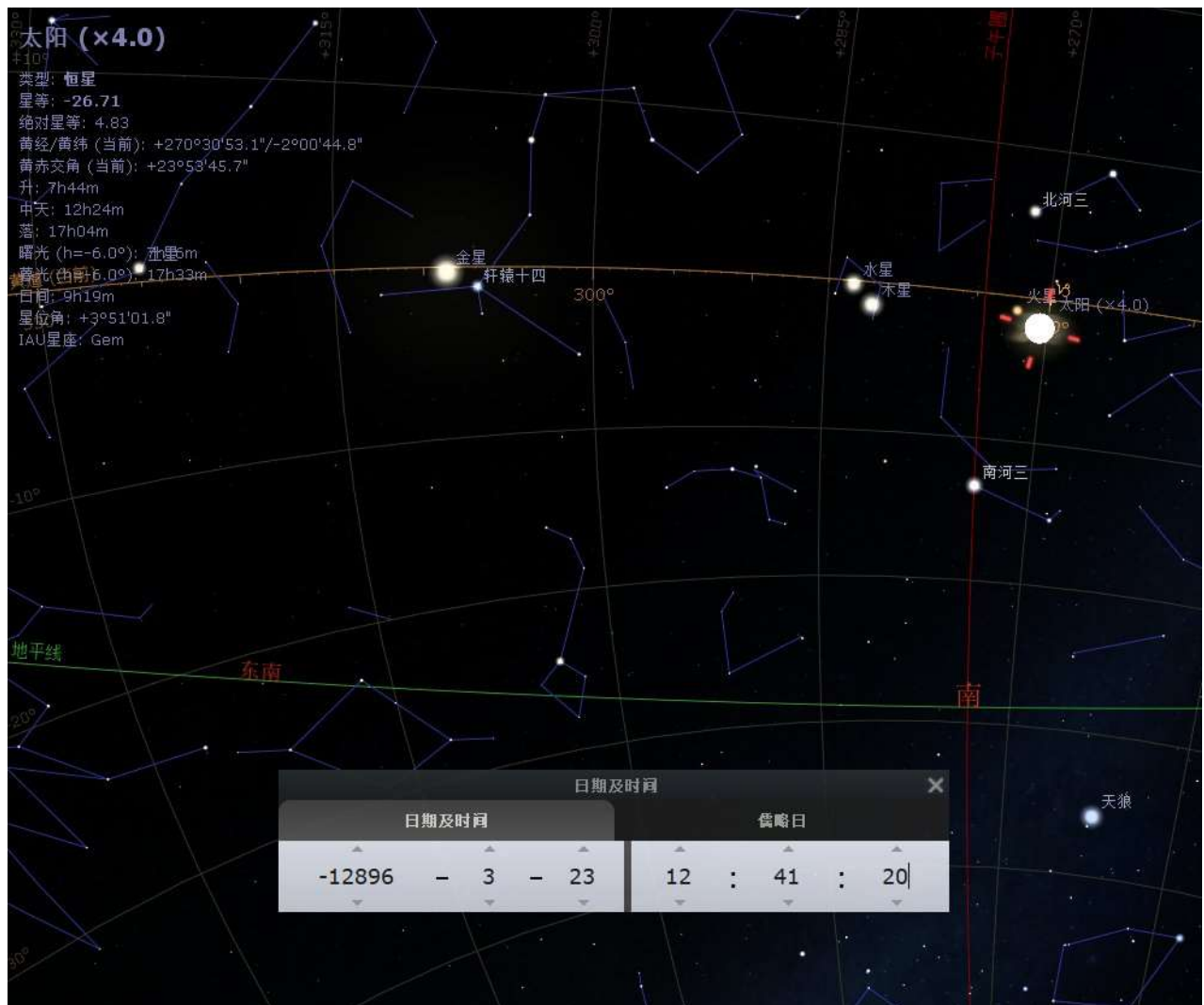
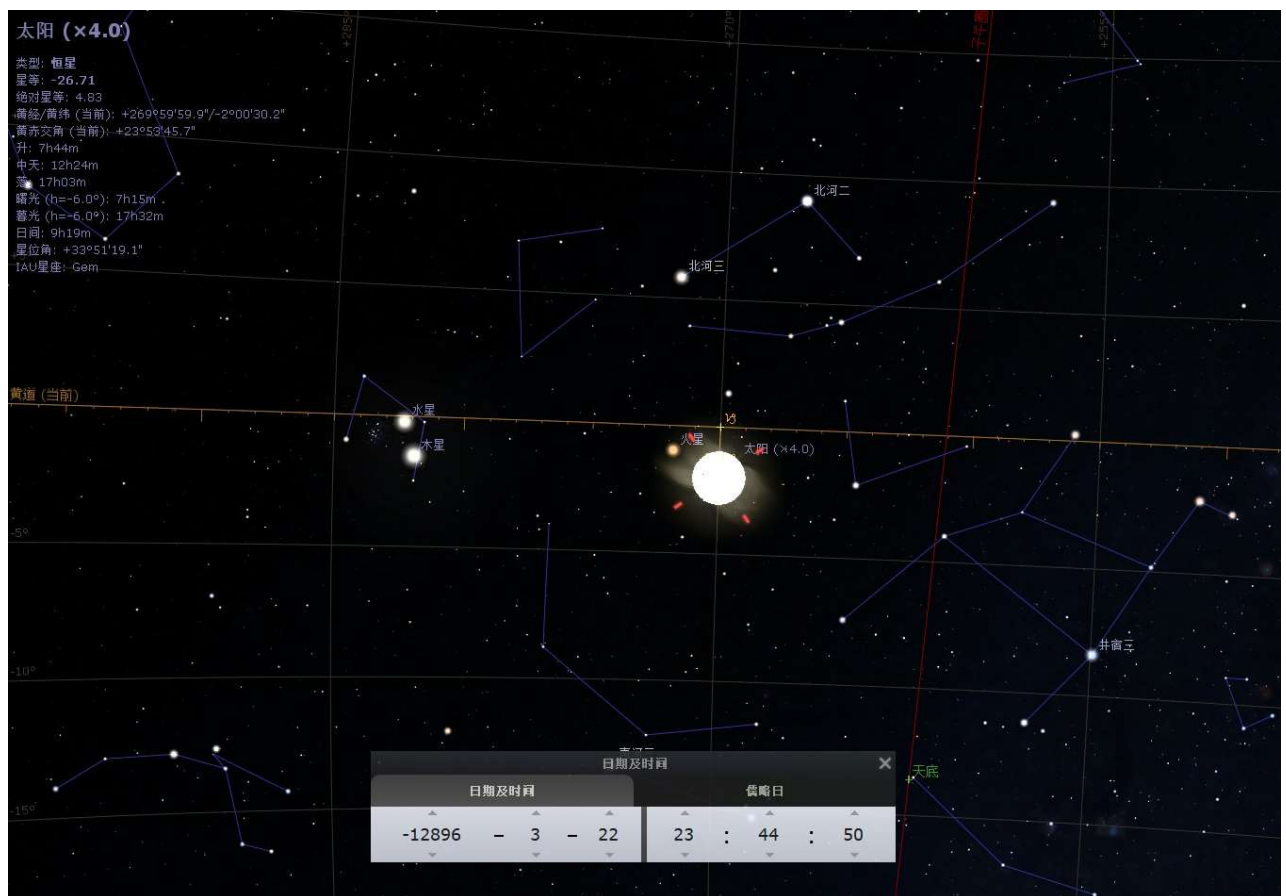


Figure 32



Note that 12,897 BC is of particular significance as it is marked as a “Jiazi Year” (甲子年) according to Chinese traditional calendar. Since the Winter Solstice point on March 22, 12,897 BC was at 23:44:50, it belongs to “Zi” (子) time according to Chinese traditional timing system. It is very interesting. For a long time, Chinese scholars have been tirelessly looking for the initial time of Huaxia civilization but they have never succeeded. It should be a particular "Jiazi Year, Jiazi Month, Jiazi Day and Jiazi Hour" (甲子年甲子月甲子日甲子时) on the account of Chinese historical documents.

Notes:

1) *Tiangan Dizhi*: There are ten characters in *Tiangan* (天干), the order is *Jia* (甲), *Yi* (乙), *Bing* (丙), *Ding* (丁), *Wu* (戊), *Ji* (己), *Geng* (庚), *Xin* (辛), *Ren* (壬), *Gui* (癸); There are twelve characters in *Dizhi* (地支), the order is *Zi* (子), *Chou* (丑), *Yin* (寅), *Mao* (卯), *Chen* (辰), *Si* (巳), *Wu* (午), *Wei* (未), *Shen* (申), *You* (酉), *Xu* (戌), *Hai* (亥). The two are combined to be a table with a total of sixty cycles, which are used repeatedly every 60 years. The table is headed by *Jiazi*, the first one of a cycle.

"Zi" month refers to the solar month with "Major Snow" and "Winter Solstice" of the 24 Solar Terms. Once it comes to the "Major Snow" point, namely at 255° ecliptic longitude, it enters "Zi" month (marked in yellow in the chart below).

2) *The relationship between the 24 Solar Terms and the 12 Lunar Months*

Solar Month / Lunar Month	Yin Month / the first month	Mao Month / the second month	Chen Month / the third month	Si Month / the fourth month
Solar terms	Beginning of Spring, Rain Water	Awakening of Insects, Spring Equinox	Pure Brightness, Grain Rain	Beginning of Summer, Grain buds
Solar Month / Lunar Month	Wu Month / the fifth month	Wei Month / the sixth month	Shen Month / the seventh month	You Month / the eighth month
Solar terms		Minor Heat, Major Heat		White Dew, Autumn Equinox

	Grain in Ear, Summer Solstice		Beginning of Autumn, End of Heat	
Solar Month / Lunar Month	Xu Month / the ninth month	Hai Month / the tenth month	Zi Month / the eleventh month	Chou Month / the twelfth month
Solar terms	Cold Dew, Frost's Descent	Beginning of Winter, Minor Snow	Major Snow, Winter Solstice	Minor Cold, Major Cold

The initial time of Huaxia calendar must begin from a perfect “Zi” time of a particular “Jiazi Year, Jiazi Month, Jiazi Day” according to the Chinese historical records. At Lake Van to the east of the Göbekli Tepe site, the author found it such an ideal observation spot since the lake has a wide surface and excellent observation points on all sides.

当前地点信息

纬度: N 38° 29' 26.99"

经度: E 42° 45' 34.00"

海拔: 1708米

从GPS获取位置

☐ 从网络定位
☐ 使用当前地点为默认观测地点

地名/城市: 凡湖观测点

区: 西亚

行星: 地球

时区: 本地平太阳时

☐ 使用自定义时区
☐ 启用夏令时

加入列表

删除

返回默认地点

The author made a vector coordinate diagram of the southern ecliptic sky at the Winter Solstice point on March 23, 12,897 BC at Van Lake to carefully examine the entire ecliptic sky circle, especially the situation in the "Chun Shou" region. Judging from the diagrams below, Mercury and Jupiter are exactly within the range of the four stars of Ghost Mansion. Although Jupiter is not within the Ghost Mansion of the 28 Mansions, it is in the Ghost Mansion of the 27 Mansions. This exactly matches "Stars correspond to Ghost" in the record. (Figure 33, 34, 35)

Figure 33

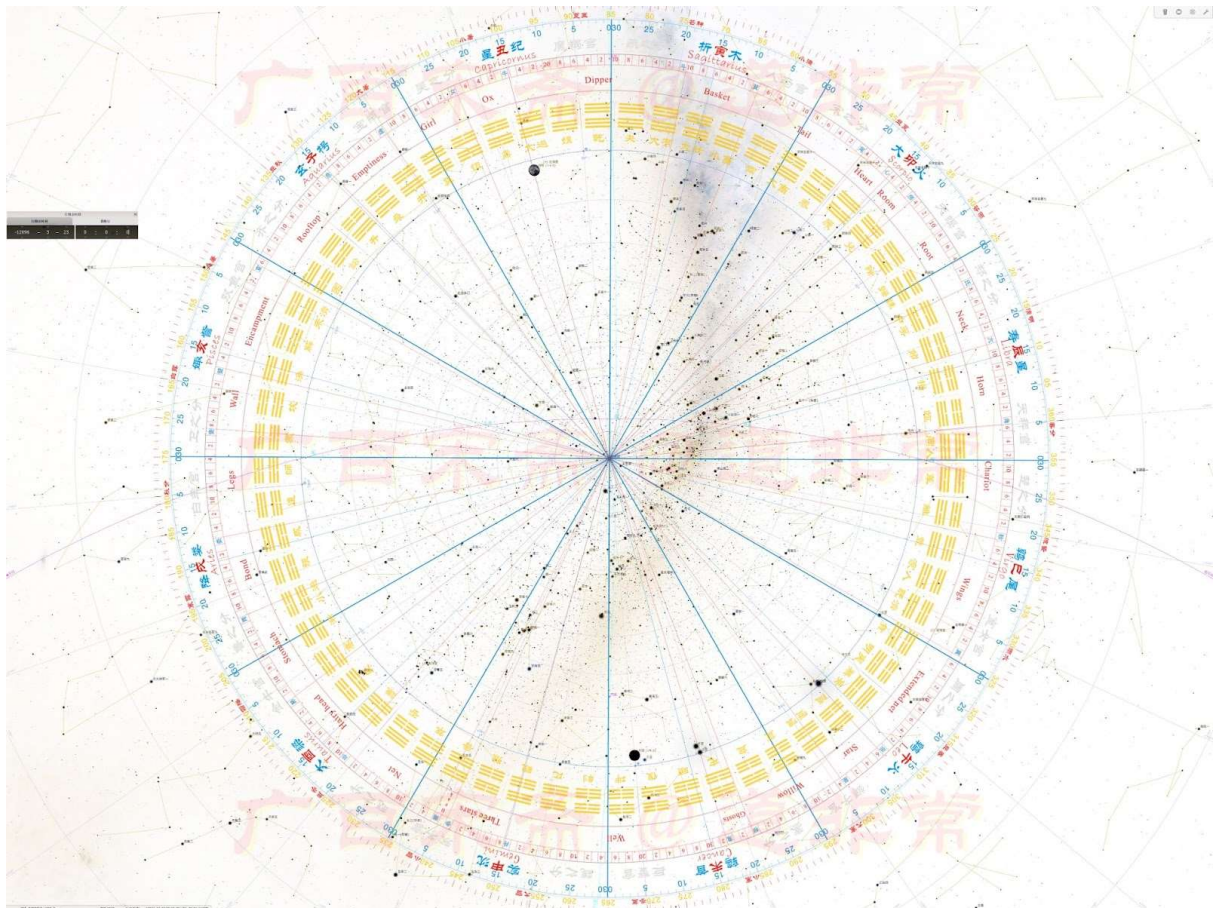


Figure 34

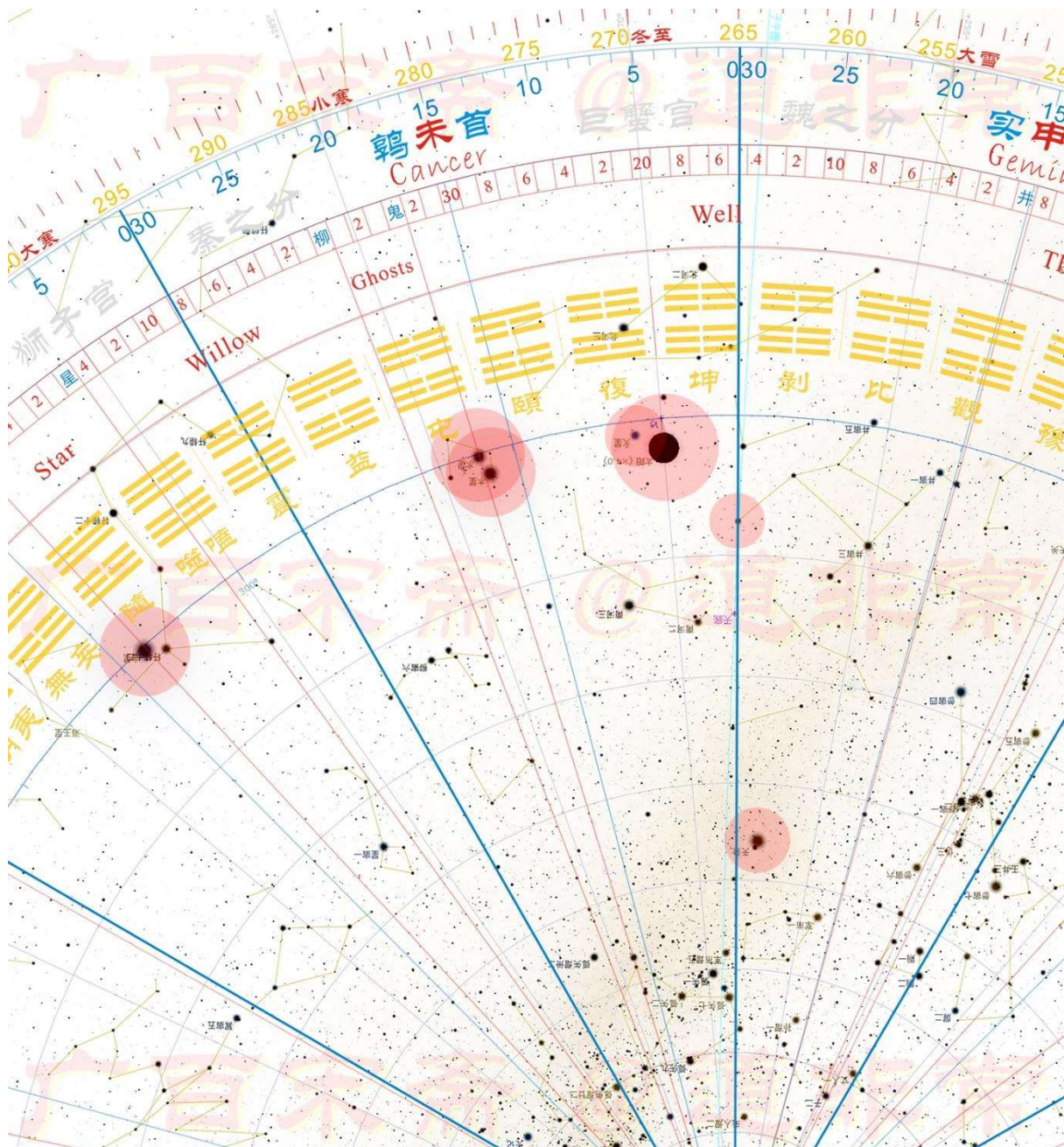
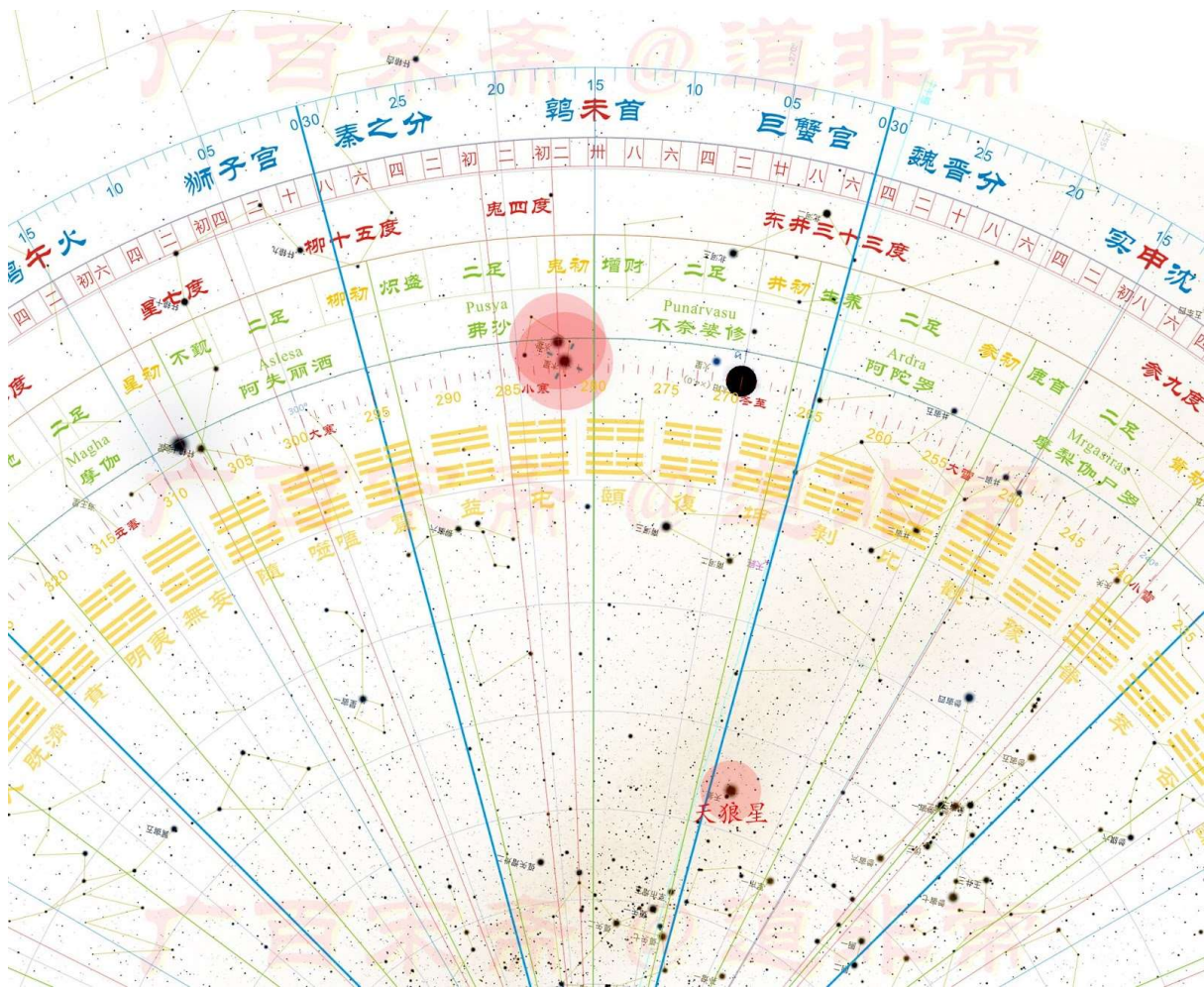


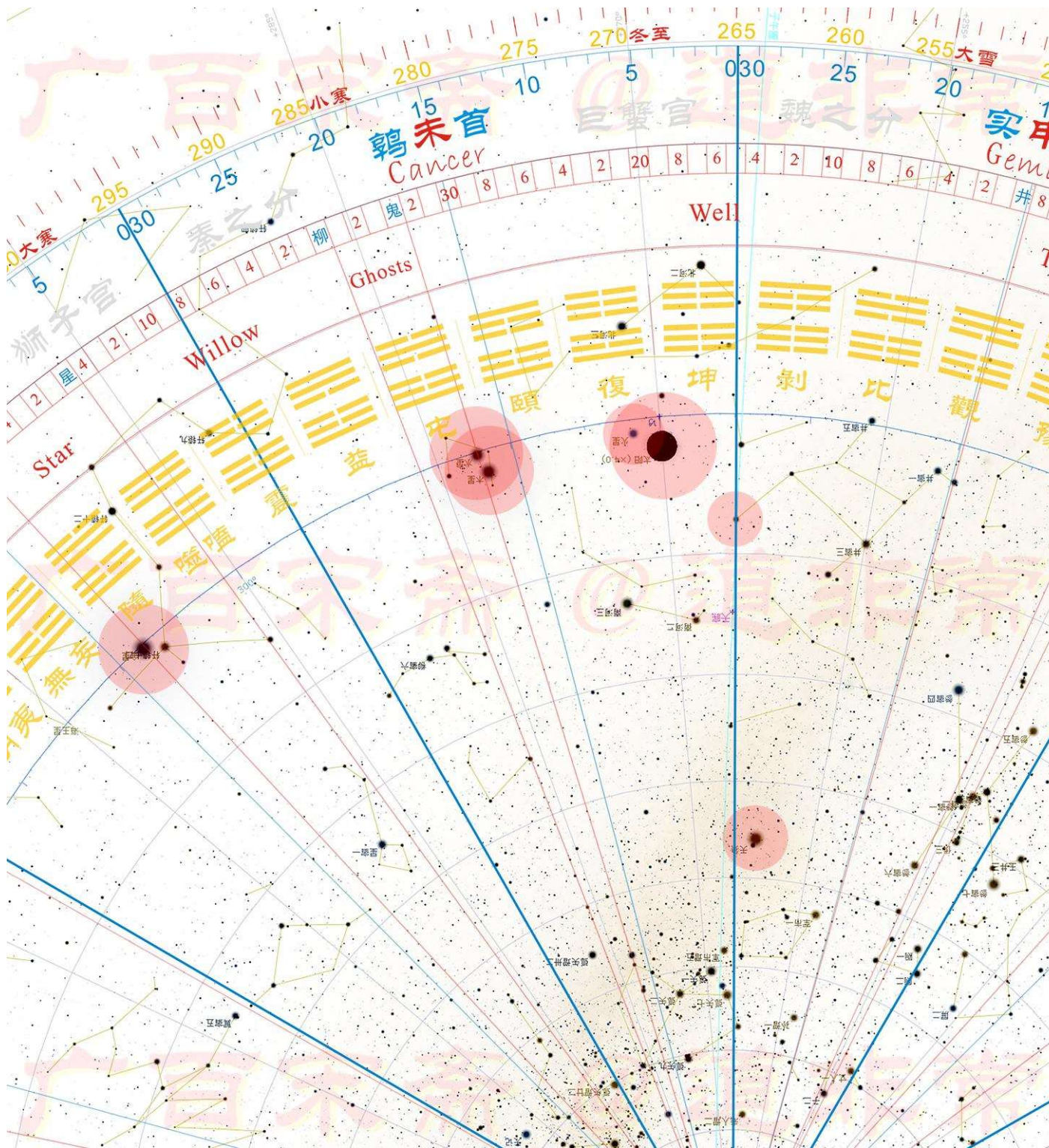
Figure 35



The founding time of the ancient “Shu Kingdom” was as far earlier as the Winter Solstice point on March 23, 12,897 BC! It is the only time- point that is not completely in alignment with the four astronomical and calendar characteristics recorded in “Shu Zhi” of “Huayangguo Zhi”, but also perfectly matches the feature of the “Jiazi Year, Jiazi Month, Jiazi Day and Jiazi time” at which Huaxia calendar initially began.

What is especially important is on this particular day, Jupiter happened to be in the ecliptic sky zone of Tun Hexagram(屯卦). (Figure 36)

Figure 36




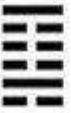






























































In “Yi Jing” (易经, the Book of Changes), the 64 Hexagrams are divided into the upper section and the lower section, with 30 Hexagrams in the upper section and 34 Hexagrams in the lower section. Following the first two Hexagrams of Qian (乾) and Kun (坤) in the upper section, are Tun (屯) and Meng (蒙); the last two Hexagrams in the upper section are Kan (坎) and Li (离). The lower section starts from Xian (咸) and Heng (恒), and the last two Hexagrams are Ji Ji (既济) and Wei Ji (未济). The Hexagrams arranged in pairs are either in the reverse relationship, such as Tun and Meng, or opposite to their corresponding Lines, such as Kan and Li.

Notes:

The 64 Hexagrams: (Charts are from internet)

上经三十卦					
01. 乾 ☰	02. 坤 ☷	03. 屯 ☳	04. 蒙 ☶	05. 需 ☵	06. 讼 ☶
07. 师 ☶	08. 比 ☶	09. 小畜 ☶	10. 履 ☱	11. 泰 ☰	12. 否 ☷
13. 同人 ☲	14. 大有 ☲	15. 谦 ☶	16. 豫 ☳	17. 随 ☰	18. 蛊 ☱
19. 临 ☱	20. 观 ☶	21. 噬嗑 ☲	22. 贲 ☶	23. 剥 ☶	24. 复 ☱
25. 无妄 ☲	26. 大畜 ☶	27. 颐 ☶	28. 大过 ☱	29. 坎 ☵	30. 离 ☲
下经三十四卦					
31. 咸 ☶	32. 恒 ☱	33. 遁 ☶	34. 大壮 ☲	35. 晋 ☲	36. 明夷 ☲
37. 家人 ☲	38. 睽 ☱	39. 蹇 ☵	40. 解 ☵	41. 损 ☶	42. 益 ☲
43. 夬 ☱	44. 姤 ☱	45. 萃 ☱	46. 升 ☲	47. 困 ☱	48. 井 ☵
49. 革 ☲	50. 鼎 ☲	51. 震 ☳	52. 艮 ☶	53. 渐 ☲	54. 归妹 ☲
55. 丰 ☲	56. 旅 ☲	57. 巽 ☴	58. 兑 ☱	59. 涣 ☱	60. 节 ☵
61. 中孚 ☴	62. 小过 ☱	63. 既济 ☵	64. 未济 ☲		

							
乾	坤	屯	蒙	需	讼	师	比
							
小畜	履	泰	否	同人	大有	谦	豫
							
随	蛊	临	观	噬嗑	贲	剥	复
							
无妄	大畜	颐	大过	坎	离	咸	恒
							
遁	大壮	晋	明夷	家人	睽	蹇	解
							
损	益	夬	姤	萃	升	困	井
							
革	鼎	震	艮	渐	归妹	丰	旅
							
巽	兑	涣	节	中孚	小过	既济	未济

Why were the 64 Hexagrams arranged in this way by Huxia ancestors? It has been an eternal mystery.

When the author saw that at the Winter Solstice on March 23, 12,897 BC, the initial time of Huaxia calendar and the founding time of ancient “Shu Kingdom”, Jupiter was in Tun Hexagram ($281^{\circ}15'-286^{\circ}52'30''$), the third Hexagram of the upper section of “Yi Jing”, the author immediately understood why the 64 Hexagrams had been arranged in this way. The ancestors arranged the sequence according to Jupiter’s position in the Hexagrams: Jupiter was in a certain Hexagram when some important astronomical phenomena occurred, as the result, this Hexagram (Tun/屯) and its "partner Hexagram" (Meng/蒙) were arranged after the first two Hexagrams Qian (乾) and Kun (坤). The author will discuss why the first two Hexagrams are Qian and Kun in another article.

Since Tun(屯) and Meng (蒙) are followed by Xu (需) and Song (訟), it must mean some major astronomical phenomena occurred when Jupiter was in Xu Hexagram. The region of Xu Hexagram is $56^{\circ}15'-61^{\circ}52'30''$. After March 23, 12,897 BC, some particular astronomical phenomenon did occur when Jupiter was in Xu Hexagram. For example, on August 10, 12,857 BC, five stars were in a line (Figure 37); On September 4, 12,786 BC, a solar eclipse appeared (Figure 38); On August 24, 12,703 BC, four-stars were closely in a line (figure 39). To confirm what kind of major astronomical phenomenon determines the sequence of the 64 Hexagram, the workload is very huge.

Figure 37

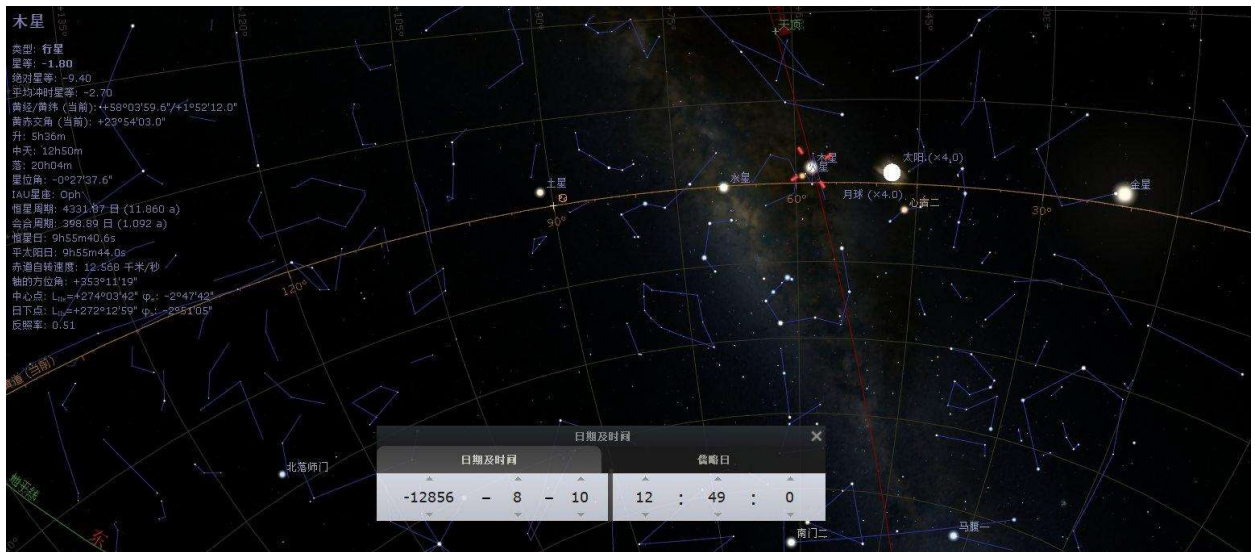


Figure 38

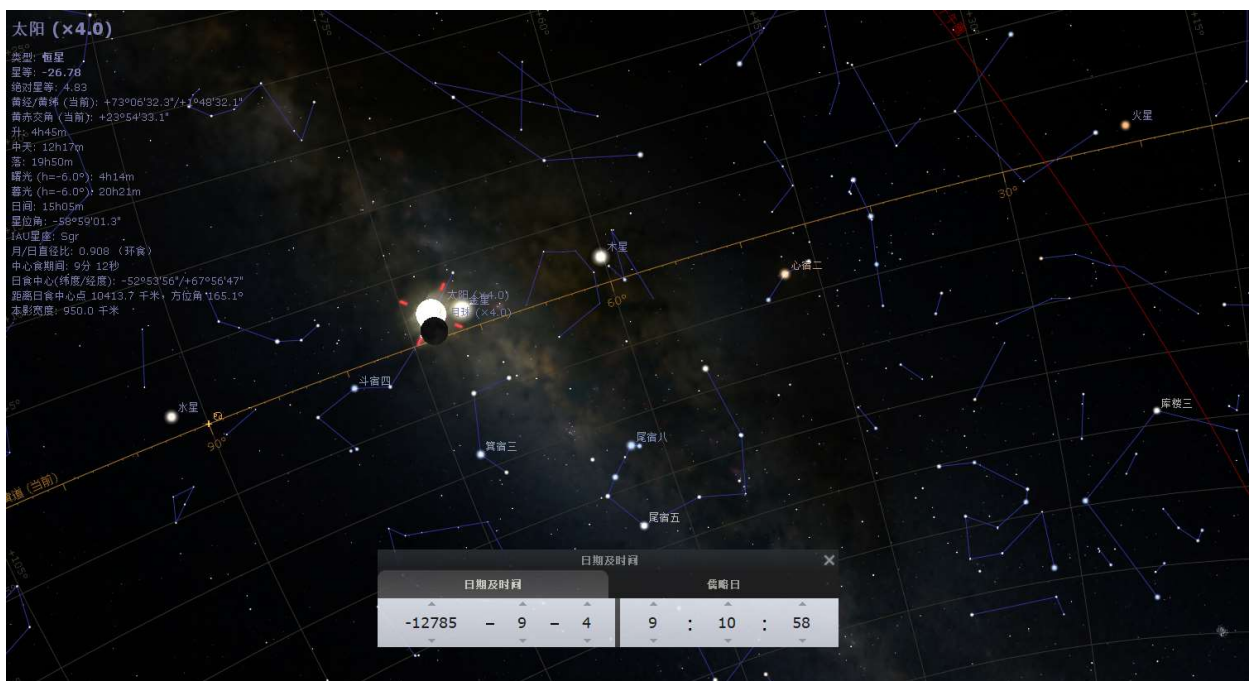
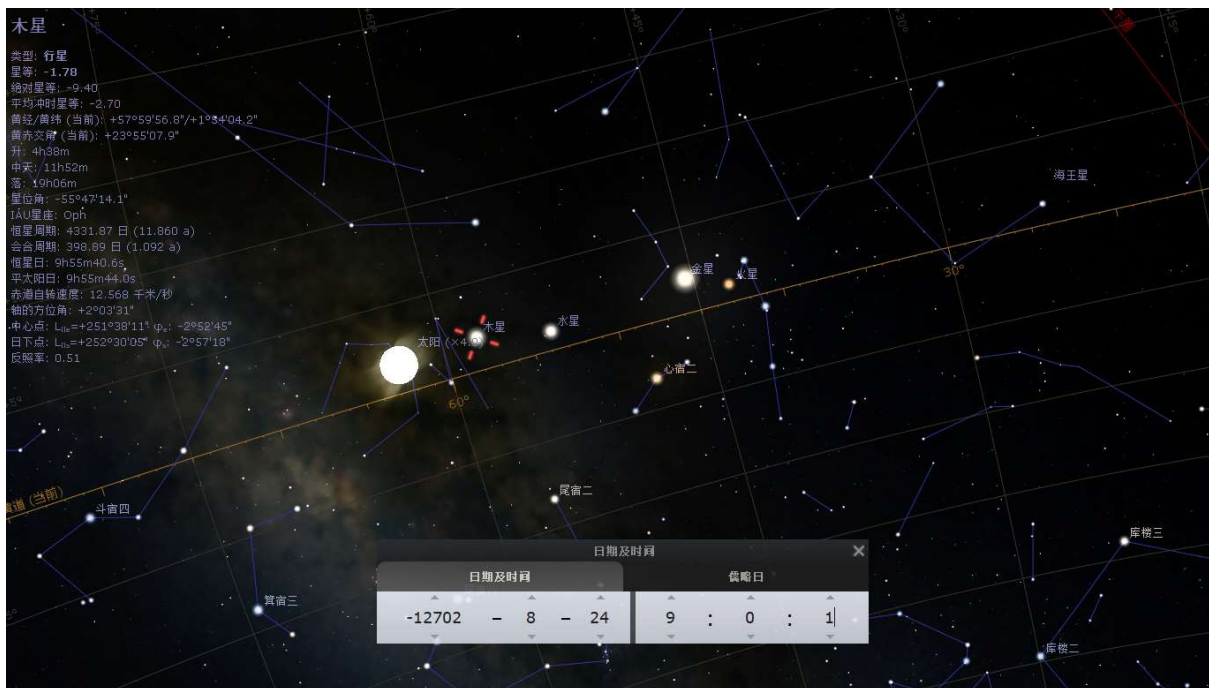


Figure 39



Although it is hard, it is easier to handle in some cases. For example, the first Hexagram in the Lower section of “Yi Jing” is Xian (咸), it must because when Jupiter was in Xian Hexagram ($185^{\circ}37'30''$ - $191^{\circ}15'$), some major astronomical phenomenon occurred.

In ancient China, there was a "Mingtang" (明堂, the Mansion of Light) system. "Mingtang" was emperors' governing palace, in which the emperor responded with heaven and the earth, communicated with the spirits, observed the astronomical phenomena, promulgated the calendar, and implemented rewards and punishments. What is interesting is that "Mingtang" corresponds to “Room Mansion” (Fangsu) of the 28 Mansions. (Figure 40, 41)

Figure 40

<p>而疾兩端狹而遲勢自然耳譬輪之有輻蓋之有弓 豈外有餘而中不足哉若夫九行之交五緯之次苟 求其故皆可以因是而得之矣</p>	<p>經星列宿名數圖 <small>見晉志考史記天官書 略同及見鄭氏通志</small></p>	<p>二十八舍度最多者莫如東井 <small>三十三度 通</small> 其次莫</p>	<p>如南斗 <small>二十六度 通</small> 度最少者莫如觜觿 <small>二度 通</small></p>	<p>其次莫如輿鬼 <small>四度 通</small></p>	<p>角二星為天關其間天門其內天庭黃道經其中七</p>	<p>欽定四庫全書</p>	<p>尚書通考</p>	<p>卷一</p>	<p>曜之所行左角為天田主刑右角為將主兵 <small>通志 角二</small></p>	<p>星十二度 如鼎形</p>	<p>亢四星天子之內庭也 <small>四星九度 如彎弓</small></p>	<p>氐四星天子之宿宮 <small>四星十六度 似斗側 量米 今十五度</small></p>	<p>房四星為明堂天子布政之宮也亦四輔也又為四</p>	<p>表中間為天衢為天淵黃道之所經也南間曰陽</p>	<p>間北間曰陰間七曜由乎天衢則天下和平亦曰</p>	<p>天駟為天馬主車駕亦曰天廐又主開閉為蓄藏</p>
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Figure 41

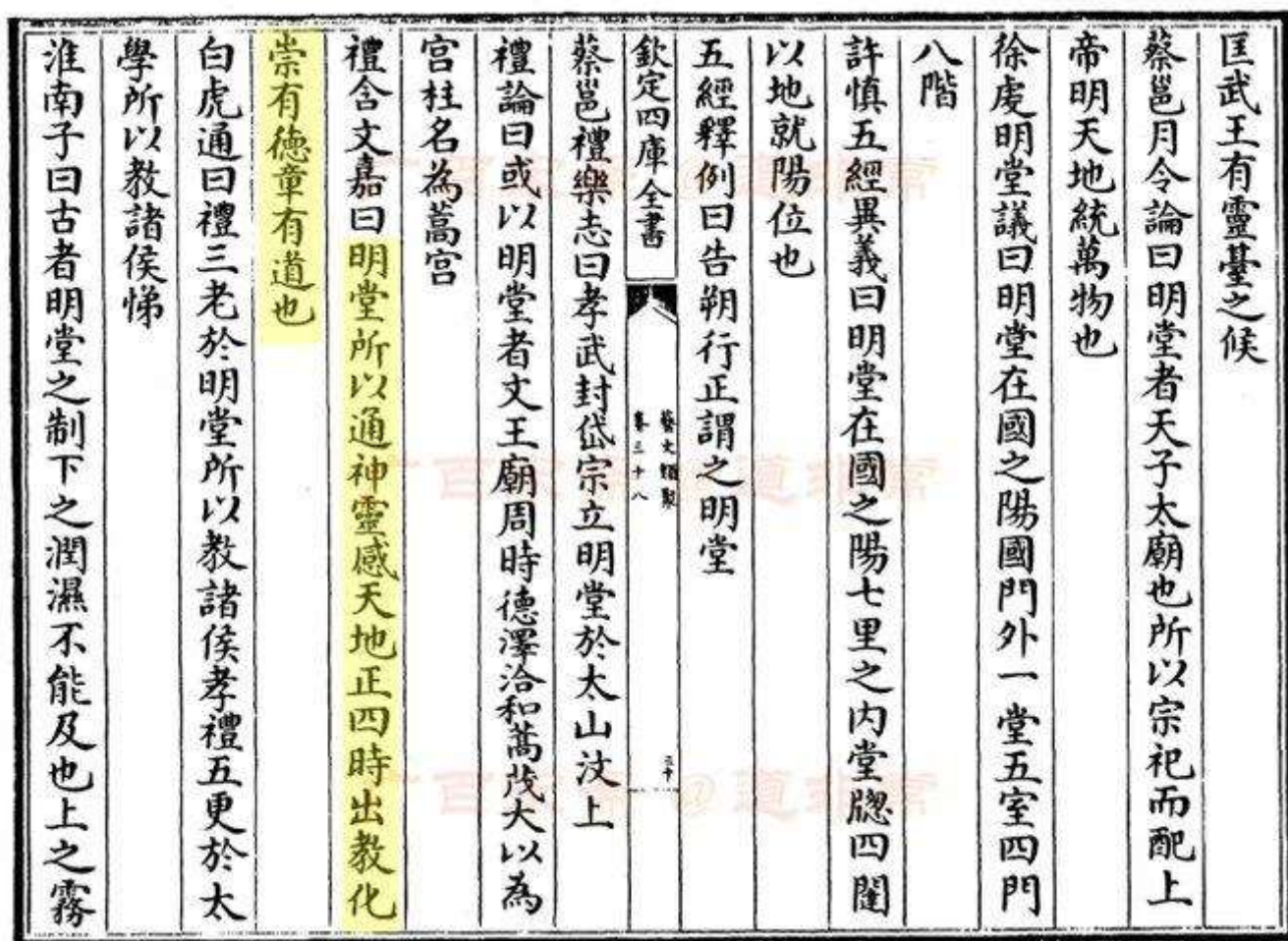


Figure 42, Room Mansion is right corresponding to the middle of "Da Huo" (大火, meaning big fire). Why is this "Ci" named "Da Huo" (big fire), and Room Mansion also represents "big fire" in light of ancient Chinese literature? It is because when the summer solstice point (90° ecliptic longitude) was in the four stars of Room Mansion, a major event occurred.

Figure 43, In the year 9,177 BC (the astronomical year - 9176), the Summer Solstice point was at the star "Room Mansion IV" (Beta Scorpii). This year also happened to be a "Jiazi Year".

Figure 42

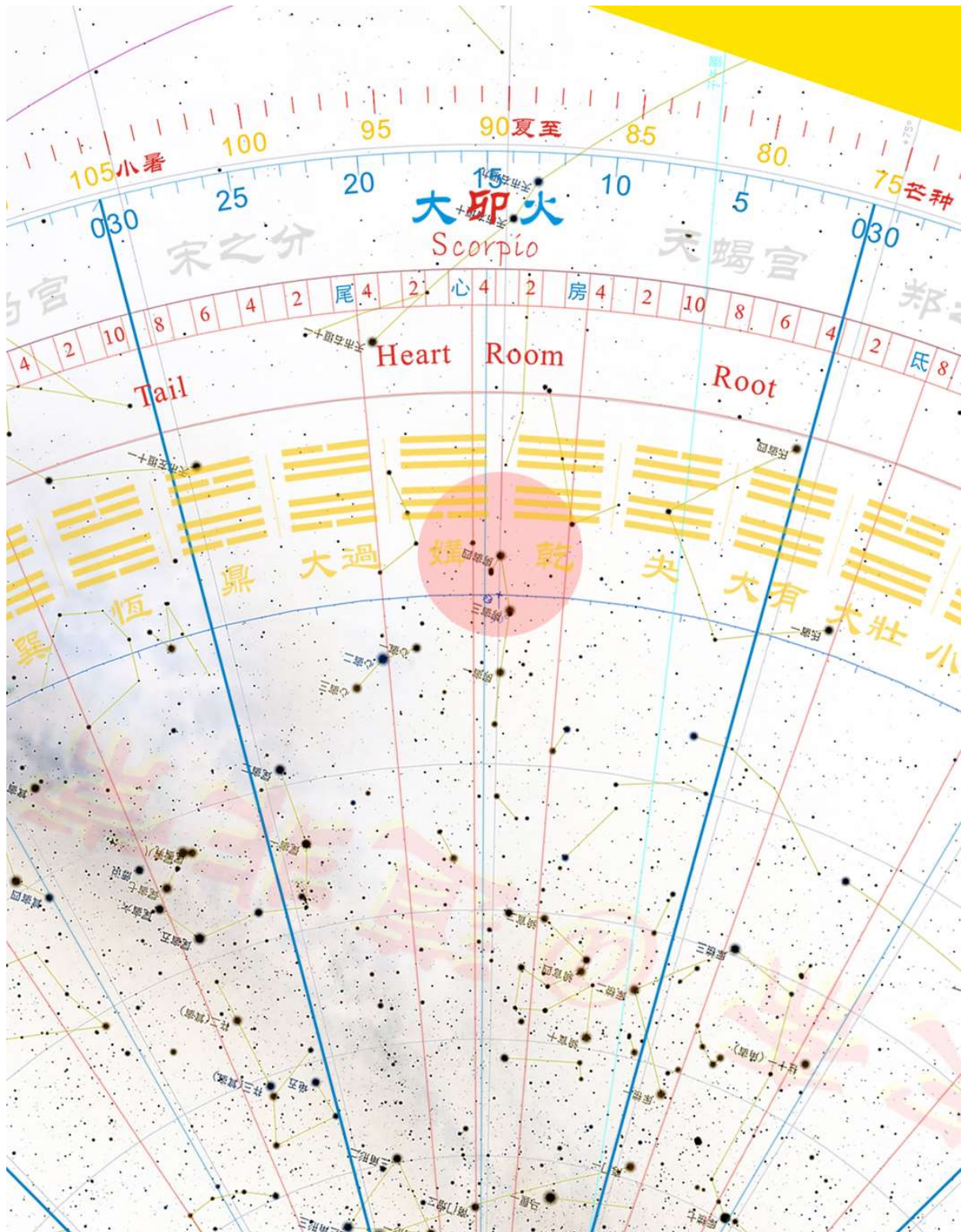
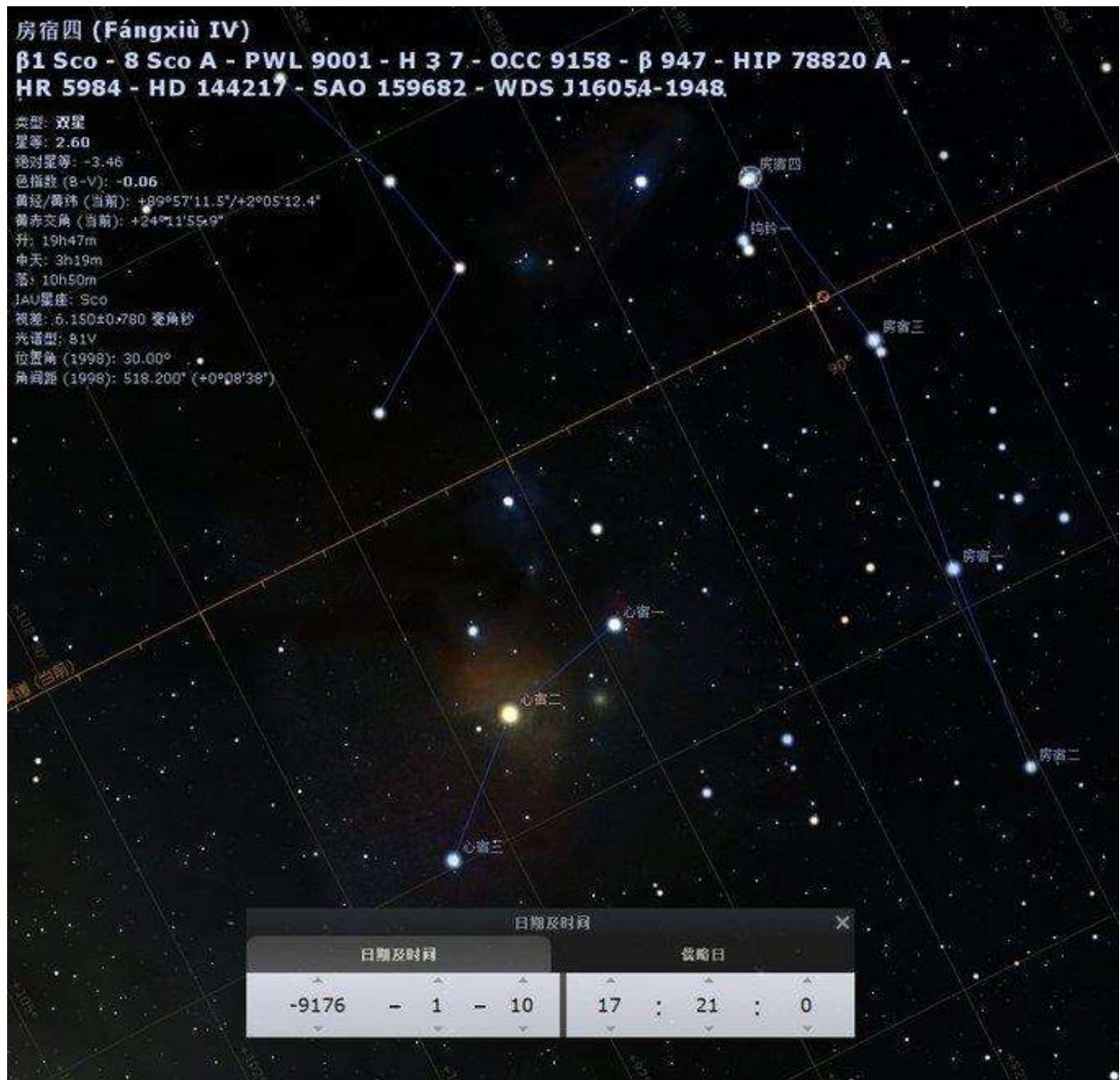


Figure 43



At sunset of the Beginning of Winter on January 10, 9,177 BC at Van Lake, Three Stars Mansion was located on the southern meridian. Moreover, the astronomical phenomenon that appeared in the northern ecliptic sky is more magnificent. In the northern ecliptic sky, Di Xing (帝星, Kochab) and Hou Xing (侯星, Ras Alhague) are almost on the meridian, Arcturus and Sadr are almost on the same horizontal line, and the line connecting Kochab and

Ras Alhague is perpendicular to the line connecting Arcturus and Sadr, forming a huge Cross in the northern sky. (Figure 44)

The upright huge Cross (Figure 44) in the northern sky firstly appeared at the sunset on the Beginning of Winter of that year, and then whenever on the day of the next Solar Term, the direction of the huge Cross deflected 15° counterclockwise. Starting from the Beginning of Winter of 9,177 BC, the huge Cross in the northern sky kept rotating counterclockwise, which played a distinct role in indicating the seasons and terms. This major astronomical phenomenon is the origin of the Swastika, and as well as the large Christian cross. (Pictures below are from Internet)





Figure 1. Painted Pottery Designs; Samarra ware, Iraq, c. 4000 B.C.



Meanwhile, starting from the Beginning of Winter on January 10, 9,177 BC, as shown in Figure 45 & 46, Arcturus's position moved at the eight horizontal, vertical and diagonal positions in the northern sky with the change of time, which could exactly mark the eight Solar Terms of Beginning of Winter, Winter Solstice, Beginning of Spring, Spring Equinox, Beginning of Summer, Summer Solstice, Beginning of Autumn, and Autumnal Equinox

Figure 44

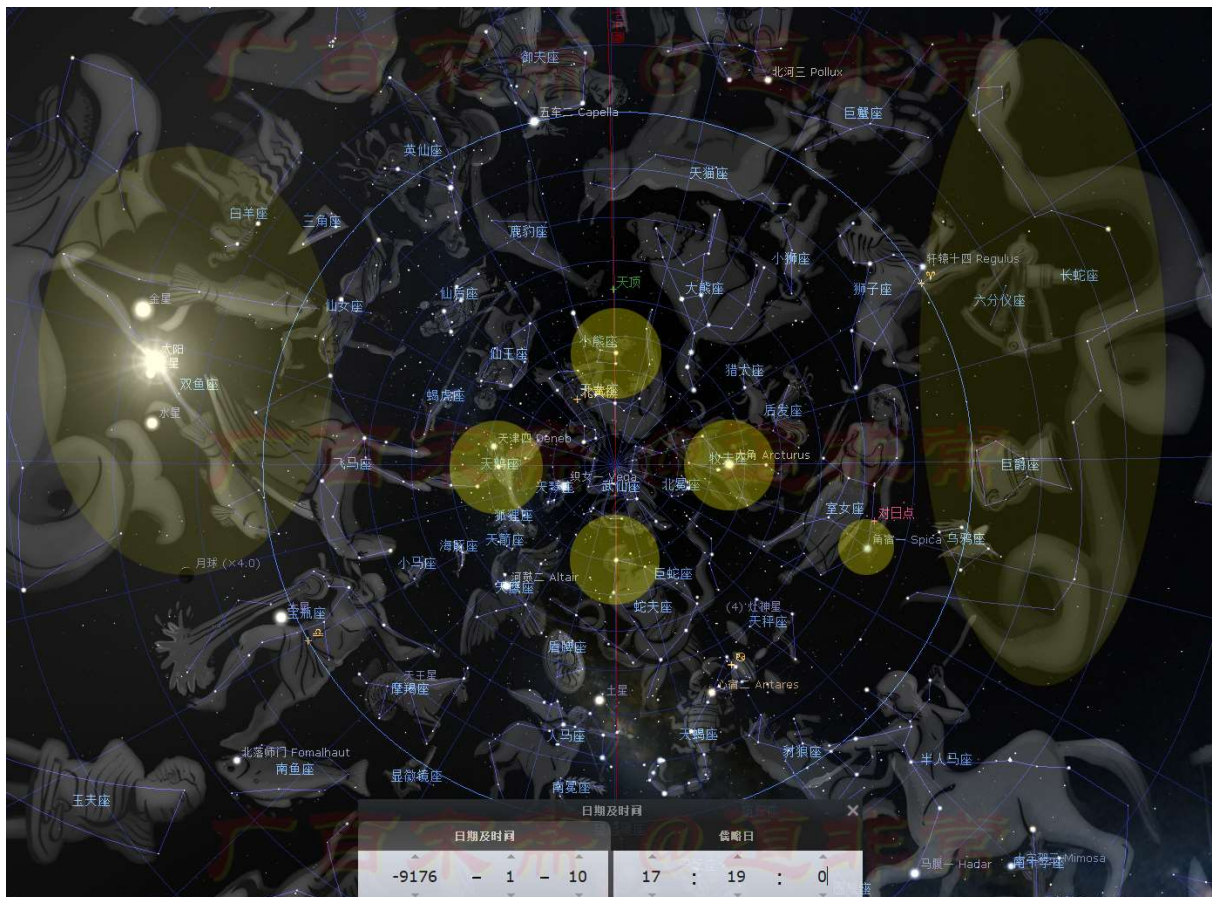


Figure 45

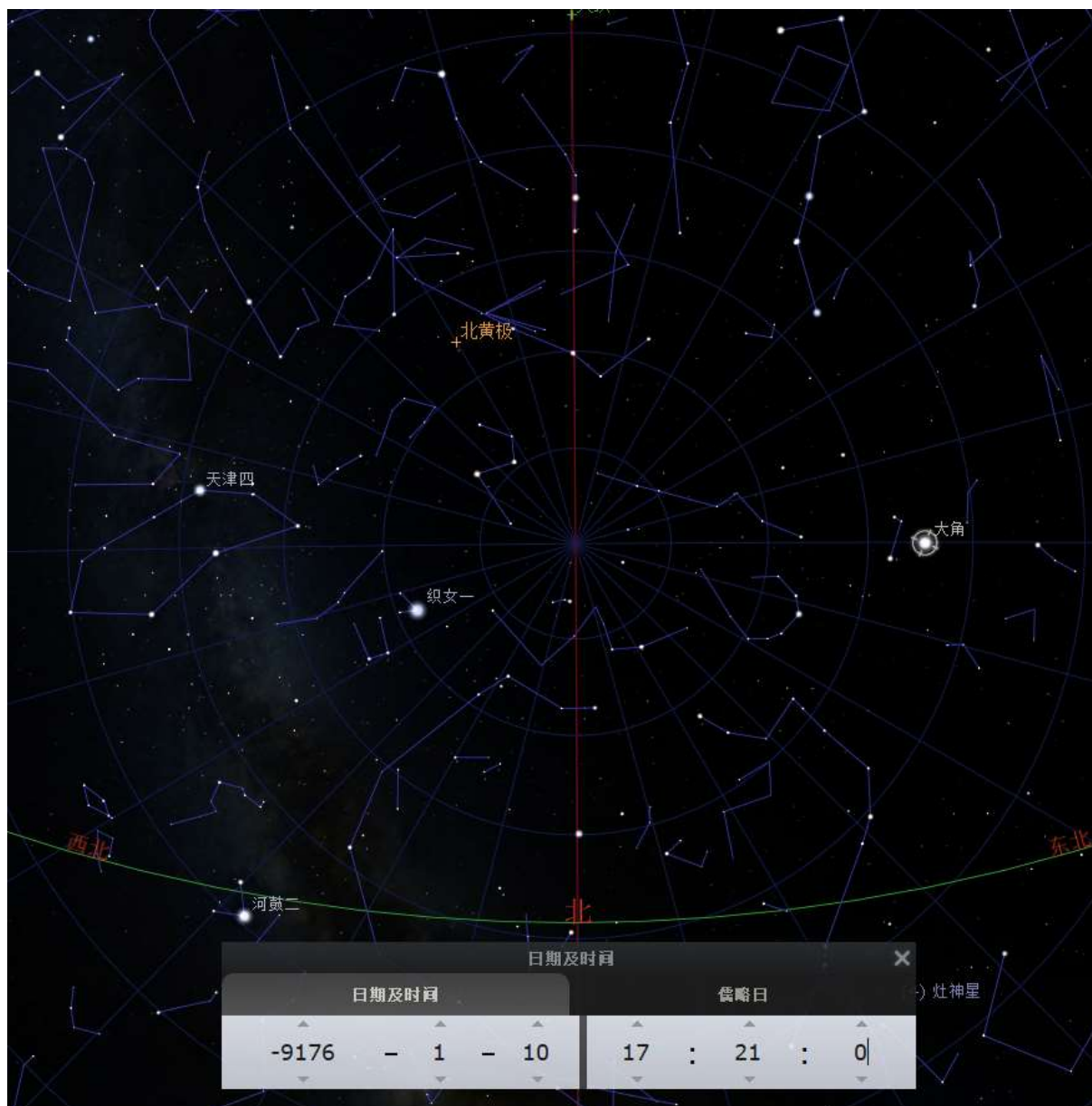
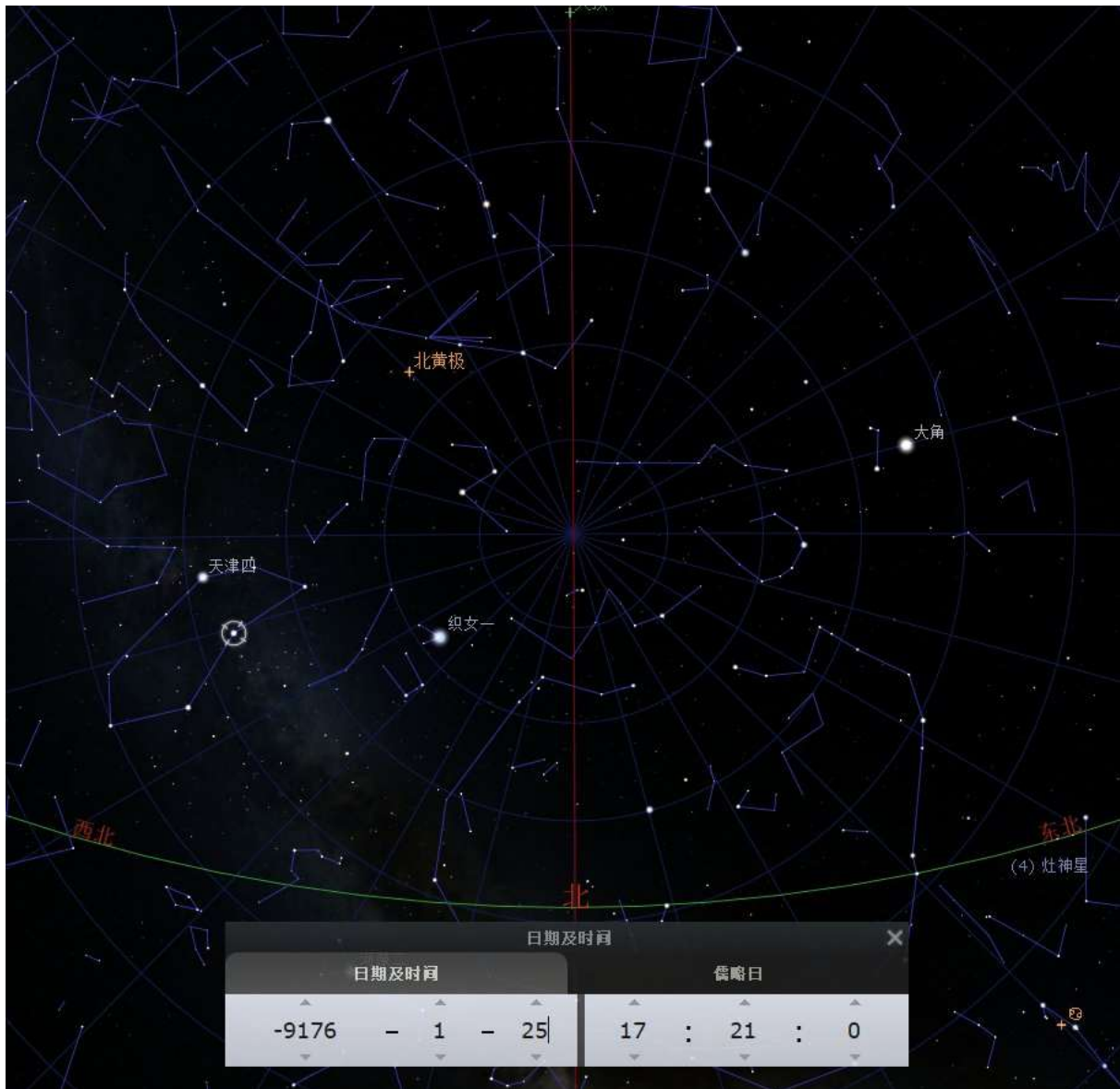
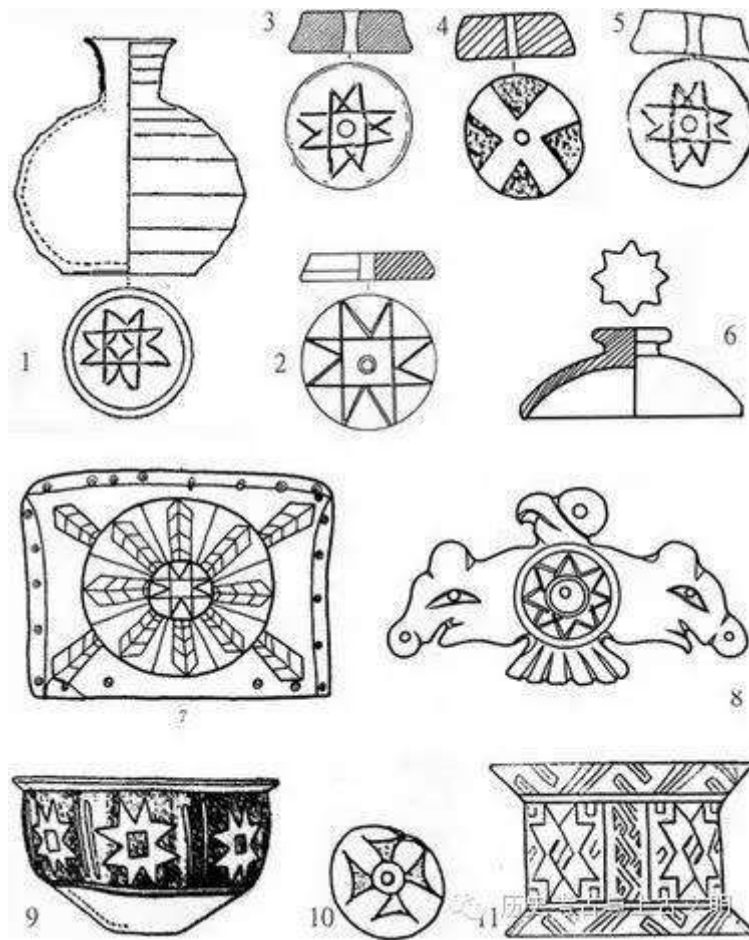


Figure 46



Undoubtedly, the octagonal patterns on various utensils unearthed in the Sumerian civilization, the Mayan and Aztec civilizations in America, as well as the Neolithic sites in China are all originated from Arcturus in the northern sky in 9,177 BC, which became the special symbol of indicating the eight major Solar Terms.

The following pictures from Internet are the examples for reference.





Sadr is one of the main stars of Cygnus, and this “big bird” rotated counterclockwise in the northern sky with the change of time, therefore it also became a clear and accurate indication of the seasons and terms (Figure 47, 48). This “big bird with a long neck” is referred to as the "Xuan Niao" (玄鸟), meaning the rotating bird, in Chinese historical documents.

A piece of gold artifact named "Xuan Niao" was unearthed at Jinsha Bronze Culture Site in Sichuan, China. The long-necked bird is a flamingo, however, Sichuan has never had wild flamingos. (Figure 49)

Figure 47

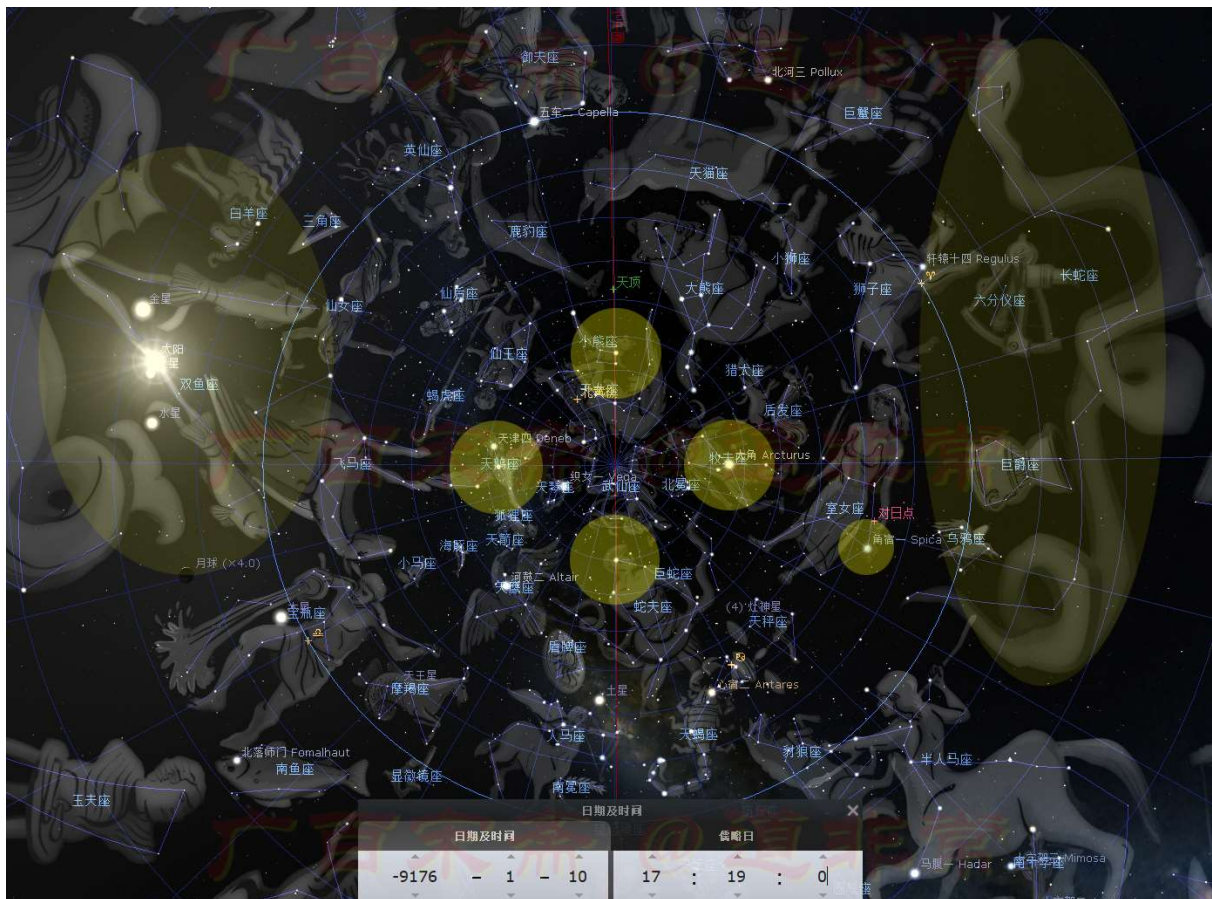


Figure 48



Figure 49 (The picture is from Internet)



The year 9,177 BC is so important, and at the Beginning of Winter of this year, where was Jupiter located? Jupiter happened to be in Xian Hexagram ($185^{\circ}37'30''$ - $191^{\circ}15'$), which is exactly the first Hexagram of the lower section of “Yi Jing”! At the same time, there was also a magnificent astronomical phenomenon that the sun, the moon and the four stars were connected closely in a line! (Figure 50, 51, 52)

Figure 50

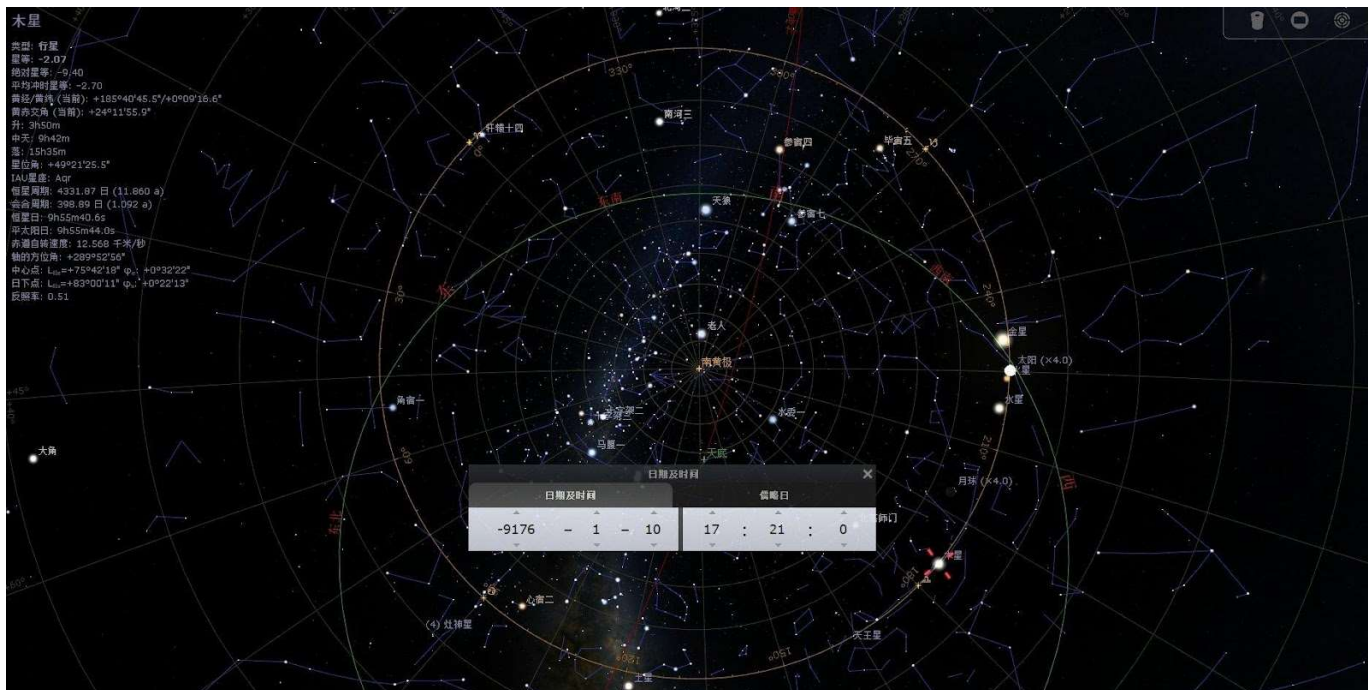


Figure 51

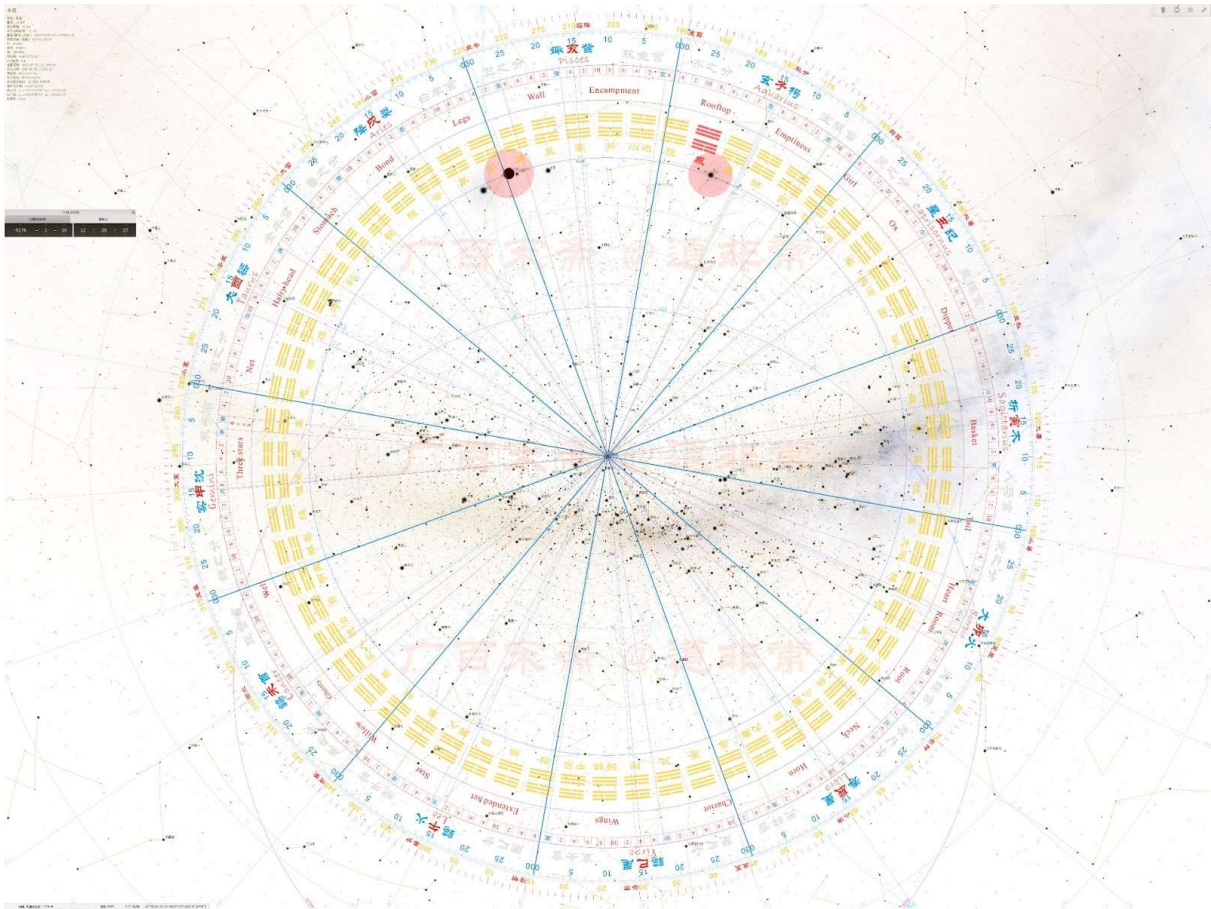
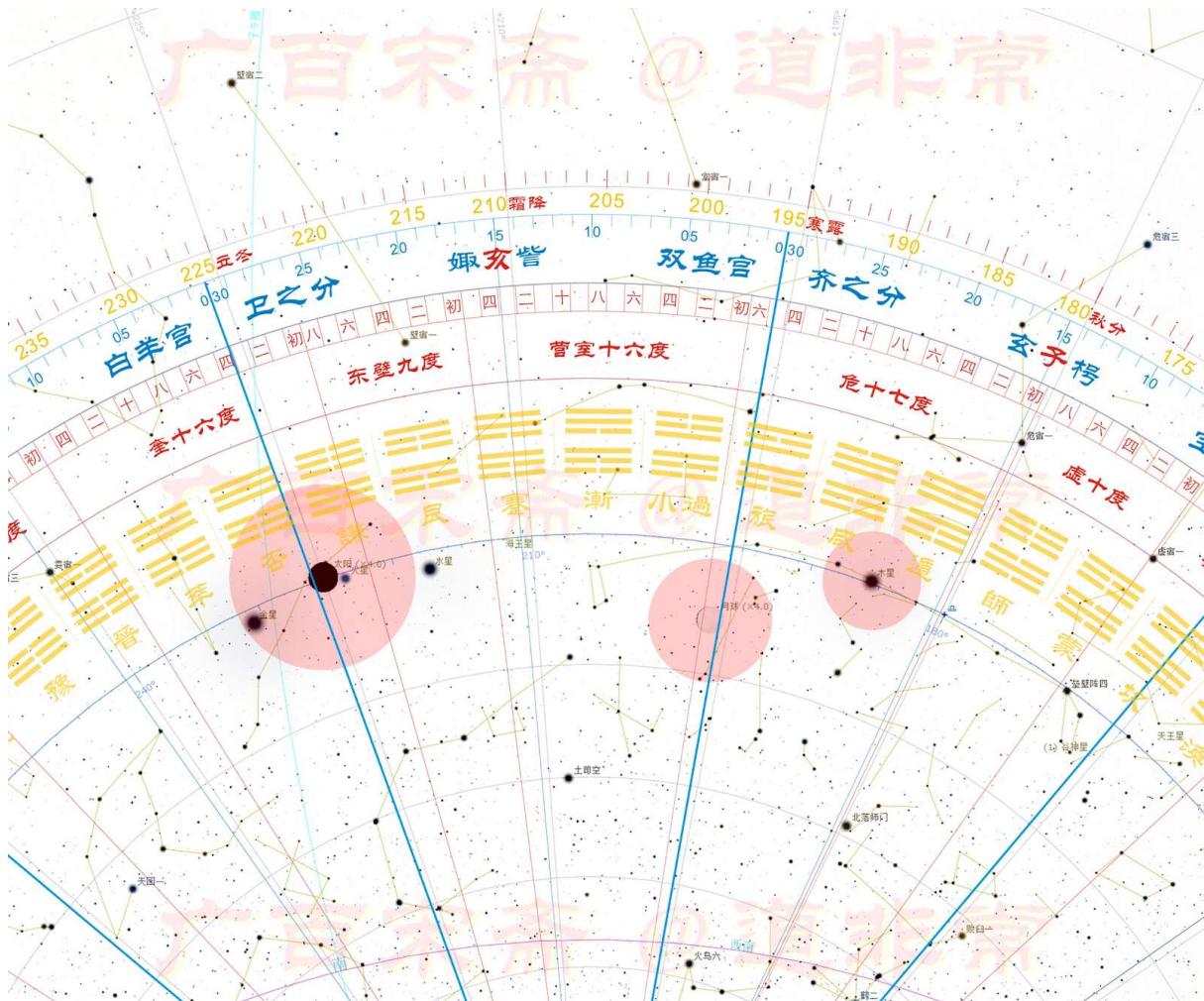


Figure 52

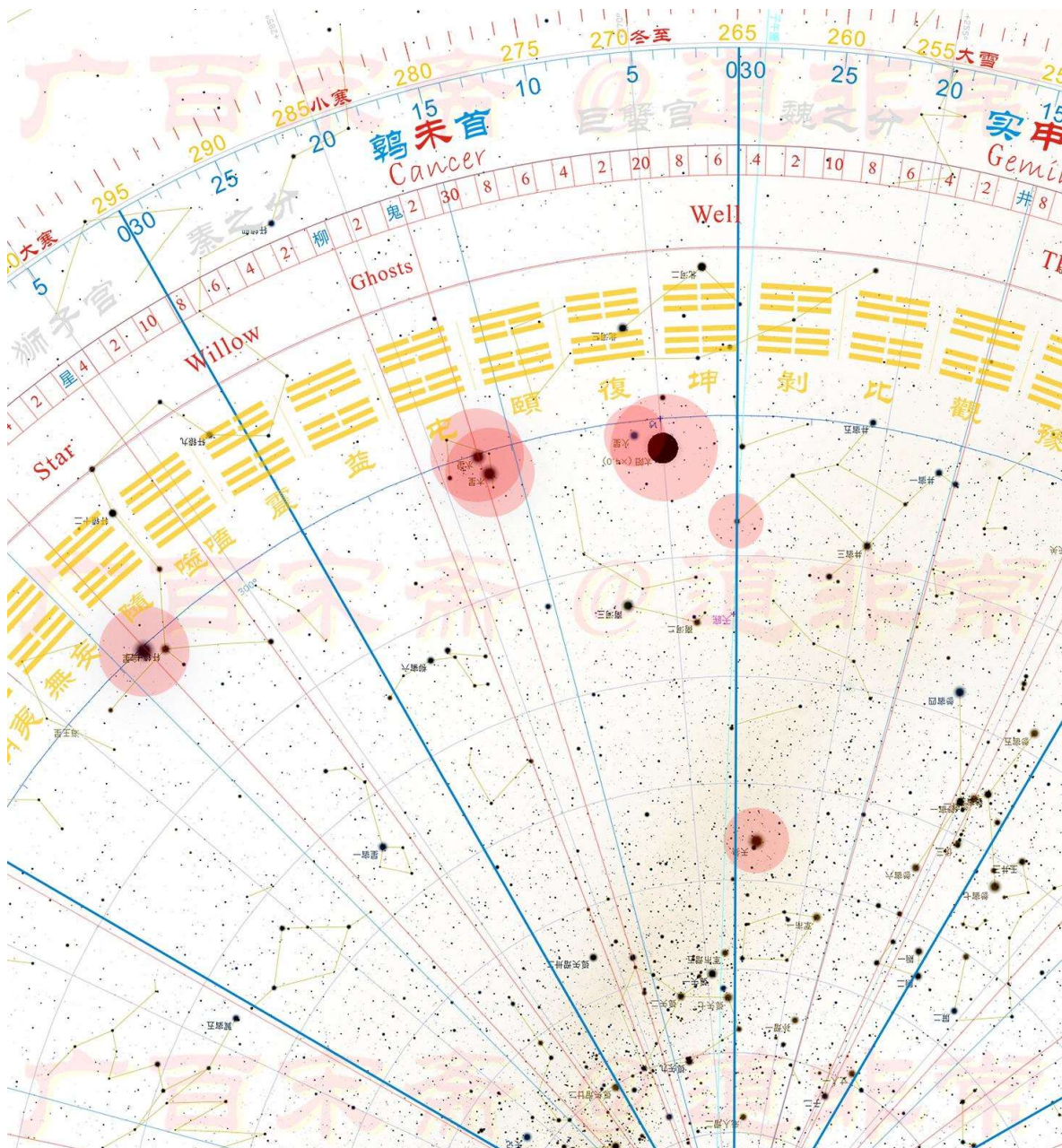


In this way, The author has learnt the great mystery of the division of “Yi Jing” into the upper and the lower sections:

Tun was arranged after the first two Hexagrams of Qian and Kun in the upper section because the year 12,897 BC was a “Jiazi Year”, and when some major astronomical phenomena appeared, Jupiter was in Tun Hexagram at the Winter Solstice of this year (“Jiazi day and Jiazi time”). The first Hexagram of the lower section is Xian because the year 9,177 BC was also a “Jiazi Year”, and when some major astronomical phenomena appeared, Jupiter was in Xian Hexagram at the Beginning of Winter of this year (Figure 53). It must involve some

significant factors that it was a “Jiazi Year”, it was at a major Solar Term such as “Winter Solstice”, “Beginning of Winter”....., and some major astronomical phenomena appeared when Jupiter was in a certain Hexagram, which were the marks of the most significant events and new eras in Huaxia civilization. Therefore, the upper and lower sections of “Yi Jing” in fact represent the two stages of Huaxia civilization.

Figure 53



According to the above inference, the first stage of Huaxia civilization started from the Winter Solstice on March 23, 12,897 BC when Jupiter was in Tun Hexagram (the third Hexagram of the upper section of “Yi Jing”) and ended when Jupiter was in Li Hexagram (离卦) (the last Hexagram of the upper section of “Yi Jing”). The second stage of Huaxia civilization started from the Beginning of Winter on January 10, 9,177 BC, when Jupiter was in Xian Hexagram (the first Hexagram of the lower section of “Yi Jing”), and ended when Jupiter was in Weiji (未济) Hexagram (the last Hexagram of the lower section of “Yi Jing”).

Why was Ancient Huaxia civilization divided into two stages? And why does the upper section of “Yi Jing” end at Li Hexagram? The author thought of the Younger Dryas event. The relevant research by international academia shows that during the "Younger Dryas Period" about 12,800 years ago, many animals in North America, South America, and Europe, such as mammoths, African buffaloes, and giant zebras, were extinct. The Clovis people in North America were thus devastatingly impacted. Studies by relevant scholars have shown that the earth was impacted by an asteroid or a comet about 12,900 years ago.

There is also a legend of “Nuwa mending the sky” (女娲补天) in China—“In ancient times, the four pillars supporting the sky collapsed, the earth cracked, fires spread, and floods raged”. It also seems like an asteroid or a comet hitting the earth and causing a major cataclysm. International academia speculates on the age of the impact, mainly through radiocarbon 14 dating of the relevant stratus, and it is estimated to be around 12,800 years ago. (The pictures below)

THE CLOVIS COMET

Part I: Evidence for a Cosmic Collision 12,900 Years Ago

FOR REASONS still not entirely understood, most of the large animals in the New World became extinct at the end of the Pleistocene epoch. For decades, their passing has been a source of wonder and contention among the researchers who study them. Natural vegetation shifts, climate changes, over-hunting by humans, plagues, and various combinations thereof have been put forward as proximate causes of the extinctions, though no definitive consensus has been reached.

As it turns out, all those theories might be further

Allen West sampling a backhoe trench profile at the Big Pine Tree site for Clovis-age sediments.



BILL COVINGTON

off the mark than previously realized. If the authors of a study published in the 7 October 2007 issue of the *Proceedings of the National Academy of Science (PNAS)* are correct—and over a dozen converging lines of evidence argue that they are—then a comet hit North America 12,900 years ago, dooming the Pleistocene megafauna and decimating the local human population.

Allen West, whose research was the impetus for the *PNAS* study, realizes that some observers won't like the theory. But he's convinced it's the explanation that best fits the facts. The signs are well documented and copious; when taken to-

gether, they form a composite "smoking gun" that strongly suggests that something came out of the stars and hit us at the beginning of the Holocene. Following standard scientific protocol, West and his research team have entertained many other

theories in search of a viable alternative. But in the end, he says, "We sure can't think of one."

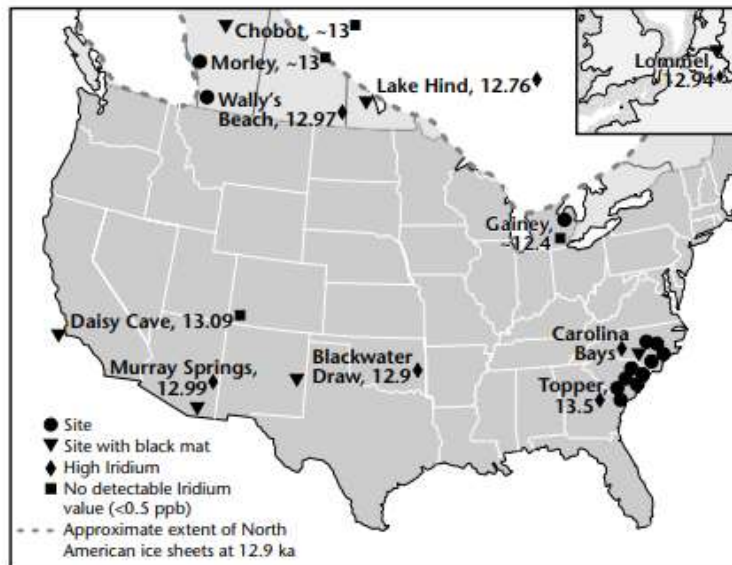
Back to the deep freeze

Just as things were warming up after the long Pleistocene Ice Age, an abrupt temperature reversal plunged the Northern Hemisphere into a thousand-year cold spell known as the Younger Dryas (YD) interval. The beginning of the YD in North America, Greenland, and Western Europe is well established at 12,900 CALYBP. At about the same time, the last of the Pleistocene megafauna were disappearing in North America and the Clovis culture was breathing its last.

A recent reexamination of the Clovis time range by geochronologist Tom Stafford and geoarchaeologist Mike Waters (*MT* 22-3, -4, "Clovis Dethroned: A New Perspective on the First Americans") makes it clear that, among other things, Clovis came to an end in the extraordinarily brief period 12,800–12,925 CALYBP. Their conclusion is consistent with data compiled by C. Vance Haynes, who has demonstrated the presence of dark organic deposits, known to scientists as "black mats," that mark the end of the Clovis era at more than 50 different archaeological sites across North America. They form a boundary that's easily identified in about one-third of the known Clovis sites, and the best explanation for them is that they represent significant organic enrichment of the local sediments via algal blooms or a sudden infusion of charcoal or soot. The formation of black mats dates conclusively to the beginning of the YD interval.

The sudden onset of the Younger Dryas is implicated, therefore, in the decline of Clovis. But what triggered the YD in the first place? Traditional explanations center on a sudden influx of glacial meltwater into the North Atlantic, which would have disrupted the saline density and interfered with established patterns of ocean circulation that contributed to the warming of the Northern Hemisphere. This explanation seems reasonable, since it's well known that modern England, for example, would be significantly colder without the Gulf Stream. But oddly enough, it didn't happen during any previous interglacial, so some random event must have triggered the abrupt climate change.

That random event might have been the impact of a relatively small highly fragmented comet or asteroid, particularly one that exploded in the upper atmosphere, igniting fires over a large area. Such an event would fill the atmosphere with soot and dust that would block out significant amounts of solar radiation for weeks or months, resulting in a "nuclear winter" effect. Even after the skies



Sites investigated in the study including Lommel, Belgium, with their calibrated Younger Dryas boundary (YDB) dates. For the Carolina Bays, 3 of 5 sediment analyses revealed detectable Ir values, though ages of the Bays determined by optically stimulated luminescence (OSL) are inconsistent. The approximate extent of the North American ice sheets at 12.9 ka is consistent with the research team's observations that all sites were ice-free at the time of the YD event.

originate in the outer reaches of the solar system. Although they sound less dangerous than asteroids, comets can be bad news, too. In 1908, for example, something exploded 8 km over Tunguska, Siberia, blowing down and flash-burning 2,150 km² (830 mi²) worth of timber without leaving an obvious crater— exactly what would be expected of a cometary impact. As far as we can tell, the Tunguska event was caused by a comet fragment less than

cleared, feedback mechanisms involving reflected solar radiation from newly formed snow and glaciers would maintain frigid temperatures for centuries.

Hit me with your best shot

You might think the idea of a giant space object hitting the Earth is outlandish, but it's not as if it hasn't happened before. In fact, mounting evidence suggests that it's happened hundreds of times in the geological past. The best-known example is the Cretaceous-Tertiary (KT) event, which killed off the non-avian dinosaurs and paved the way for a mammalian florescence that continues to this day. The general scientific consensus is that the KT event occurred when a celestial body 10 km (6 mi) across smashed into Mexico's Yucatán peninsula 65 MYA, putting an end to the Cretaceous period with thunderous finality. Evidence also points to a similar but much larger impact 251 MYA, at the end of the Permian. Both events occurred abruptly, both are marked in the geologic record by enrichment of certain elements and the formation of items typically associated with extraterrestrial (ET) impactors, and both caused mass extinctions that killed off a sizable percentage of life on Earth.

ET impactors come in two basic flavors, asteroids and comets. Both the Cretaceous and Permian objects are believed to have been asteroids, giant space rocks that are stony or metallic in composition. Comets, on the other hand, are more like vast dirty snowballs, loosely compacted masses of ice and dust that

50 m across. The object responsible for the YD and Dr. Haynes's black mats is believed to have been something similar, but much larger: a full-fledged comet that makes the Tunguska impactor look tiny by comparison. No crater has ever been linked to the event; nor, given the nature of the beast, is one ever expected to be.

Building the case for the Clovis event

Dr. West is a geophysicist who spent most of his career consulting for petroleum exploration and mining companies on three continents, so he's well versed in the Earth's history. After retiring several years ago, he landed a deal to write a book about a subject of great interest to him: the possibility of ET impacts in the recent geologic past. He was familiar with a theory proposed by Drs. Richard Firestone and William Topping in these very pages (MT 16-2, "Ter-



Typical nanodiamonds. Scale is in nanometers (a millionth of a millimeter).

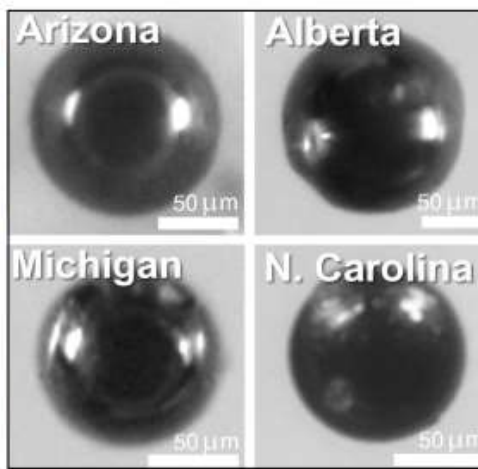
restrial Evidence of a Nuclear Catastrophe in Paleoindian Times"), which argued that a nearby supernova event had enriched Clovis-age sediments with radiocarbon, skewing Paleo dates by about 20,000 years. While the Firestone/Topping theory is now considered unlikely, it was based in part upon Topping's recovery of tiny magnetic microspherules in immediate post-Clovis sediments at the Gainey, Michigan, Paleoamerican site. These microspherules are part of the normal

cosmic rain, but at Gainey they are present at abnormally high levels. West wondered if he had found the same result at other Clovis sites.

"As it turns out, there were a lot of the early sites in my backyard," says West, who lives in Arizona. He obtained permission from Vance Haynes to collect samples of the Clovis sediments at Murray Springs, Arizona, and sure enough, they were loaded with microspherules. "That's when I got interested and really expanded the book. Rick Firestone

agreed to come in as a coauthor, and I was in a position where I could fund the research." Eventually they built a team consisting of chemists, physicists, archaeologists, geologists, and various other specialists to help them evaluate the anomaly.

Research at Blackwater Draw, New Mexico (the Clovis type site), revealed that the microspherules were present in the Clovis sediments there as well. Since then, West and his team have found microspherules and a suite of other markers in the YD horizons of seven other Clovis and equivalent-age sites, including Chobot, Morley Drumlin, and Wally's Beach (all in Alberta, Canada); Topper in South Carolina; Lommel in Belgium; Daisy Cave in California; and Lake Hind in Manitoba. (West notes that he first learned of the archaeological discoveries of Anton and Maria Chobot of Buck Lake, Alberta, in *MT 16-1*, "Finding Early Peoples in Alberta.") They've also tested sediments from a number of Carolina bays, elliptical depressions long suspected to be

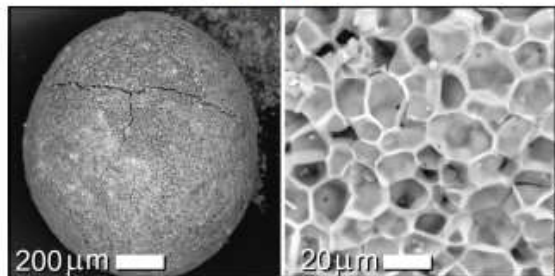


associated with an ET impact event. Not all the impact markers have been identified at all the sites, but all sites present multiple markers at the YD boundary.

In addition to unusually high concentrations of microspherules (sometimes exceeding 2,000 times the normal background level), they've identified enriched levels of iridium and nickel at some sites—

◀ Magnetic microspherules observed in YD sediments at Murray Springs in Arizona, Chobot in Alberta, Gainey in Michigan, and Howard Bay in North Carolina. Scale is in microns.

▼ Exterior (left) and latticework interior of a typical carbon spherule, in this case from South Carolina. Scale is in microns.



BOTH: ALLEN WEST

typical markers of ET impacts. Also common are spongy carbon spherules, glass-like carbon, soot, and polycyclic aromatic hydrocarbons, all evidence of high-temperature fires; Haynes's black mats; and, at four sites, carbon fullerenes containing demonstrably extraterrestrial helium. At 12 Clovis-age sites in 5 countries on 2 continents, they also found microscopic nanodiamonds, which

WHAT'S A COMET?

Comets, meteors, asteroids, meteorites, supernovas—non-scientists among us have a hard time sorting out heavenly bodies. Astrophysicist Carl Sagan, in the companion book to his TV series *Cosmos*, tells how he once hit a communication snag when trying to explain to someone, What's a comet?

He was a graduate student in 1957, on duty one night at the Yerkes Observatory of the University of Chicago when the phone rang. When Sagan answered, the caller replied, "Lemme talk to a shtrominer."

The fellow was obviously quite soused. Sagan politely asked if he could help.

"Well," said the caller, "see, we're havin' this garden party out here in Wilmette, and there's somethin' in the sky. The

funny part is, though, if you look straight at it, it goes away. But if you don't look at it, there it is."

Sagan thought it useless to try to explain that since the most sensitive part of the retina lies outside the center of your field of view, faint objects are best viewed by averting your vision slightly. He knew that a newly discovered comet called Arend-Roland was barely visible in the night sky at that time. So he told the caller he was probably looking at a comet.

After a long pause the caller asked, "Wash' a comet?"

Sagan replied, "A comet is a snowball one mile across."

After a longer pause the caller said, "Lemme talk to a real shtrominer."

—Ed.

have exactly one known origin: ET impacts. That was the clincher. "At one point we looked at the possibility of major volcanism, but it just doesn't fit all the data," West says. "No volcanic eruption produces nanodiamonds." In his opinion, an extraterrestrial impact remains the best explanation for the totality of their findings.

Al Goodyear, who also contributed to the *PNAS* paper, agrees. He became involved in the project in the spring of 2005, when West contacted him about visiting Topper in order to sample the Clovis-age sediments there for ET markers. "I wasn't exactly sure what he wanted at first," Dr. Goodyear recalls, "but

Allen West (left) and Al Goodyear (center) consulting with backhoe operator John Thompson of Clariant Corporation at the Big Pine Tree site (38AL143), one mile from the Topper site in South Carolina.



he explained that his team was going around America sampling sediments from Clovis sites with good context. He also explained that if their theory was right, they'd be able to tell me and other Paleoamerican researchers where the 12,900-year-old level was in a site. For sites without carbon for dating, this seemed like a good benefit."

Although Goodyear was a little skeptical at first, he was soon convinced. "Topper produced the iridium," he reports, "plus now they're finding

C. Vance Haynes (front) and Allen West examining the black mat at the Murray Springs site in Arizona.




trillions of nanodiamonds there." In addition, he soon came to realize that his own research indicated that something odd was happening immediately post-Clovis. In fall 2005, he reevaluated the South Carolina Paleoindian Point Database in preparation for that year's Clovis in the Southeast Conference in Columbia, South Carolina, reclassifying Redstone fluted points that had previously been identified as Clovis (*Current Research in the Pleistocene*, vol. 23, "Recognizing the Redstone Fluted Point in the South Carolina Paleoindian Point Database"). "When I finished," Goodyear explains, "I found that I had from

4 to 5 times more Clovis points than Redstones, the fluted-point type thought to come after Clovis. I examined the North Carolina and Virginia data and found essentially the same thing." Goodyear hypothesized that his results might indicate a widespread population decline, possibly as a result of the catastrophic Clovis impact postulated by Allen West's team.

Currently, he and West are examining the data for evidence of similar patterns of population decline throughout the East.

Reasonable doubt

Although the jury's still out on the matter, the clues unearthed by West and his team point toward a catastrophic impact at the end of the Clovis era. But what happened, exactly? The details remain sketchy, but the culprit was apparently a heavily fragmented multi-kilometer-sized icy body, similar to but much larger than the Tunguska impactor, which exploded over the continental ice sheet covering north-eastern Canada. A cushion of ice 1 to 2 miles thick, after all, might explain why an impact crater associated with the event hasn't been found. While West admits that the absence of a crater blunts the theory, he argues that the other evidence more than makes up for it. "We have more than 14 lines of evidence that there was an impact," he points out. "We tell the people who don't believe this to point to a single place in the geological record where all these markers occur that *isn't* considered an impact."

We'll discuss the nature of the Clovis event in more detail in Part II of this series, "What the Data Tell Us." 

—Floyd Largent

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Can more accurate dating be done? Yes!

12,800 years ago, it was exactly between the first stage of Huaxia civilization starting from the Winter Solstice of March 23, 12,897 BC and the second stage starting from the Beginning

of Winter of January 10, 9,177 BC. But when exactly did the event occur? Is it related to the last Hexagram of the lower section of “Yi Jing”, Li (离) Hexagram (343°7'30" — 348°45')?

The author searched for it and finally made an amazing discovery! At the “Pure Brightness” (清明, one of the 24 Solar Terms) of June 25, 10,773 BC, the solar annual apparent motion was at 15° ecliptic longitude when Jupiter was in Li Hexagram (343°7'30" — 348°45'), and the five stars converged in the ecliptic sky region of 75° ecliptic longitude. (Figure 54, 55, 56)

Since this day was a "Pure Brightness" day, the author has learnt the reason that "Pure Brightness" has become the most important sacrificial festival and also the tomb-sweeping day in Huaxia civilization. It is because the earth was devastated on this day. The day with the characteristics (Jupiter was in Li Hexagram and at “Pure Brightness”) can only be found the day June 25, 10,773 BC !

Figure 54

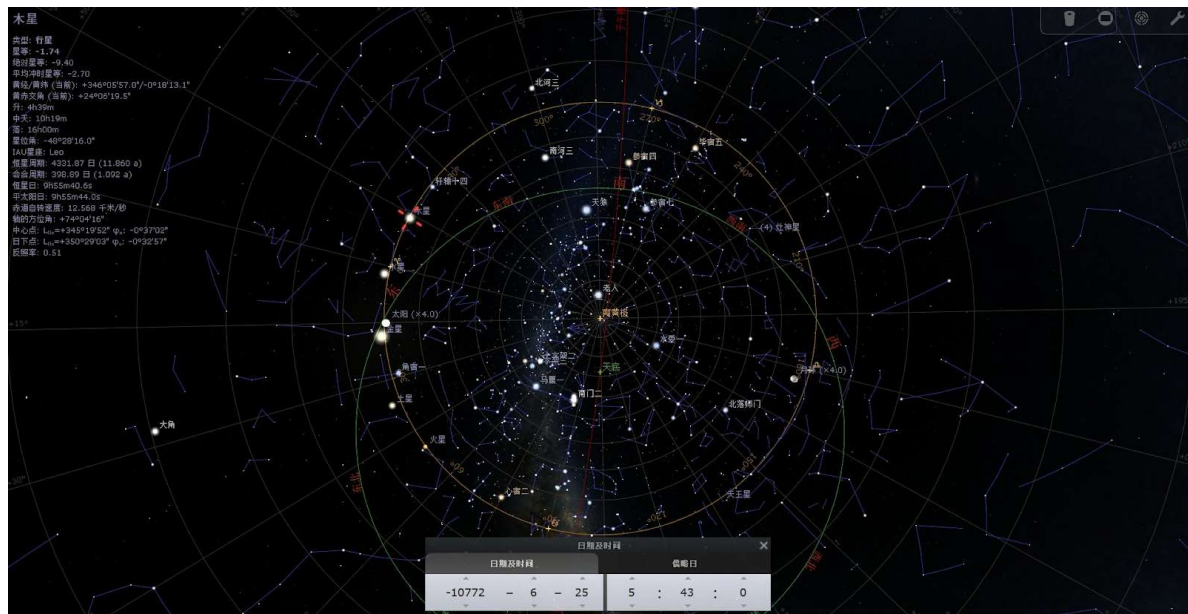


Figure 55

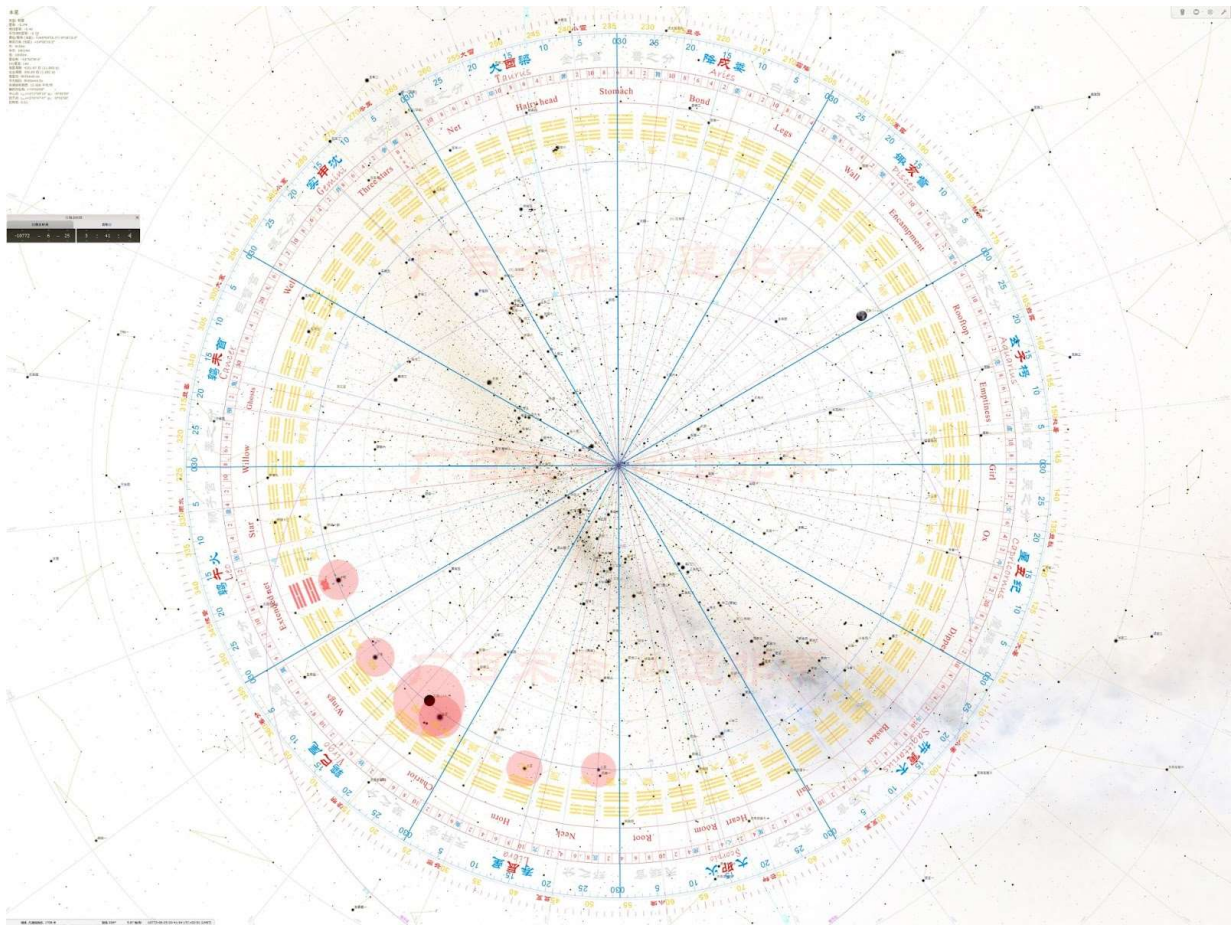
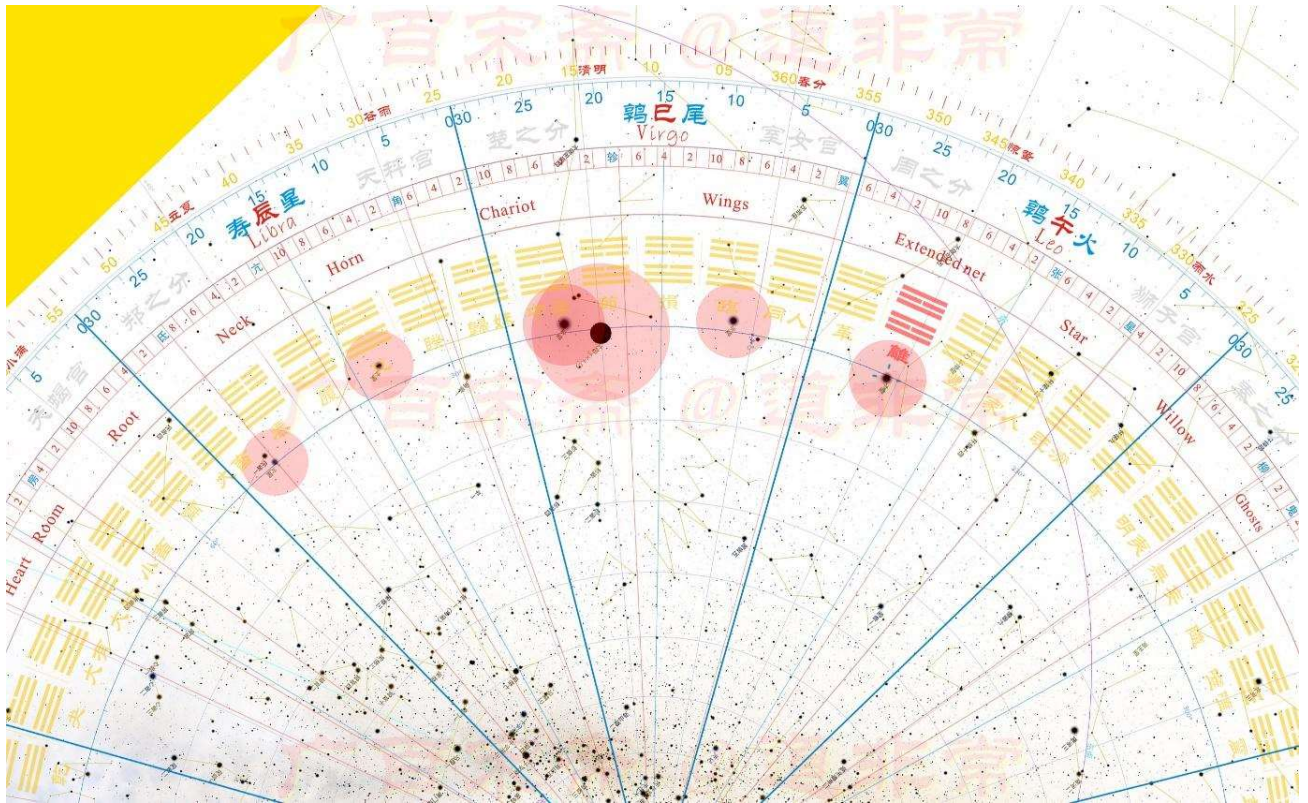


Figure 56



There was one of the oldest festivals in ancient Egypt, Sham Ennessim (闻风节), still an important festival in Egypt and the Middle East, but no one knows the origin of it. The ancient custom of Sham Ennessim includes painting eggs, colliding eggs, and eating lettuce. (Figure 57)

Chinese and international academia probably have never thought that the ancient Chinese "Pure Brightness Festival" (清明节) and "Cold Food Festival" (寒食节) happened to have the same custom such as painting eggs, colliding eggs and eating lettuce. (Figure 58, 59)

It can be inferred that Sham Ennessim was originally the Pure Brightness Festival and Cold Food Festival!

Figure 57 (taken from the internet)



Figure 58

火起於子推琴操所云子綏即介推也又云五月五日與今有異皆因流俗所傳據左傳及史記並無介推被焚之事周禮司烜氏仲春以木鐸修火禁於國中注云為季春將出火也今寒食準節氣是仲春之末清明是三月之初然則禁火蓋周之舊制也

寒食挑菜

按如今人春日食生菜

關雎鏤雞子關雎子

欽定四庫全書 荆楚歲時記 十三

按玉燭寶典曰此節城市尤多關雎之戲左傳有季邱關雎其來遠矣古之豪家食稱畫卵今代猶染藍茜雜色仍加雕鏤遞相餉遺或置盤俎管子曰雕卵然食之所以發積藏散萬物張衡南都賦曰春卵夏筍秋韭冬菁便是補益滋味其關卵則莫知所出董仲舒書云心如宿卵為體內藏以據其剛髣髴關理也

三月三日四民並出江渚池沼間臨清流為流觴曲水

Figure 59

沂蒙地区清明时节染蛋民俗考

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[摘 要]染蛋是中国传统节日清明节中的一项主要民俗活动,至少可以追溯到南北朝时期。由清明染蛋衍生出用彩蛋祭祖、互赠彩蛋和碰鸡蛋等民俗活动,在今天的沂蒙地区仍十分流行。染蛋民俗中蕴含着浓厚的文化内涵,主要体现在百姓婚育求子的生命观和祛灾祈吉的民族心理两个方面。清明时节染蛋民俗作为中华传统民俗中的一部分,具有娱乐群众和维系社会关系的功能。

[关键词]沂蒙地区;清明;染蛋;民俗文化

[中图分类号]K892.2

[文献标识码]A

[文章编号]1009-3621(2021)02-0092-04

民俗,即民间风俗,指一个国家或民族中广大民众所创造、享用和传承的生活文化^{[1]2}。清明节作为中华民族的传统节日,是唐宋以来逐渐兼容了上巳和寒食两个民俗节日的活动内容,三节合一形成的一个独立的民俗节日。清明节常常伴随着丰富多样的民俗活动,沂蒙地区不仅保存有清明节常见的扫墓、踏青、插柳等民俗活动,还保留了独具特色的染蛋民俗。其内容主要包括:用“洋红”“洋绿”“洋黄”这三种颜料将鸡蛋染成彩色、用彩蛋祭祖、互赠彩蛋和碰鸡蛋等。清明染蛋是沂蒙地区的一项重要民俗活动,但《山东省志·民俗志》仅提到“山东多地还有儿童斗鸡蛋(也叫碰鸡蛋)的习俗”^{[2]195},并未详细记载清明时节染蛋民俗,也没有学者对其展开系

用彩画装饰鸡蛋。南北朝时期的“雕卵”活动有了进一步发展,在雕卵的基础上衍生出了“斗鸡”和“斗鸡子”活动。南朝梁人宗懔在《荆楚岁时记》记载在寒食日:“斗鸡,镂鸡子,斗鸡子。”^{[6]37}可见,至少在南北朝时期,清明节前已经出现与染鸡蛋相关的活动。

清明时节染蛋民俗在隋朝时期极为盛行。隋人杜公瞻在为《荆楚岁时记》“斗鸡子”活动作注时提到:“古之豪家,食称画卵。今代犹染蓝茜杂色,仍加雕镂,递相餽遗,或置盘俎。”^{[6]37}可知隋朝时期在寒食当天,人们用茜草将鸡蛋染成红色,再对其作雕饰,染画后的鸡蛋还可以作为礼物互相赠送,有的还放在菜盘里供食用,有的放在祭器里祭祀。

到了唐朝,唐玄宗以休养生息为由,下令禁止

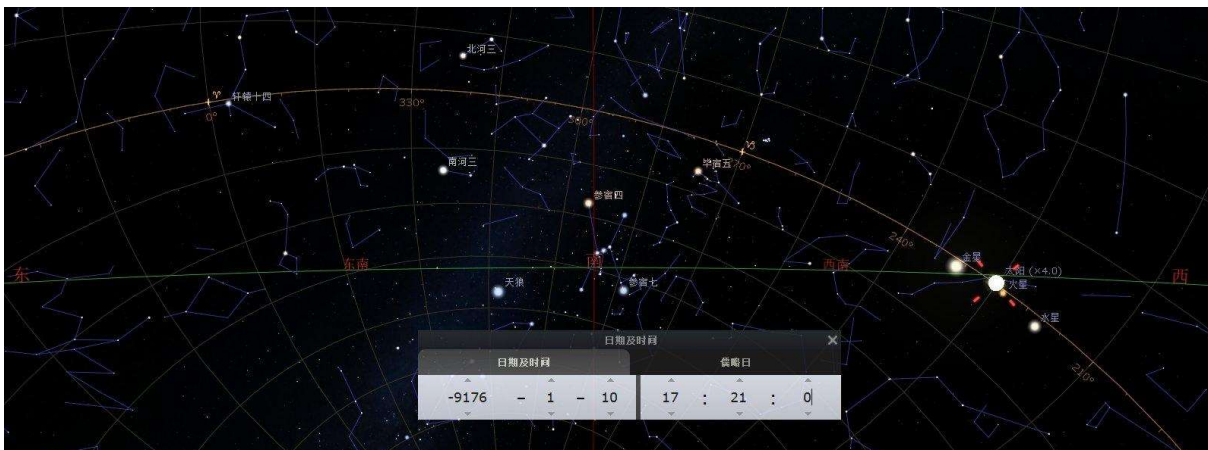
A brief conclusion: Huaxia civilization officially originated on the shore of Lake Van on today's Turkish Plateau on March 23, 12,897 BC. It developed for more than 2,000 years. On June 25, 10,773 BC, the day of "Pure Brightness", an extraterrestrial object or more hit the earth. At sunrise that day, Three Stars Mansion (Orion) was on the southern sky meridian and Jupiter was in Li Hexagram. This marked the end of the first stage of Huaxia civilization. At sunset of January 10, 9,177 BC, the Beginning of Winter, Three Stars Mansion was also on the southern sky meridian, and some major astronomical phenomena appeared in the northern sky when Jupiter was in Xian Hexagram. Moreover, the Summer Solstice point of this year was in the region of the four stars of Room Mansion, so the "Ming Tang" system was

established (Figure 60, 61). This marked the beginning of the second stage of Huaxia civilization.

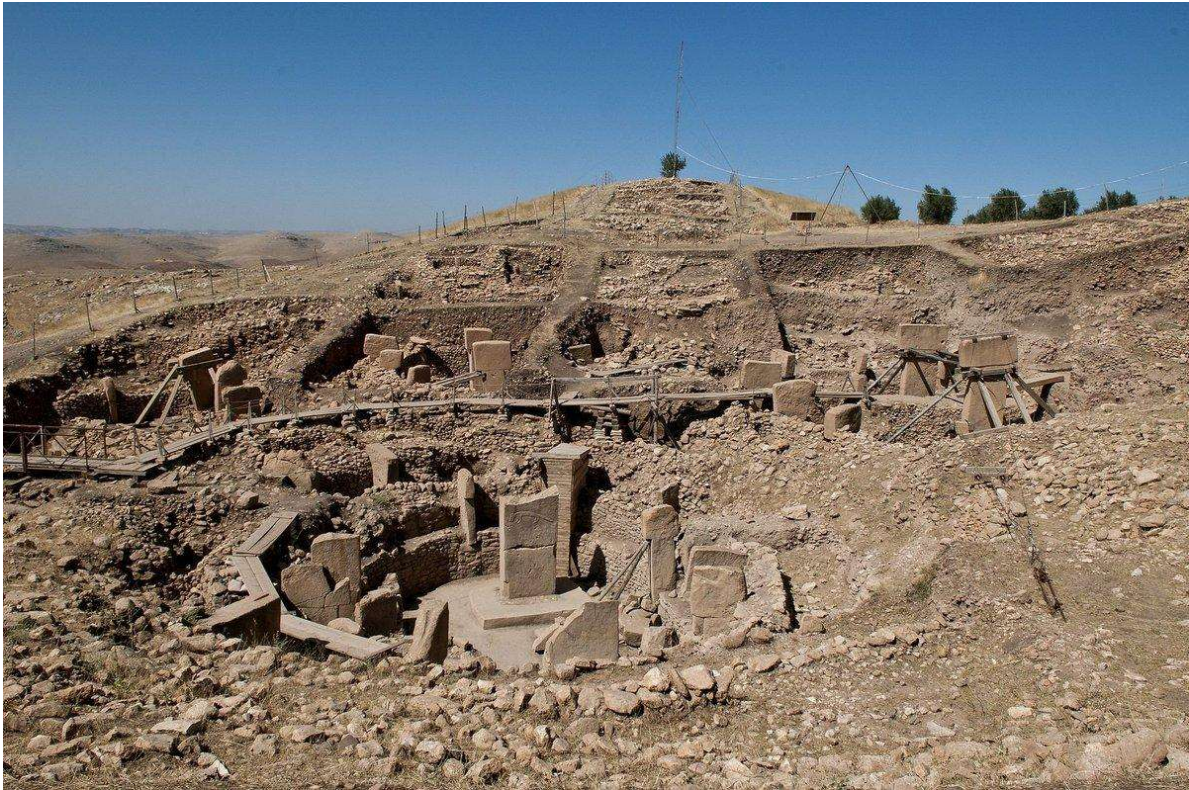
Figure 60



Figure 61



Since the earliest stratigraphic age of Göbekli Tepe is dated before 9,000 BC, the author speculates that starting from the Beginning of Winter of January 10, 9177 BC, whenever some rare or major astronomical phenomena occurred, the ancestors gathered there and set up monuments to memorize and worship. Regrettably, I have never been to the site to carefully examine each pillar, nor has the author fully studied the relevant materials. The author's personal speculation is only for academic reference.



The last Hexagram in the Lower section of “Yi Jing” is “Wei Ji” Hexagram (未济) . Accordingly, it must be because when Jupiter was in "Wei Ji" Hexagram at a certain time, some rare or major astronomical phenomena appeared. Searched by the software, on November 24, 7,768 BC, when Jupiter was in Wei Ji Hexagram ($146^{\circ}15'-151^{\circ}52'30''$), the sun, the moon, and the five stars were in a line, and annular solar eclipse appeared. (Figure 62, 63, 64)

Figure 62

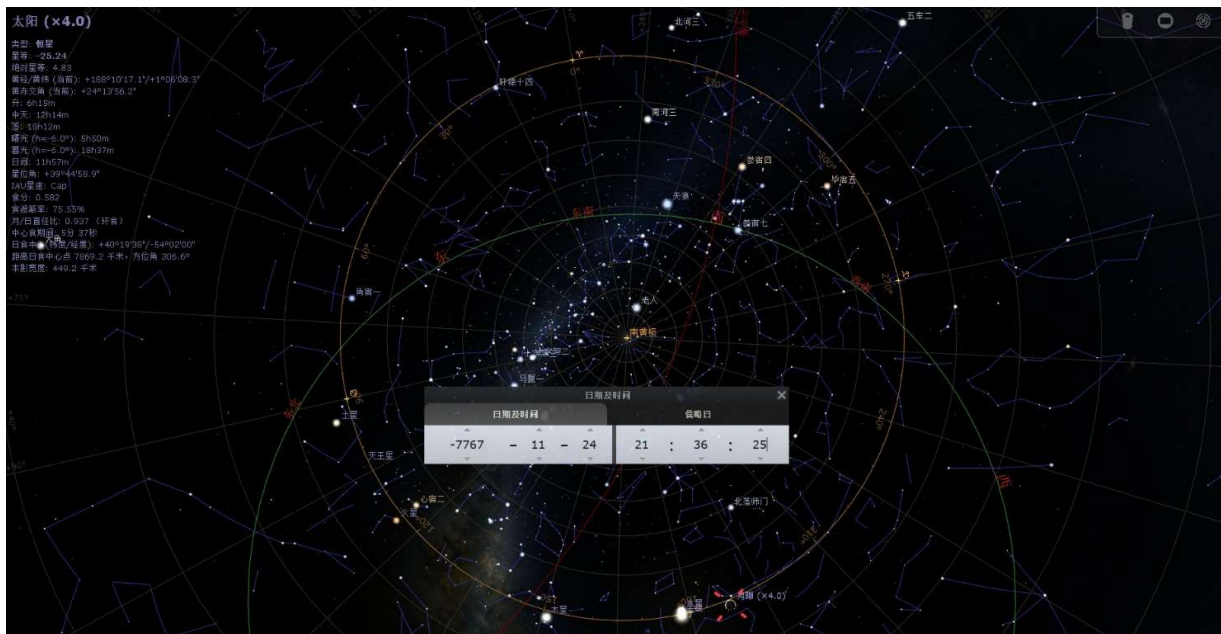


Figure 63

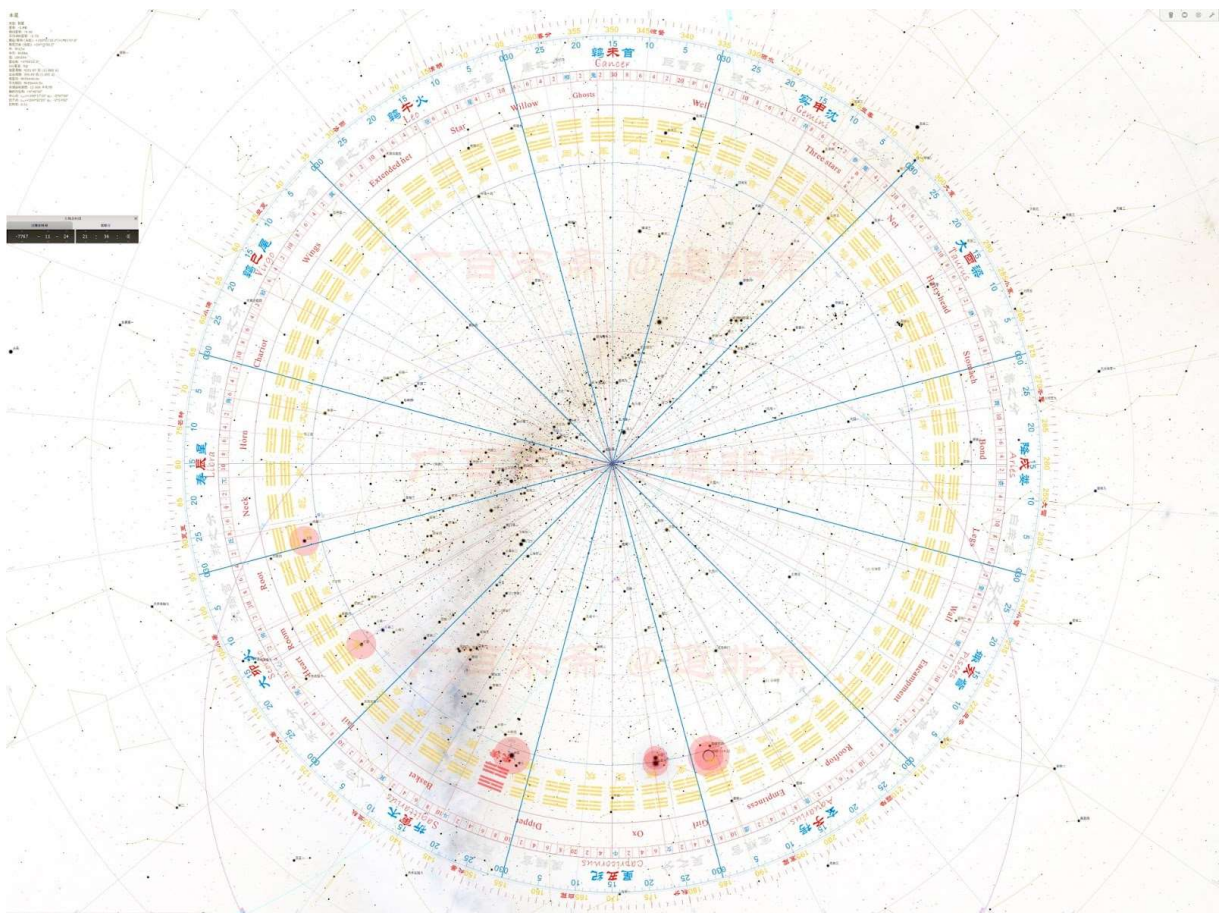
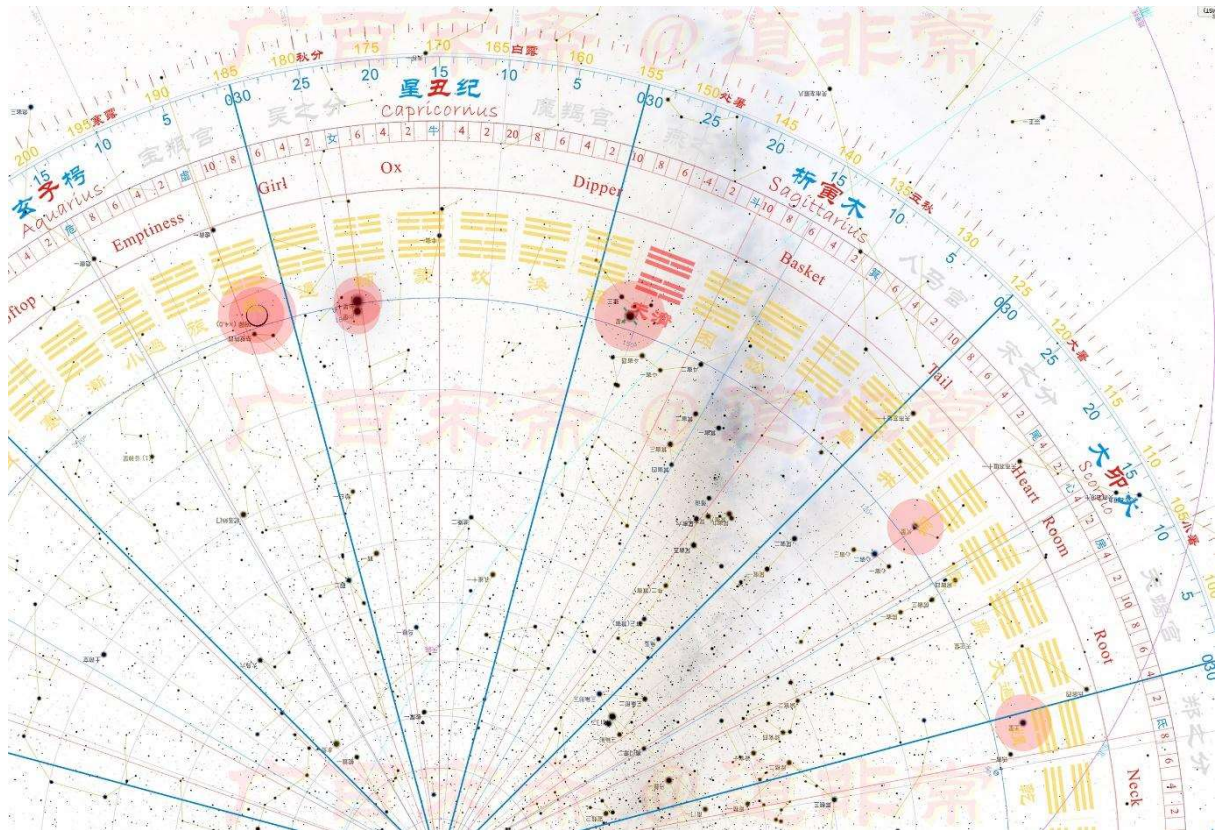


Figure 64



The latest stratigraphic age of Göbekli Tepe is dated around 8,000 BC, so the author speculates that after the magnificent astronomical phenomenon occurred on November 24, 7,768 BC, the ancestors also set up monuments to memorize and worship. By then, the 64 Hexagrams in “Yi Jing” have been completed, which means the second stage of Huaxia civilization ended and then started a new era. The arrangement of the Hexagrams in the upper section and the lower section of “Yi Jing” perfectly matches the dating of the starting time and the burial time of Göbekli Tepe.