

THE FIRST KNOWN CHINESE CALENDAR:
A RECONSTRUCTION BY THE SYNCHRONIC EVIDENTIAL APPROACH

by

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ABSTRACT

The first known Chinese calendar refers to the calendar embodied in the Yin oracle-bone inscriptions (OBI). Since 1925, the two-layered evidential method has been the standard approach to interpreting them. This method combines primary inscriptional evidence with secondary materials, resulting in inconclusiveness and inaccuracy in previous studies. By adopting the synchronic evidential approach, the present dissertation aims at accurately reconstructing the system by which the Yin divided time into fixed periods.

Chapter 1 deals with background issues: it justifies the assertion that the Yin calendar was the first known Chinese calendar, presents inscriptional evidence indicating the existence of a prescriptive Yin calendar, proposes absolute dates for this calendar and justifies the adoption of the synchronic evidential approach.

Chapter 2 focuses on time divisions in the Yin day. The two criteria for determining a time division in the OBI are defined as: 1) a word's usage as a time division in early Chinese texts, and 2) suitability of this usage in inscriptional contexts. The order of the twelve time divisions shows that *su* 夙 is the first division of the Yin day. *Su* is thus the start of the Yin day.

Chapter 3 analyzes the lunation in the Yin calendar. Inscriptional evidence confirms that the Yin month is either 30 or 29 days long. There is no proof of a long Yin month of 31 days or longer, or for a short one of 25 days. Long and short Yin months occur alternately. The Yin employed both year-end intercalation and in-year intercalation. By late periods, in-year intercalation replaced year-end intercalation.

Chapter 4 addresses issues concerning the Yin year. A normal Yin year consists of 12 months, a leap year 13 months. The designation for the Yin year is *si* 祀. Reconstructions show the commencement of the Yin year is the second month before the month containing the winter solstice.

Chapter 5 takes issue with a problematic attitude in the field. It is inappropriate to deny conclusions drawn from inscriptions. Rather, a researcher should give priority to inscriptional evidence over all other secondary materials. It is time to replace the two-layered evidential method with the synchronic evidential approach.

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CHAPTER ONE

INTRODUCTION

1.1 The Yin Calendar as the First Known Chinese Calendar

The word “calendar” has several meanings in modern English. Two of those meanings are particularly relevant to the subject of this study. The first one is “a chart showing the days, weeks, and months of a particular year.” The second one is “a system by which time is divided into fixed periods, and of marking the beginning and end of a year” (Hornby 2002: 192). Since this dissertation aims to reconstruct the first known Chinese calendar, it certainly will contain some charts that show days and months of some years of this calendar. However, its main purpose is to expound the system of this calendar that divided time into fixed periods.

The traditional view is that the Chinese invented their calendar independently. According to extant early Chinese texts, Rong Cheng 容成, a subject of the legendary ruler Huang Di 黄帝, was the inventor of the first Chinese calendar.¹ Huang Di’s reign has been dated to a period in the 27th century BC.² It is also recorded in early Chinese texts that one of

¹ For instance, it is mentioned in the chapter “Wu gong 勿躬” of the *Lushi chunqiu* 吕氏春秋 that Rong Cheng made a calendar (容成作历). It is recorded in the chapter “Li shu 历书” of the *Shiji* 史记 that Huang Di possibly observed and studied stars and established the calendar (盖黄帝考定星历). The present writer’s translation of this sentence is based upon the usage of words *kao* 考 and *ding* 定 in classical Chinese. According to the *Ciyuan* 辞源, the word *kao* 考 may mean *kaocha* 考察, ‘to observe and study,’ and the word *ding* 定 can mean *zhiding* 制定, ‘to make.’ This writer’s understanding of the expression *kao ding xing li* 考定星历 is that it means “to observe [the patterns of the motion of] stars and to make a calendar.” That Huang Di and Rong Cheng both made calendars is not a contradiction because achievements by subjects could be attributed to their ruler in China. In any event, it is the traditional view that the Chinese calendar was invented during the reign of the legendary Huang Di.

² According to the *Shiji*, Huang Di was the first Chinese ruler. Sima Qian 司马迁 did not give dates of the reign of Huang Di because there were no reliable sources about Chinese chronology before the Gonghe 共和 Period. After Sima Qian, many scholars have made efforts to reconstruct the Chinese chronology before that period. Unfortunately, none of them has produced an acceptable chronology for Huang Di. To date, there are no archaeological findings that can be regarded with much certainty as those of Huang Di. At present, it is not possible to determine the absolute dates of his reign, even if, indeed, he was an early ruler in China. All the alleged dates of the reign of Huang Di are therefore unreliable. One such example is the date 2697 BC given by J.A.G. Roberts (2003: xxi).

Chinese rulers' most important functions was to compile and issue calendars yearly.³ If these textual records concerning the invention of the Chinese calendar are accurate, then the Chinese calendar would have a history of about 4,700 years, and the one created by Rong Cheng should definitely be regarded as the first Chinese calendar.

However, it must be acknowledged that the records mentioned above were compiled thousands years after the legendary reign of Huang Di. In the earliest extant contemporary writing in China, i.e., the oracle-bone inscriptions (abbreviated as OBI in this study) of the Yin 殷 dynasty (ca 1300 BC – ca 1046 BC), there are no references to Huang Di. In addition, the existence of Huang Di is not supported by archaeological findings; there is not a single archaeological site that is generally accepted as being related to Huang Di. These three facts certainly cast doubt upon the existence of both Huang Di and Rong Cheng. Accordingly, it is extremely difficult to accept the above records at face value. Needless to say, there is no reliable evidence whatsoever that supports the historicity of the invention of a calendar by Rong Cheng or by Huang Di. Therefore, the present writer does not consider the mythical calendar of Huang Di to be the first known Chinese calendar.

It is recorded in the chapter “Wudi benji 五帝本纪” of the *Shiji* 史记 that the rulers who came after Huang Di in ancient China were Zhuan Xu 颛顼, Di Ku 帝喾, Di Yao 帝尧 and Di Shun 帝舜. At present, there are no contemporary materials, written or archaeological, that support the existence of these four legendary rulers of ancient China. Because of the uncertainty surrounding their existence in history, none of those alleged calendars of those

³ The pivotal role of calendars conceptualized by early Chinese can be clearly demonstrated by various early Chinese texts. For example, it is recorded in the chapter “Li shu” of the *Shiji* that, in early China, if the surname of a dynasty changed, the beginning of the calendar year must be changed accordingly. The followings are examples given by Sima Qian: the Xia calendar year began with the second month after the one that contains the winter solstice; after the Xia, the Shang changed the commencement of the year to the month immediately after the month of the winter solstice. After the overthrow of the Shang, the Zhou changed the start of the year to the month of the winter solstice (王者易姓受命...改正朔...夏正以正月,殷正以十二月,周正以十一月). This kind of record shows the importance attached to the compilation of calendars in early China. Further, there is the following passage in the chapter “Yao dian 尧典” of the *Shangshu* 尚书: “Thereupon Yao commanded Xi and He [the present writer has changed James Legge’s romanization of Chinese characters to *pinyin* 拼音], in reverent accordance with their observation of the wide heavens, to calculate and delineate the movements and appearances of the sun, the moon, the stars, and the zodiacal spaces; and so to deliver respectfully the seasons to the people” (Legge 1872: 18). If Xi and He had to deliver seasons rather than years by observing the sun, the moon, the stars, and the zodiacal spaces, it is reasonable to assume it was done year by year.

rulers could truly be regarded as the first known Chinese calendar.

After Di Shun, according to early Chinese texts, the Xia 夏 Dynasty (ca 2070 BC- ca 1600 BC) was founded. Also, in texts such as the *Shijing* 诗经, *Zuozhuan* 左传, *Shiji* and *Hanshu* 汉书, there are references to a Xia calendar. However, in the chapter “Luli zhi 律历志” of the *Songshu* 宋书, Zu Chongzhi 祖冲之 (429-500), an astronomer of the Song 宋 Dynasty (453-479 A.D.), pointed out that this so-called Xia calendar was actually created between the end of the Zhou Dynasty (ca 1046 BC -- 256 BC) and the beginning of the Han Dynasty (206BC – 220 AD). Zu Chongzhi’s view is still accepted by Chang Yuzhi 常玉芝 (1998: 3) and Chen Meidong 陈美东 (2003: 91). It thus appears that this so-called Xia calendar might in fact not be the calendar of the Xia Dynasty. In addition, there are no contemporary written records of the Xia Dynasty available to modern scholars. Sarah Allan (1984) has expressed doubts with regard to the existence of this dynasty. Because of these problems concerning the existence of the Xia Dynasty and the credibility of the so-called Xia calendar, there is no solid factual basis to consider the Xia calendar mentioned in early Chinese texts as the first known Chinese calendar.

It is recorded in many early Chinese texts that the Xia Dynasty was followed by the Shang 商 Dynasty (ca 1600 – ca 1300 BC) and the Yin 殷 Dynasty (ca 1300 BC – ca 1046 BC). The existence of the Yin Dynasty has been proven by the discovery of the OBI at Anyang 安阳 in 1899. Hu Houxuan 胡厚宣 (1984) estimates that 154,604 pieces of Yin oracle bones have been unearthed.⁴ The followings are the two most important OBI collections: *Jiaguwen heji* 甲骨文合集 (abbreviated as *Heji* in this study), which published 41,956 pieces of the Yin oracle bones, and *Xiaotun nandi jiagu* 小屯南地甲骨 (abbreviated as *Tunnan* below), which published 4,162 pieces of the Yin oracle bones.

The OBI found at Anyang are the earliest contemporary written records in China. Among them are a large number of inscriptions that are clearly related to a calendar. These inscriptions have attracted the attention of many scholars since the earliest stage of the study of the OBI, and progress in the study of the Yin calendar has been continually made

⁴ Dong Zuobin 董作宾 (1955: 184-185) and Chen Mengjia 陈梦家 (1956: 47-48) estimate that about 100,000 pieces of the Yin OBI have been found. Since Hu Houxuan (1984) has listed a specific number of oracle bones for each collection, his conclusion seems more credible than that of Dong Zuobin and of Chen Mengjia.

throughout the 20th century. To date, more than 400 articles and books relating to various aspects of the calendar seen in the Yin OBI have been published.⁵ Generally speaking, contemporary inscriptional evidence points to the existence of a Yin calendar in the Yin OBI.

The foregoing analysis leads to the following conclusion: up to now, the earliest contemporary written records are the Yin OBI, and the calendar attested to in the Yin OBI is the earliest Chinese calendar that can be reconstructed with contemporary records. Therefore, the Yin calendar may be considered to be the first known Chinese calendar.

1.2 The Existence of a Prescriptive Yin Calendar

The previous section asserts that the calendar of the Yin Dynasty is the first known Chinese calendar. In order to reconstruct this calendar, the lost Yin calendar has to be recovered. Of course, this task rests on the assumption that there indeed existed a prescriptive calendar in the Yin Dynasty that guided the life of the Yin people throughout the whole year. If the existence of such a Yin calendar were in serious doubt, it would render this study meaningless. Therefore, it is absolutely vital that this issue be addressed.

It appears that the ability of the Yin people to compile a prescriptive calendar has been accepted by most specialists in the field, including eminent scholars such as Dong Zuobin 董作宾 (1895-1963), Chen Mengjia 陈梦家 (1911-1966), and Chang Yuzhi 常玉芝. However, there are a few scholars who doubt the existence of a prescriptive Yin calendar.

For example, it is Shinjō Shinzō's 新城新藏 opinion (1936: 86) that the Chinese started compiling calendar in 600 BC. In other words, according to Shinjō Shinzō, before 600 BC, the Chinese people, including the Yin, were unable to compile a calendar. His view does not enjoy wide acceptance among scholars today, because his work, which was published at the very early stage of the study of the Yin OBI, was not based on comprehensive inscriptional evidence. The progress in the study of OBI that has been made subsequent to Shinjō Shinzō's work clearly demonstrates that his view contradicts the inscriptional evidence that will be introduced in the present study.

⁵ Song Zhenhao (1999: 439-463), the most recent bibliography of the study of the calendar of the Yin Dynasty, lists 398 relevant publications.

Yabuuchi Kiyoshi 薮内清(1956: 72-74) holds the view that the commencement of each month of the Yin calendar was based on the actual observation of the new crescent moon. If this view is correct, it follows that the Yin people would have known the end of a month and the start of the next month only when they could actually observe the new crescent moon. In other words, the Yin did not have a calendar that had prescribed dates for each month. Without knowing dates of future months, it would have been absolutely impossible for the Yin to compile a prescriptive calendar for a whole year. This is a significant implication of Yabuuchi Kiyoshi's view.

David N. Keightley's opinion (2000: 6, note 18) about the Yin calendar is similar to that of Yabuuchi Kiyoshi. He states that "I believe that the Shang did not use a prescriptive calendrical month of fixed length but employed an observational calendar, simply noting the number of each moon as it waxed and waned...." If it is a fact that the Yin simply noted the number of each month as it waxed and waned, it is reasonable for him to assume there was no prescriptive calendar in the Yin Dynasty.

In the field of Yin calendar studies, scholars who hold the view that the Yin were unable to compile a prescriptive calendar spanning a whole year have been less influential than those who propose that the Yin were able to accomplish this feat. One reason for this is that scholars who hold the former view have yet to publish any detailed and systematic studies on the Yin calendar, whereas scholars who support the existence of a Yin calendar have already published two lengthy monographs. However, this does not constitute sufficient grounds for dismissing the view that the Yin could not compile a prescriptive calendar. The best and most practical way to judge the validity of these two different theories is to consult the inscriptional evidence.

In the Yin OBI, there are a number of pieces of evidence that indicate, in one way or another, the existence of a prescriptive Yin calendar. First, David Pankenier has written the following comments to the draft of this dissertation on April 5, 2005:

The fact that the count of moons could never exceed 13 proves beyond a doubt that they already had a concept of a year, otherwise there would be nothing to prevent their using the *tiangan* 天干 to enumerate 10 moons in the civil calendar, or even 60 moons, using the whole series of sexagenary designations. If they had a concept of a

year, almost certainly based on the cycle of seasons, and they made adjustments to the lunar count to synchronize with that tropical year, that means the calendar had a prescribed length.

Also, in his comments to the draft of this dissertation, Edwin G. Pulleyblank points out that the Yin “obviously expected there to be 12 or 13 moons in a year.” Indeed, it is a fact that a year in the Yin OBI generally consisted of 12 or 13 months, as will be demonstrated in Chapter Four. This fact suggests that the length of a Yin civil year was fixed at 12 or 13 months in length. This is the first evidence indicating a prescriptive calendar in the Yin OBI.

Second, the Yin calendar had prescriptive months, as shown by the following six inscriptions on *Heji* 11485:

[01] 癸亥卜，争贞：旬亡(=无)祸。一月。

癸未卜，争贞：旬亡(=无)祸。二月。

癸卯卜：旬亡(=无)祸。二月。

[癸]卯[卜，争]贞：[旬]亡[=无祸]。五月。

癸未卜，争贞：旬亡(=无)祸。三日乙酉夕月有食，昏⁶。八月。



[癸]卯卜：旬[亡=无]祸。

《合集》11485

Crack-making on *guihai* (day 60), Zheng divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the first month.

Crack-making on *guiwei* (day 20), Zheng divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiwei* was in] the second month.

On *guimao* (day 40), [Zheng] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the second month.

⁶ The bone graph  is often transcribed as *wen* 闻, ‘to hear,’ by other specialists. Ken-ichi Takashima (2004: 7) does not accept such an interpretation. He interprets “that the original graph , structurally similar to the ‘ancient form’ (*guwen* 古文) given by the SW (12a) being complete with the phonophorica *hun* 昏, written as *hun* 昏, stands for the word *hun* 昏/昏, ‘dark.’ The Shang time keepers and others were watching this lunar eclipse at midnight on July 12, 1201 B.C., and the moonlit night turned dark momentarily.” Since it is likely that the night turns dark momentarily when a lunar eclipse occurs, Ken-ichi Takashima’s transcription is adopted here.

[Crack-making on *gui*]mao (day 40), [Zheng] divined: “[In the next 10-day week], there will be no [disasters.]” Day *guimao* was in] the fifth month.

Crack-making on *guiwei* (day 20), Zheng divined: “[In the next] 10-day week, there will be no disasters.” At the night of the third day *yiyou* (day 22), the moon was eclipsed and it became dark. [Day *yiyou* was in] the eighth month.

On [*gui*]mao (day 40), divined: “[In the next] 10-day week, there will be [no] disasters.”

Heji 11485

In these six inscriptions, there are seven *ganzhi* dates and four month notations. According to Dong Zuobin (1952: 287-289), there is only one reconstruction that can accommodate all these dates and month notations. Below is his reconstruction.

Moon	First day	Last day
1 st moon	<i>yisi</i> (day 42)	<i>guiyou</i> (day 10)
2 nd moon	<i>jiayu</i> (day 11)	<i>guimao</i> (day 40)
3 rd moon	<i>jiachen</i> (day 41)	<i>renshen</i> (day 9)
4 th moon	<i>guiyou</i> (day 10)	<i>renyin</i> (day 39)
5 th moon	<i>guimao</i> (day 40)	<i>xinwei</i> (day 8)
6 th moon	<i>renshen</i> (day 9)	<i>xinchou</i> (day 38)
7 th moon	<i>renyin</i> (day 39)	<i>gengwu</i> (day 7)
8 th moon	<i>xinwei</i> (day 8)	

The reconstruction above shows that the first, third, fifth and seventh months are 29 days long, and that the second, fourth and sixth months are 30 days long, whose durations are the same as months in later prescriptive Chinese calendars. The prescriptive lengths of these months are inscriptional evidence for the view that the Yin calendar had prescriptive months, indicating that the Yin calendar could be prescribed.

Third, it can be inferred from some inscriptions that the Yin people were able to determine dates of future months in advance. This is another indicator of the existence of a prescriptive Yin calendar.

As cited above, both Yabuuchi Kiyoshi and David N. Keightley believe that the Yin started their month with actual observation of the new crescent moon. According to their

theory, the Yin people must not have been able to determine a date of a future month or year in advance. The validity of their theory, therefore, can be judged by investigating whether or not the Yin actually knew dates of future months in advance. If the Yin people did know dates of future months, this fact would directly contradict Yabuuchi Kiyoshi's and David N. Keightley's view that the Yin did not employ a prescriptive calendar, making their view untenable.

After examining all rubbings in the *Heji*, the present writer has found inscriptions that suggest that the Yin could know dates of future months. Below are two examples:

[02] 辛丑卜，巡：酉梁登辛亥。十二月。

辛丑卜：于一月辛酉酉梁登。十二月卜。 《合集》21221

Crack-making on *xinchou* (day 38⁷), Xun [divined:] "On *xinhai* (day 48), [the king will] perform the *you*-sacrifice and offer *liang*-millet." [Xun divined in] the twelfth month.

On *xinchou* (day 38), [Xun] divined: "On *xinyou* (day 58) of the first month, [the king will] perform the *you*-sacrifice and offer *liang*-millet." In the twelfth month [Xun] divined.

Heji 21221

[03] 乙卯王卜，在庚师贞：余其敦⁸，⁹十月戊申⁹。王占曰：吉。在八月。

《合集》41756

On *yimao* (day 52), the king made cracks, and [he] was in the Geng encampment and divined: "I will attack X [an unknown character]; it should be in the tenth month, on *wushen* (day 45), that I destroy them." The king read the cracks and declared: "Auspicious." [Day *yimao* was] in the eighth month.

Heji 41756

Example 2 is made up of two inscriptions from Period I⁹. In these two inscriptions, there

⁷ The number after a certain *gan* 干 *zhi* 支 date indicates its position in the unending sixty-day *gan* 干 *zhi* 支 cycle.

⁸ Because of the gap of three thousand years between the OBI and the modern Chinese writing system, it is difficult to transcribe some bone graphs into simplified modern Chinese characters, even though there are detailed studies on those bone graphs. Whenever this occurs, this writer has simply copied the graph into his transcription.

⁹ There are two major theories with regard to the periodization of the Yin OBI. Dong Zuobin (1933) divides the Yin OBI into five periods. His theory has been modified later, based on progress in the study of the OBI and archaeological findings. For an English introduction of Dong Zuobin's theory, see David N. Keightley (1985: 92-94). The second theory has been systematically explained in Li Xueqin and Peng Yushang (1996). The major difference between these two theories is methodological. As for dating the vast majority of the Yin OBI, their results are almost the same except for the so-called Li-group inscriptions. Li Xueqin's conclusion about the Li-group inscriptions is not fully supported by archaeological data,

are three dates, *xinchou*, *xinhai*, and *xinyou*, and two month notations, the twelfth month and the first month. These inscriptions also show that the day *xinchou* was in the twelfth month and the day *xinyou* was in the first month. From *xinchou* (day 38) to *xinyou* (day 58), there were 21 days, which is apparently not enough for an intercalary month. Therefore, the first month immediately followed the twelfth month in this example. As will be demonstrated in Chapter Three, an intercalary month in Period I could be put at the end of a year, and such an intercalary month is referred to as ‘the thirteenth month’ in Period I inscriptions.¹⁰ Had the Yin not had a prescriptive calendar, as Yabuuchi Kiyoshi and David N. Keightley suggest, the diviner Xun would not have been certain as to whether there would be an intercalary month, ‘the thirteenth month,’ after the twelfth month when the divination of Example 2 was made. Example 2 proves diviner Xun actually knew there would not be an intercalary month after that twelfth month. Diviner Xun indeed knew day *xinyou* belonged to the first month. Thus, Example 2 is one piece of evidence that demonstrates that the Yin could know the date of a future month.

Example 3 is an oracle bone from Period V. This inscription records two dates, *yimao* and *wushen*, and two month notations, the eighth month and the tenth month. *Yimao* was in the eighth month and *wushen* in the tenth month. The interval between *yimao* (day 52) and *wushen* (day 45) was fifty-three days, which is shorter than the length of two lunar months. Because of this, only one month can be inserted between *yimao* of the eighth month and *wushen* of the tenth month. This excludes the possibility of an intercalary month between the eighth and tenth month mentioned in this example. Chapter Three will present inscriptional evidence to show that the in-year intercalation was adopted during Period V. Since the two dates and two month notations in the third example exclude the possibility of an intercalary month between the eighth month and tenth month of that year, the diviner, who happened to be the king, was certain of the future date *wushen*. *Heji* 41756 is another piece of solid evidence that shows that the Yin knew the date of a future month.

which the present writer analyzed in detail in a manuscript entitled “Can the Date of the Li Diviner Group Inscriptions be Settled?” In the present dissertation, therefore, this writer follows a refined Dong Zuobin’ periodization of the Yin OBI, which is employed by the *Heji*.

¹⁰ According to Chang Yuzhi (1998: 302), the phrase “the thirteenth moon” occurs 121 times in the Bin-group inscriptions, which are one group of inscriptions from Period I.

Besides those two examples above, some time phrases in charges¹¹ indicate that the Yin knew when the current month would end and when the next month would start. The following are some examples of charges with different time phrases:

[04] 癸巳卜，争贞：今一月雨。王占曰：丙雨。

癸巳卜，争贞：今一月不其雨。 《合集》12487

Crack-making on *guisi* (day 30), Zheng divined: "It will rain in this first month." The king read the cracks and declared: "it will rain on a *bing*-day."

Crack-making on *guisi* (day 30), Zheng divined: "It may not happen to rain in this first month."
Heji 12487

In the two charges in this example, the time phrase is *jin yiyue* 今一月, 'this first month.' Generally speaking, divination was a means for early Chinese to resolve their doubts about a proposed plan of an action. It thus can be inferred that the time for an event in a charge should have been clear to the diviner. In other words, a time phrase in a charge refers to a definite time period. Since the phrase 'this first month' referred to a definite period, and since that period was clear to the diviner, it is reasonable to suggest that diviner Zheng and other Yin people knew when that first month would end and when the second month would begin.

Besides *jin yiyue*, there are similar time phrases such as *jin eryue* 今二月, 'this second month,' *jin sanyue* 今三月, 'this third month,' *jin siyue* 今四月, 'this fourth month,' *jin wuyue* 今五月, 'this fifth month,' *jin liuyue* 今六月, 'this sixth month,' *jin qiyue* 今七月, 'this seventh month,' *jin bayue* 今八月, 'this eighth month,' *jin jiuyue* 今九月, 'this ninth month,' *jin shiyue* 今十月, 'this tenth month,' *jin shiyiyue* 今十一月, 'this eleventh month,' *jin shieryue* 今十二月, 'this twelfth month,' and *jin shisanyue* 今十三月 'this thirteenth month' in other inscriptions¹². Like *jin yiyue*, 'this first month,' these time phrases are evidence showing that the Yin knew the end of the current month and the start of future months beforehand.

¹¹ An inscription may consist of a preface, charge, crack number, crack notation, prognostication, verification and post-face. The term "charge" refers to the topic of the inscription. For more details, readers are referred to David N. Keightley (1978: 28-44).

¹² All these examples are transcribed by Shima Kunio (1971: 260.2-4).

Examples 2-4 strongly indicate that the Yin people knew dates of future month in advance. In order for them to be able to do so, the Yin must have had prescriptive calendar tables to assist them. I believe that *Heji* 24440 can be considered a piece of direct evidence for the existence of that kind of calendar table. Those characters inscribed on this piece of oracle-bone are as follows.

[05] 月一正曰食麦。甲子、乙丑、丙寅、丁卯、戊辰、己巳、庚午、辛未、壬申、癸酉、甲戌、乙亥、丙子、丁丑、戊寅、己卯、庚辰、辛巳、壬午、癸[未]、甲申、乙酉、丙戌、丁亥、戊子、己丑、庚寅、辛卯、壬辰、癸巳。二月父禾。甲午、乙未、丙申、丁酉、戊戌、己亥、庚子、辛丑、壬寅、癸卯、甲辰、乙巳、丙午、丁未、戊申、己酉、庚戌、辛亥、壬子、癸丑、甲寅、乙卯、丙辰、丁巳、戊午、己未、庚申、辛酉、壬戌、癸

《合集》24440

Month/ one/ right/ called/ eating wheat: *jiazi, yichou, bingyin, dingmao, wuchen, jisi, gengwu, xinwei, renshen, guiyou, jiaxu, yihai, bingzi, dingchou, wuyin, jimao, gengchen, xinsi, renwu, gui(wei), jiashen, yiyong, bingxu, dinghai, wuzi, jichou, gengyin, xinmao, renchen, guisi*. The second month/ father *xuan*: *jiawu, yiwei, bingshen, dingyou, wuxu, jihai, gengzi, xinchou, renyin, guimao, jiachen, yisi, bingwu, dingwei, wushen, jiyong, gengxu, xinhai, renzi, guichou, jiyin, yimao, bingchen, dingsi, wuwu, jiwei, gengshen, xinyou, renxu, gui*.

Heji 24440

Heji 24440 is a piece of oracle bone from Period II. In 1933, Guo Moruo 郭沫若 pointed out that this was a copy of an early calendar table.¹³ Since then, many scholars have accepted his conclusion. The most recent example is Chen Meidong 陈美东 (2003: 22). Indeed, the content of *Heji* 24440 makes it easy for people to consider it to be a copy of a calendar table that recorded dates of the first two months of a certain year. It appears reasonable to assume that the Yin people used such tables to assist themselves in calculating future dates. More importantly, the existence of such a table strongly suggests the existence of a prescriptive calendar at that time.

In this section, the writer has presented evidence in the Yin OBI that indicates that the

¹³ Guo Moruo made this comment in his annotation about *Tongzuan* 通纂 6, which was first published by Bunkyo in Tokyo in 1933. It was reprinted by Kexue Chubanshe in Beijing in 1982 and is the version used in the present context. For his opinion on this particular oracle bone, see Guo Moruo (1982: 216-217).

length of a Yin civil year and that of a Yin month were prescribed, that the Yin people could know dates of future months with the assistance of a calendar table, and that there were calendar tables. This view is contrary to that which says the Yin did not use a prescriptive calendar. The conclusion drawn here is that the Yin people did compile a prescriptive calendar. As a matter of fact, Chen Zungui 陈遵妣 (1980: 203-204), a specialist in the field of early Chinese calendar, points out that, with the knowledge of the length of both a civil year and a month, it was not at all difficult for early Chinese to compile their calendars. It is being asserted here that the inscriptional evidence listed above is sufficient for making the case for the existence of a prescriptive calendar in the Yin dynasty, which serves as a solid foundation for the thesis of the present dissertation.

1.3 The Absolute Dates of the Yin Calendar

If the Chinese calendar was indeed invented at the time of Huang Di, it would have a history of about 4,700 years. Since, based on the evidence, this writer does not agree with that belief and instead proposes that the Yin calendar is the first known Chinese calendar, it is necessary now to clarify the absolute dates of the Yin calendar.

The Yin calendar is taken to mean the calendar reconstructed from the Yin OBI. It follows that the absolute dates of this Yin calendar are the same as that of the Yin OBI. Therefore, one can establish the dates of the Yin calendar by determining the absolute dates of the Yin OBI.

There has been much research into determining absolute dates of the Yin Dynasty. The most recent study is the report by the Xia-Shang-Zhou Duandai Gongcheng 夏商周断代工程 published in 2000. In this report, absolute dates for the Yin Dynasty have been determined to be 1300 BC – 1046 BC. However, the absolute dates for the Yin Dynasty are not the same as those for the Yin OBI.

During the Yin Dynasty, there were twelve kings: Pangeng 盘庚, Xiaoxin 小辛, Xiaoyi 小乙, Wuding 武丁, Zugeng 祖庚, Zujia 祖甲, Linxin 廪辛, Kangding 康丁, Wuyi 武乙, Wending 文丁, Diyi 帝乙 and Dixin 帝辛. However, in the current corpus of the Yin OBI, no inscriptions can be identified as those of the first three, i.e., Yin kings Pangeng, Xiaoxin,

and Xiaoyi. In other words, current Yin OBI represent remains of only nine Yin kings. Therefore, the time period of the Yin OBI should be shorter than that of the Yin Dynasty.

The report by the Xia-Shang-Zhou Duandai Gongcheng (2000) assigns 1250 BC – 1046 BC to the time period from Wuding to Dixin. But these dates cannot be accepted as absolute dates for the Yin OBI because they are not in agreement with records of lunar eclipses in Period I inscriptions.

There are five lunar eclipse records in Period I inscriptions. Zhang Peiyu (1999) 张培瑜, a renowned specialist in early Chinese astronomy and a prominent member of the team of the Xia-Shang-Zhou Duandai Gongcheng, explains how the team made use of those records in determining absolute dates of the Yin Dynasty. However, not all of his conclusions are supported by relevant inscriptions, because of two reasons.

First, Zhang Peiyu (1999) does not take month notations of those records into consideration at all. Among those five inscriptional lunar eclipse records, two have month notations. The eclipse on the night of *yiyou* 乙酉 (day 22) occurred in the eighth month and that on the night of *jiwei* 己未 (day 56) in the twelfth month. Zhang Peiyu (1999: 39) identifies them with the eclipses on November 25, 1181 BC and December 27, 1192 BC, respectively. His date for the *yiyou* eclipse indicates that the Yin calendar was three months ahead of the modern calendar, and his date for the *jiwei* eclipse suggests that the Yin month corresponded to the month of the modern calendar. If Zhang Peiyu's dates are correct, there would be a difference of three months when the Yin people made adjustments to their civil year to synchronize with the tropical year. Such a difference would be so large that the calendar would be useless to determine seasons. Moreover, other dates for these two eclipses, which will be presented shortly, can avoid this discrepancy that Zhang Peiyu has created. This is one reason that suggests that some of his absolute dates are unsupported by relevant inscriptions.

Second, Zhang Peiyu selects December 27, 1192 BC as the date for the eclipse on *jiwei* because he thinks the word *zhuo* 斲, 'cut,' in that record indicates that the eclipse continued past midnight. This conclusion is not in agreement with his date for the eclipse on *guiwei*. He identifies the eclipse on *guiwei* as the one on July 11-12, 1201 BC which started at 22:24 and ended at 0:54. If his reason for selecting the date of the eclipse on *jiwei* is correct, the word *zhuo* should occur in the record of the eclipse on *guiwei* as well. The fact is that this word

does not appear in the record of the eclipse on *guiwei*. Zhang Peiyu's explanation could not, and still cannot, fit all relevant inscriptions. This certainly casts doubts on his conclusions.

Given the two reasons just discussed, the present writer cannot accept Zhang Peiyu (1999) and Xia-Shang-Zhou Duandai Gongcheng's absolute dates for the Yin OBI. This writer will now present his view on the absolute dates of the Yin OBI.

In 1998, this writer published an article on absolute dates for those five lunar eclipses in Period I inscriptions. At that time, both month notations of eclipses on *yiyou* and *jiwei* and the usage of the word *zhuo* were taken into consideration. The dates of those two eclipses were determined to be May 31, 1227 BC and August 14, 1166 BC, respectively, in that article. It was further proposed in that context that the reign of Yin King Wuding was around 1230 BC – 1162 BC (Liu Xueshun 1998: 23).

In 2003, this writer published an article on the time span of the Yin OBI. According to the statistics presented, there are 2,179 pieces of oracle bone with inscriptions that divine on specific sexagenary dates whether the Yin king would have disasters in the next 10-day week. Because this kind of divination was done once in ten days, it is possible to calculate an approximate time period for the Yin OBI. The writer's conclusion is that the Yin OBI after Wuding was produced in about 116 years (Liu Xueshun 2003: 22).

Based upon this writer's two studies just mentioned above, the writer's perspective on the temporal range of the Yin OBI will now be discussed. Since the Yin OBI are remains of Wuding to Dixin, the upper limit should not be earlier than the start of the reign of Wuding, i.e., ca 1230 BC. Because the inscriptions after Wuding were made in about 116 years, the lower limit should be 116 years later than the end of Wuding's reign, i.e., $(1162-116=)$ ca 1046 BC.

It is proposed that ca 1230 BC–1046 BC are absolute dates for the Yin OBI. Because the writer reconstructs the Yin calendar, or what is being termed the first known Chinese calendar, based on the Yin OBI, the absolute dates for this calendar should be ca 1230 BC–1046 BC as well.

1.4 The Synchronic Evidential Approach

As mentioned in Section 1.1, there are more than 400 articles and books devoted to

studying the Yin calendar. Needless to say, significant progress has been made in the last century. For example, it is now a well-known fact that the Yin calendar was a lunar-solar calendar. On the other hand, specialists still cannot reach consensus on some major principles of this Yin calendar. Some disagreements have appeared because of shortcomings to the method employed in relevant studies. The view taken in the present context is that those controversies can be resolved by adopting a new, more reliable research approach.

In the past century, the most dominant approach in the field of the Yin calendar has been the so-called *erchong zhengju fa* 二重证据法, 'two-layered evidential approach,' which was put forward by Wang Guowei 王国维 (1877-1927) in 1925 as follows:

吾辈生于今日，幸于纸上材料外，更得地下之材料。由此种材料，我辈固得据以补正纸上之材料，亦得证明古书之某部分全为实录，即百家不雅驯之言，亦不无表示一面之事实。此二重证据法，惟在今日始得为之。虽古书之未得证明者，不能加以否定，而其已得证明者，不能不加以肯定，可断言也。¹⁴

In the time in which we presently live, besides documents on paper, it is fortunate that we have other kinds of materials [that have been dug from] underground. Based upon this kind of [excavated] material, we certainly are able to augment and rectify the paper documents. We also can prove that some portions of ancient books are entirely true records and that even those ungainly records of one-hundred schools of thought may contain one element of truth. It is only in the present time that this two-layered evidential approach can be applied [in the study of early history]. Even though some ancient books have not been proven [true records] yet, one cannot deny them; as for those books that have been proven [true records], one has to accept them. This is what I can say with certainty.

The passage quoted above shows that Wang Guowei's two-layered evidential approach has two characteristics: 1) to augment and rectify paper documents with archaeological records, and 2) not to deny ancient paper records that have not been proven true. On its face value, there is nothing wrong with this approach in itself. However, there is a very serious

¹⁴ This article is reprinted in Wang Guowei (1968). For this citation, see Wang Guowei (1968: 2078).

methodological flaw in its application, as will be shown shortly.

At the time when Wang Guowei proposed his approach, there were two competing schools of thought concerning how to treat early Chinese texts. On the one hand, some scholars were very skeptical of the historicity of early Chinese texts. On the other hand, other scholars still believed those texts. By applying the two-layered evidential approach, Wang Guowei published some famous articles like “Buci zhong suo jian xiangong xianwang kao 卜辞中所见先公先王考,” “Buci zhong suo jian xiangong xianwang xu kao 卜辞中所见先公先王续考,” and “Gushi xinzheng 古史新证.” These articles proved some early text records about the Yin Dynasty, such as those in the *Shiji*, to be true, which was regarded as a clear demonstration of the historical values of early Chinese texts. These publications thus made him the most prominent scholar of that time in the field of early Chinese history. Because of this, his approach gained a warm reception. Gradually, it has become the most popular approach, and scholars researching the Yin OBI claim they employ it in their investigations. The fact is, however, that the so-called “Guowei” approach applied by most scholars is not actually the same one proposed by Wang Guowei himself.

As already indicated, Wang Guowei’s two-layered evidential approach has two characteristics. One is to augment and rectify records in early Chinese texts with archaeological records. The other is not to deny those texts that have not been proven true yet. It appears that he did not explicitly encourage people to treat those two kinds of materials equally in researches about early Chinese history. But it is true that he indeed asked others not to deny textual records even when they were not proven correct yet. His ambiguity about whether those two kinds of sources should be differentiated has encouraged other scholars to combine evidence of different natures rather than augment and rectify early Chinese texts with primary materials. This is a clear violation of the first characteristic of Wang Guowei’s proposal.

Consider Chang Yuzhi’s 常玉芝 *Yin Shang lifa yanjiu* 殷商历法研究, the second and most recent monograph on the Yin calendar, as an example. Chang Yuzhi (1998: 7) clearly describes her approach as follows.

本书以数万片甲骨文为基础，结合有关商代金文和文献记载，深入论证殷商

历法的纪日、纪月、纪年问题.

This book thoroughly analyzes the problems of how the Yin-Shang calendar designated day, month and year on the basis of tens of thousands of OBI and by combining them with relevant records in the Shang bronze inscriptions and texts.

In her own words, she combines records in the Yin OBI, the primary and contemporary evidence, with records in texts, which are the secondary and much later records. Further, she even interprets inscriptional evidence based on later texts without fully analyzing other relevant inscriptional records. This is a clear example of how the so-called two-layered evidential approach has been applied by scholars in the field of the Yin calendar.

Combining inscriptional evidence with textual records and using texts as the main basis for interpretation of the Yin OBI result in very serious problems. That extant Chinese texts were written one thousand years or more after the Yin Dynasty is beyond dispute. This means that those records concerning the Yin are not necessarily historically accurate or reliable. Because of this, there is a risk to basing the interpretation of the Yin OBI mainly on questionable records of later Chinese texts. For instance, because the phrase *dayue* 大月 refers to a long month in later Chinese texts, Chang Yuzhi (1998: 275) has regarded the expression *da jin eryue* 大今二月 as a reference to a long month of the Yin calendar. As will be shown in Chapter Three, the expression *da jin eryue* is not a constituent of that inscription and it was, and still is, incorrect to take it as a reference to a long month of the Yin calendar.

In addition, there is contradictory information about the same issue of the Yin calendar in transmitted Chinese texts. If each specialist only accepts information he favors and then proceeds to interpret a given inscription, it follows that there will be disagreements among them. Unfortunately, that is the actual situation as it exists in the study of the Yin calendar. The following represents an example of this kind of biased approach.

Chang Zhengguang 常正光 (1981), Wen Shaofeng 温少峰 and Yuan Tingdong 袁庭栋 (1983), Zheng Huisheng 郑慧生 (1983), Zhang Peiyu 张培瑜 and Meng Shikai 孟世凯 (1987), Feng Shi 冯时 (1990), Wang Hui 王晖 (1994), and Chang Yuzhi (1998) have each conducted research concerning the start of the Yin year. Their approaches to this issue are the same, i.e., the so-called two-layered evidential method. The inscriptions they cited are generally the same as well. However, their conclusions are different and exclusive, primarily

because they have interpreted the same inscriptional materials according to different Chinese textual records, which will be evaluated in Chapter Four. The inconclusiveness of their research fully reflects the negative effect of their flawed approach to the study of the Yin calendar.

In order to avoid yet another possible inconclusive study, it is absolutely vital that the present writer finds and adopts a new methodology for this dissertation. It is suggested that the synchronic evidential approach satisfies this requirement.

Ken-ichi Takashima has long been an advocate of the synchronic evidential approach. More recently, he again defines this approach in the paper he presented at the Workshop on Early Chinese Civilization held at the University of British Columbia in Vancouver on March 9-13, 2005. Takashima (2005: 3) states:

That is, we should try to interpret the data or issues at hand on the basis of as much intrinsic evidence as possible without drawing conclusions from the later transmitted texts and their commentaries. This seems idealistic, and sometimes interpretation is simply impossible due mainly to the paucity of relevant materials, but such a purist approach will uncover much that seems clouded by the application of the two-layered evidential approach.

The differences between this synchronic evidential approach and the two-layered evidential method are significant. While the latter approach does not differentiate between inscriptional evidence and textual records, with regard to the relative importance of each, the former approach does encourage drawing conclusions from contemporary evidence as much as possible and discourages over-reliance on later evidence, i.e., records in late transmitted Chinese texts. As the above example shows, the combination of contemporary and late evidence contributes to the inconclusiveness of various studies of the Yin calendar. Theoretically speaking, by discouraging research based upon later evidence as much as possible, the amount of inconclusive research would be greatly reduced, making the synchronic evidential approach much superior to the two-layered evidential method.

The superiority of this synchronic approach is clearly shown in Ken-ichi Takashima's paper presented at the International Symposium on the Historical Aspects of the Chinese

Language in Commemorating the Centennial Birthday of the Late Professor Li Fang-Kuei (1902 – 1987) held at the University of Washington in Seattle on August 17, 2002. The paper concerns the *rong* 𠄎 sacrifice of the Yin Dynasty, which was one of the most frequently performed sacrifices in the court of the Yin. In the Yin OBI, there are numerous inscriptions regarding this sacrifice. In addition, it is also mentioned in transmitted texts.¹⁵ Before Ken-ichi Takashima (2002), Kong Yingda's 孔颖达 sub-commentary on the *rongri* 彤日 was repeated in various publications. Kong states that *rong* referred to a sacrifice conducted the day after another sacrifice, an interpretation that has subsequently been accepted by both Chinese and foreign scholars.¹⁶ It seems that Kong's commentary has become the standard interpretation. However, after examining the contexts of inscriptions where *rong* appears, Ken-ichi Takashima finds no evidence to support the traditional theory that *rong* is a following-day sacrifice. More specifically, the traditional interpretation requires that some sacrifices different from *rong* were conducted before it on the day previous to the *rong* sacrifice. But apart from a very limited number of possible examples, there were no sacrifices that were carried out before the *rong* sacrifice. Moreover, there are examples that are opposite to the interpretation of *rong* as "next day sacrifice" (Takashima 2002: 8-10). It thus appears that the interpretation of *rong* recorded in Chinese texts, though very popular among specialists, simply does not match the meaning of *rong* in the language of the Yin OBI. If so, another conclusion must be drawn: Kong's understanding of the *rong* sacrifice is inaccurate and it should be disregarded. Clearly, Ken-ichi Takashima's new approach has eliminated the misinterpretation of the word *rong* in the Yin OBI, which could not be achieved using the approach of the two-layered evidential method.

Those scholars who follow the approach of the two-layered evidential method, be it consciously or subconsciously, have not made due effort to understand the actual meaning of the *rong* sacrifice in the language of the Yin OBI and have simply repeated an incorrect interpretation of the word. On the other hand, Ken-ichi Takashima (2002) is able to reach his decisive conclusion because of his synchronic evidential approach. While the researches mentioned in Note 16 are inconclusive, Ken-ichi Takashima (2002) seems conclusive insofar

¹⁵ See the chapter "Gaozong rongri 高宗彤日" of the *Shangshu*, which James Legge (1872: 264) has translated into English.

¹⁶ To name just a few, Luo Zhenyu (1915.2: 16b), Rao Zongyi (1957: 11), Li Xiaoding (1965.3: 2762-2764), Xu Zhongshu (1988: 947-948, 995), James Legge (1872: 264) and Bernhard Karlgren (1950: 26).

as the *rong* sacrifice is concerned. The reason for the superiority of this new approach is that, to the greatest possible extent, it excludes records in later Chinese texts from the research. Compared with contemporary OBI, the later texts are far less reliable and less credible historically. Moreover, they may well have been further corrupted at even later times. All of these factors make these texts very unreliable, and cause them to be possible sources of errors in studies that are based on them. By excluding them from research whenever possible, the synchronic evidential approach can avoid their negative influence.

This has been the rationale for adopting the synchronic evidential approach in this dissertation focusing on inscriptional evidence to reconstruct the Yin calendar.

1.5 Aims of This Study

Since it involves reconstruction of a calendar, this study will produce calendar tables. It is firmly believed by this writer that accurate calendar tables for the whole Yin Dynasty would definitely be welcomed by scholars in the field of early Chinese history, since such tables would be a significant aid in determining the chronology of Chinese history. Unfortunately, the fact is that this worthwhile ideal is extremely difficult to attain. Dong Zuobin was unable to achieve this task in 1945. Half a century later, Chang Yuzhi (1998) also failed to provide such a reconstruction. It still is not a realistic aim for the following two major reasons.

First, there are no generally accepted absolute dates for the Yin Dynasty yet. It is easy to understand that, in order to compile a calendar table for each year of the Yin Dynasty, absolute dates for each Yin king have to be conclusively determined. After nearly five years of work by a team of more than 200 Chinese scholars, the Dating Project of the Xia, Shang, and Zhou dynasties could not present final conclusions about dates of each Yin king, a fact that has already been admitted by the team. Because of the uncertainty regarding those absolute dates, there is no base for any reliable and meaningful reconstruction of a calendar table for each year of the Yin Dynasty.

Second, the Yin calendar evolved over time. For example, as shown in Chapter Three, there is evidence to suggest that the year-end intercalation was replaced by the in-year intercalation. But it still is unclear as to how long that transitional period was. In addition, the

criteria for the Yin people to assign intercalary months have not been thoroughly studied yet. As a result, it will probably not be possible to reconstruct with certainty an accurate calendar table for each year, even if the absolute dates for each Yin king were established.

Given the two reasons above, this study will not aim at accurately reconstructing a calendar for every year of the Yin Dynasty, although a calendar for a few years will be constructed when necessary. Rather, this dissertation will focus on explaining the system of the Yin calendar.

Chapter Two will thoroughly investigate the time divisions and the start of a Yin day. There are some time divisions that are generally accepted by specialists due to the fact that they were still used as time divisions in later periods. As for those alleged time divisions that are only seen in the OBI, this writer will utilize applicable criteria to determine whether or not they are true time divisions. For those time divisions in early morning, modern astronomy will be used to rationalize them. The start of the Yin day has long been a hot controversy in the field and will be dealt with in this chapter as well.

Chapter Three will address several issues surrounding the Yin month. The writer will determine the number of months in a Yin year. Also, in order to ascertain the length of a Yin month, the plan will be to thoroughly investigate relevant inscriptions in order to determine if Yin months could be longer than 30 days or shorter than 29 days. With regard to the arrangement of Yin months, inscriptional evidence will be cited to show the existence of both the year-end intercalation and the in-year intercalation. In addition, the beginning of the Yin month will be demonstrated by reconstructing several months surrounding a lunar eclipse recorded in the OBI.

In Chapter Four, the discussion will turn to the designation and commencement of the Yin year, focusing on the beginning of the Yin year. First, this writer will utilize applicable criteria to determine the word *si* 祀 to be the designation of the Yin year. Then, not only will the writer evaluate different theories about the start of the Yin year, but he will also show that the Yin year started with the second month before the month of the winter solstice.

Finally, in Chapter Five, the writer will further discuss the significance of the synchronic evidential approach in the research of the Yin calendar. This approach not only requires scholars to change their way of conducting researches about the Yin calendar, but also requires that they change their attitude toward results yielded by this new approach. It is this

writer's firm conviction that no one should reject these results on the basis of later Chinese calendars. From the point view of the history of the Chinese calendar, the development of early Chinese calendars is not linear. In early China, several calendars existed simultaneously. Moreover, their development was independent of one another. As a result, the evolution that occurred in one calendar might not have taken place in other calendars. Because of political reasons, when one calendar replaced another one, the same evolution might take place again. For example, the transition from the year-end intercalation to the in-year intercalation happened at least three times in early China. Therefore, one should judge the results by the synchronic evidential approach solely on the basis of contemporary evidence not on later calendars.

CHAPTER TWO

“THE DAY” IN THE YIN CALENDAR

2.1 Introduction

In any given day, there is a period of brightness and of darkness that may be called daytime and night-time, respectively. Generally speaking, the cycle of daytime and night-time, and that of people's working and resting, are synchronous. If the concept of “the day” occurred before the invention of the timepiece, which seems to have been the case, it must have been this synchronization that made people aware of the day as a period of time

The scientific archaeological excavations at Anyang, where the residence of Yin kings was located, have been carried out since 1928. But no timepiece has ever been discovered.¹ On the other hand, the Yin people indeed recorded dates with the cyclical 60 *ganzhi* 干支 in the Yin OBI. This is direct evidence showing that the Yin had the concept of a calendar day. Further, in the Yin OBI, there are numerous inscriptions about time divisions of a day, which will be discussed in this chapter.

Specialists of the Yin calendar do not dispute the existence of time divisions of the day in the Yin Dynasty. However, they cannot reach consensus about the number of time divisions of the day there were during that dynasty. This absence of consensus is due to specialists lacking clear criteria for judging a time division in the Yin OBI. Also, they cannot agree upon the time division with which a Yin day started. The present chapter has three objectives: first, to present this writer's criteria for determining time divisions of the Yin day; second, to analyze specific time divisions in the Yin OBI and characteristics of these time divisions; and third, to present this writer's concept of the start of the Yin day.

2.2 How to Determine Words of Time Divisions

It is common sense that one has to have a criterion by which to pass judgment on any

¹ For details of excavations at Anyang, readers are referred to the *Yinxu de faxian yu yanjiu* 殷墟的发现与研究, which was written by members of the archeological team at Anyang in 1994.

issue. However, with the exception of Song Zhenhao 宋镇豪, scholars in this field usually do not clearly state their criteria, if indeed they have any, for deciding time divisions in the Yin OBI. This apparent absence of criteria makes it difficult to evaluate the potential merit of these studies in an effective way. In order to avoid this difficulty, it is this writer's intention to make clear his criteria as to how he determines whether a word in the language of the OBI is used as a time division.

2.2.1 Lexical Meaning

An authoritative dictionary is useful in deciding upon a word for a time division. If one meaning of a word denotes a time period of day, then this word can be regarded as a time division. Consider, for example, the word "dawn" in modern English. Hornby (2002: 362) lists the following two meanings under the entry of "dawn": "time of day when light first appears; daybreak" and "beginning; first signs of sth." Based on the first meaning, one can say that the word "dawn" is used as a division of time in modern English. It follows that a dictionary compiled by the Yin would be of great help to modern scholars in determining time divisions in the language of the Yin OBI.

However, the unfortunate fact is that there was no dictionary during the Yin Dynasty. Because of this, lexical meanings of a word in the language of the OBI have to be deduced either from inscriptional contexts and/or from its usages in early transmitted Chinese texts. Below is an example. After citing five inscriptions where the word *dan* 旦 occurs, Chang Yuzhi (1998: 136) offers the following explanation:

《说文》谓：“旦，明也”，是旦指天明之时。

The *Shuowen* says, "*dan* means 'bright.'" So *dan* refers to the time of daybreak.

It is apparent that she has assigned the meaning "daybreak" to the word *dan* in the Yin OBI, based on its definition in the *Shuowen*. Then, she further classifies *dan* as a time division in the OBI.

From the point of view of the synchronic evidential approach, it is unsatisfactory to assign meanings to a word in the Yin OBI based upon its usage in transmitted Chinese texts.

On the other hand, it would have been extremely difficult, if not impossible, to achieve the progress that has been made in the study of the OBI in the last century if the OBI were considered as completely separated from early Chinese texts. The present writer concurs that the synchronic evidential approach has limitations and that one should not take it to extremes. As long as records in Chinese texts do not contradict inscriptional records, they can be taken into consideration when one decides meanings of a word in the language of the Yin OBI. Therefore, it is this writer's opinion that lexical meanings of a word in early Chinese texts are helpful in determining time divisions seen in the Yin OBI.

2.2.2 Inscriptional Context

It is a tradition that Chinese scholars deduce meanings of a word from contexts. If two words are found in similar environments, *huwen* 互文 in Chinese terminology, their meanings would be deemed similar or the same. This approach is criticized by Ken-ichi Takashima.² Nevertheless, this approach is still adopted by many Chinese scholars. As for specialists in the field of the Yin calendar, Song Zhenhao (1985) has made efforts to establish a contextual criterion for judging time divisions in the OBI. Chang Yuzhi (1998: 143-150) accepts Song's criterion. The following is Song's thesis:

总之，甲骨卜辞的‘惠……酒’文例，恰好揭出一套殷人重视大事时日的礼俗。‘惠……酒’的中间几个字，专指时辰、日期或月份。³

In sum, the sentence pattern of ‘*hui ... jiu*’ in the bone inscriptions exactly shows a ritual practice of the Yin people attaching importance to the time and date of big events. The several words between ‘*hui ... jiu*’ exclusively refer to time divisions, dates or month notations.

In his comments to the draft of this dissertation, Ken-ichi Takashima points out that it is

² When analyzing the words *qi* 其 and *hui* 惠 in the OBI, he makes the following comment about Han Yaolong (1972: 10b-11a): “These two words provide another opportunity for Han Yaolong (1972: 10b-11a) to fall victim to the assumption that if two elements are found in similar environments, they must have a similar meaning.” (Takashima 1996a: 470).

³ This criterion was first proposed by Song Zhenhao (1985: 305) and repeated by Song Zhenhao (1991: 38).

linguistically naive to take issue at length with this theory. On the other hand, a terse or cavalier rejection would not likely convince Song Zhenhao and Chang Yuzhi that Song Zhenhao's criterion does not work. It is necessary to demonstrate at some length why Song Zhenhao's proposal cannot be a valid criterion, by showing that his premise is indeed false.

It is Song Zhenhao's opinion that all words between words *hui* and *you*⁴ refer exclusively to time divisions, dates, or month notations. If his assertion is correct, one can easily determine whether a word between *hui* and *you* is a time division in the language of the OBI, because time divisions are very different from dates and month notations. The fact is, however, that not every word between *hui* and *you* is a time division, date or month notation; and this can be clearly shown by the following inscriptions.

[01] 母先酉。

兄先酉。

父先酉。

《合集》27489

It should be a mother⁵ to whom [the king will] first perform the *you*-cutting sacrifice.

It should be a brother to whom [the king will] first perform the *you*-cutting sacrifice.

It should be a father to whom [the king will] first perform the *you* sacrifice.

Heji 27489

[02] 上甲先酉。

主壬先酉。


《合集》28272

It should be Shangjia to whom [the king will] first perform the *you*-cutting sacrifice.

It should be Zhuren to whom [the king will] first perform the *you*-cutting sacrifice.

Heji 28272

In those five inscriptions above, the words between *hui* and *you* are 'a mother,' 'a

⁴ Like other Chinese scholars, Song Zhenhao transcribes the bone graph  as *jiu* 酒, 'wine.' However, Ken-ichi Takashima points out that "the graph does not seem to stand for the noun 'wine.'" In addition, his paleographical study lets him understand the word "to have meant some way of cutting, the neat and beautiful execution of which was required as a preparatory sacrifice." (Takashima 1996a: 110-111). Given these reasons, it is appropriate to follow him by translating the word as 'the *you*-cutting sacrifice.'

⁵ This is a Period I inscription. Inscriptional records show King Wuding had four fathers (*Heji* 2331) and six mothers (*Heji* 2536, 2537, 2575, 2576, 2581 and 2582). These inscriptions do not show the *you*-cutting sacrifice was performed to one person or persons. The present writer tentatively translates them as 'a mother' and 'a father.'

brother,' 'a father,' 'Shangjia,' 'Zhuren,' and *xian*, which means 'first.' In these inscriptions, a mother, a brother, a father, Shangjia and Zhuren are all recipients of the *you*-cutting sacrifice. The other word *xian* 先, 'first,' is an adverb. Apparently, none of these six words refers to dates, month notations, or time divisions of a Yin day. Other similar inscriptions can be found on *Heji* 1351, 34221, 34223.

[03] 伐酹于祖乙。 《合集》190

It should be decapituri (to be used) in the *you*-cutting sacrifice to Zuyi. *Heji* 190

In this inscription, the word between words *hui* and *you* is *fa* 伐, the victim of the *you*-cutting sacrifice⁶. It definitely is not a term for time division.

By now, it becomes obvious that not every word between *hui* ... *you* refers exclusively to a time division, date or month notation in the OBI. The premise of Song Zhenhao's theory is therefore incorrect. His criterion for judging time division in the language of the Yin OBI is untenable.

2.2.3 Lexical Meaning and Inscriptional Context

Chapter One has made clear the fact that this study adopts the synchronic evidential approach. Every effort is made to draw conclusions from evidence actually found in the Yin OBI. It would be intellectually satisfying if it were possible to cite clear-cut inscriptional evidence to prove or disprove whether a particular word in the language of the OBI is used as a time division. However, the fact is that the synchronic evidential approach has its limitations. Since the Yin compiled no dictionary in which to look up meanings of words in

⁶ In his comments to the draft of this dissertation, David Pankenier raises the question: "Why are *fa* and *you* here not simply the names of two sacrificial methods?" The explanation is as follows: the word *fa* can be the name of a sacrificial method. *Wang qi fa* 王其伐, 'the king will perform the dismembering sacrifice,' (Takashima 1996a: 252) is such an example. On the other hand, it can also be used as the victim of sacrifices. The expressions *jiufa* 九伐, 'nine decapituri,' and *shifa* 十伐, 'ten decapituri,' (Takashima 1996a: 220-221) are two examples. In the following inscription, *fa* is the victim of the *you*-cutting sacrifice:

...酹下乙十伐又五...

... *you*-cutting sacrifice fifteen decapituri to Xiayi ... *Heji* 903

In addition, the word *hui* is a copula in the OBI whose function is to move the patient object to the front of the verb (Takashima 1996a: 453). This, too, indicates that *fa* in Example 3 is the victim of the *you*-cutting sacrifice. Considering all these facts, it is suggested that one takes *fa* in this example as the victim of the *you*-cutting sacrifice.

the Yin language, this writer joins other scholars in having to base his judgments in part upon the meanings found in transmitted Chinese texts.

If there is evidence to show a word is used as a time division in classical Chinese, then this study will investigate whether it makes sense to carry such a temporal use back to the earlier OBI language. Only when such an interpretation fits inscriptional contexts will it be so interpreted in the OBI. Again, consider the word *dan* 旦 as an example. As stated in the previous section, Chang Yuzhi (1998: 136) already cites evidence for the word *dan* being used as a time division in early Chinese texts. Also, it makes sense to interpret *dan* as a division of time in the following inscription.

[04] 于翌日旦大雨。

《合集》41308

Upon daybreak the next day, it will rain heavily. *Heji* 41308

Such an interpretation of the word *dan* in Inscription 4 is acceptable to all specialists. So the word *dan* in the OBI can indeed be taken as a time division. Since this word is a time division in classical Chinese, and since this usage fits inscriptional context such as Example 4, the present writer does consider the word *dan* as a time division in the OBI.

The foregoing example shows that the first thing to do in determining whether a particular word is a time division in the OBI is to examine the early Chinese texts to determine whether the word in question is used as a time division there. Normally, a word will not be deemed a time division if there is no evidence for the word being used as a time division in early Chinese texts. In such situation, even though an interpretation of a given word may seemingly fit some inscriptional contexts, this writer does not accept the particular word as a time division when the outcome of pursuing such a method could be the creation of many time divisions that are incorrect or false. The next section will pursue this discussion further.

In sum, in this chapter lexical meaning and inscriptional context form the basis for determining a word as a time division of the Yin day in the language of the OBI. If a word occurs as a time division in the early Chinese language and such a meaning fits relevant inscriptional contexts, this word will be accepted as a time division in the OBI. If a word does not appear as a time division in early Chinese texts, confidence is lacking in considering it as a time division in the OBI.

2.3 Time Divisions of the Yin Day

It is common knowledge that a day consists of two parts: daytime, 'time of brightness,' and night-time, 'time of darkness.' The usage of the words *ri* 日, 'day or daytime,' and *xi* 夕, 'night-time' as a time division in early Chinese texts and various inscriptional contexts containing these two words show that the Yin day can be divided into *ri* 日, 'daytime,' and *xi* 夕, 'night-time.' As for the time division *ri*, it can be further divided into different subdivisions of time.

2.3.1 *Ri*

In early Chinese texts, the word *ri* often refers to daytime. The following is an example:

[申包胥]立依于庭墙而哭，日夜不绝声，勺饮不入口。《左传·定公四年》

He stood leaning against the wall of the courtyard and cried. Day or night his voice was not silent; a spoonful of water did not enter his mouth. (Legge 1872b: 757)

In James Legge's translation above, the word *ri* means "daytime," although he translates it as "day." It is one of many pieces of evidence for the usage of *ri* as a time division in early Chinese texts.

Among the corpus of the Yin OBI, there are many thousands of inscriptions that contain the word *ri*. In the vast majority of these inscriptions, *ri* can be interpreted as a whole day. Determined effort has been exerted by this writer to find examples of the word *ri* as a time division in the OBI. Up to now, only a few inscriptions show that the word *ri* may actually refer to daytime rather than a whole day. Two such examples are cited below:

[05] 癸酉卜，出贞：旬亡(=无)祸。之日鬲止，夕有咎。在休。八月。

《合集》24358

Crack-making on *guiyou* (day 10), Chu divined: "[In the next] 10-day week, there will be no disasters." During this daytime, Li stopped; in the night-time, there were wild buffalos. [The king] was at Xiu. [Day *guiyou* was in] the eighth month.

Heji 24358

In the prognostication of this inscription, the words *ri* and *xi* appear to be two time

divisions. Because two different events happened in these two time divisions, it is reasonable to consider them as different time periods. Based on their usage in early Chinese language, it makes sense to interpret the word *ri*, in this example, as daytime.

[06] 丁卯卜：今日雨。

夕雨。

《合集》33871

Crack-making on *dingmao* (day 4), [X] divined: “During daylight today it will rain.”

“At night-time, it will rain.”

Heji 33871

The two inscriptions above divine the time of rain. Because of this, it is possible to interpret the word *ri* and *xi* as two different, possibly mutually exclusive, time divisions. If so, the word *ri* would be a time division that refers to daytime only.

The word *ri* is accepted as a division of time in the Yin OBI by all scholars in previous publications, however, without providing any solid evidence. The reason for the lack of solid evidence might be that these scholars accept it as common knowledge that the word *ri* refers to daytime. In the present context, however, textual and inscriptional evidence is cited in order to demonstrate that, as a time division, the word *ri* can indeed refer to daytime in the language of the Yin OBI.

In English, daytime includes time divisions such as morning, noon, afternoon, and evening. There is evidence showing that *ri* is divided into a number of sub-divisions in the Yin OBI as well. Before proceeding to discuss the time division *xi*, we turn to demonstrating, one by one, the sub-divisions of *ri*.

As mentioned in Chapter One, the Yin OBI can be divided into five periods. The time divisions of *ri* change with periods. In order to reflect such an evolution, it would be appropriate to present these time divisions period by period, starting with Period III, because many inscriptions of this period contain more than one sub-division of the time division *ri*.

2.3.1.1 Sub-divisions of *Ri* in Period III

2.3.1.1.1 *Su*


The word *su* 夙 appears as a division of time in early Chinese texts. Consider the following example:

夙夜惟寅。


《尚书·舜典》


Morning and night, you must be respectful. (Legge 1872:47)

In this sentence, the word *su* means “morning.” This is a piece of evidence for *su* as a time division. More examples can be found in Chapter “Gaoyao mo 皋陶谟” of the *Shangshu*; Chapter “Caifan 采繁”, “Xinglu 行露”, “Xiaoxing 小星”, “Ding zhi fang zhong 定之方中”, “Dongfang wei ming 东方未明”, “Zhi gu 陟肬”, “Sheng min 生民”, “Zheng min 蒸民”, “Min yu xiaozi 闵予小子”, and “You bi 有骅” of the *Shijing* 诗经; Chapter “Shiguan li 士冠礼”, “Shihun li 士昏礼”, and “Tesheng kuishi li 特牲馈食礼” of the *Yili* 仪礼; and Chapter “Zhouyu 周语” and “Jinyu 晋语” of the *Guoyu* 国语.⁷ In addition, there is a set expression *su xing ye mei* 夙兴夜寐, ‘to get up at the time of *su* and to go to bed at night.’ All these show that the word *su* is often used as a time division in early Chinese texts.

In the Yin OBI, the word *su* has such a usage as well. *Su* was inscribed as  that consists of two components: *yue* 月, ‘moon,’ and a kneeling figure. According to Xu Shen’s 许慎 *Shuowen jiezi* 说文解字, the word *su* also has the same two components. Therefore, this bone graph is transcribed as *su*. For detailed studies about the graphic evolution and original meaning of this character, see the entry of *su* in *Jiagu wenzi gulin*.⁸

Song Zhenhao (1985: 307-309) and Chang Yuzhi (1998: 150-151) have already pointed out the usage of *su* as a time division in the OBI. Their view is fully supported by the following inscription.

[07] 癸戌夙伐  不雉人。⁹

癸于旦乃伐  不雉人。

《合集》26897

On the *gui*-day, at the time of *su*, Guard will attack Zai because [that will] not

⁷ Ruan Yuan, a scholar of the Qing Dynasty, collected an enormous number of commentaries about the meaning of words in early Chinese texts. This book was reprinted in Taipei in 1967. For details of commentaries about the word *su*, see Ruan (1967: 886).

⁸ To be specific, readers are referred to Yu Xingwu (1996: 423).

⁹ Zai was an enemy of the Yin, which is shown by *Yibian* 2503. For discussion of *zhi* 雉, see Yu Xingwu (1996: 1725-1730). Yu Xingwu points out that the word *zhi* is interchangeable with the word *yi* 夷, ‘to exterminate,’ in some texts. In these two inscriptions, *zhi* occurs after *fa* 伐, ‘to attack.’ It seems to be the possible result of *fa*. If so, it makes sense to translate *zhi* here as ‘exterminate.’

exterminate [his] people.

On the *gui*-day, upon the time of *dan*, [Guard] will then attack Zai because [that will] not exterminate [his] people. *Heji* 26897

If one interprets the word *su* as morning, the word-by-word translation of the first inscription would be this: “On the *gui*-day, Guard, in the morning, will attack Zai because [that will] not exterminate [his] people.” It makes good sense. So it fits the above inscriptional context to take the word *su* as a time division.

Since the word *su* is a time division in early Chinese texts, and since such an interpretation fits inscriptional context, this writer accepts the word *su* as a division of time in the language of the Yin OBI. However, it does not necessarily denote the whole morning in the OBI, as implied by James Legge’s translation above. Both Song Zhenhao (1985: 308-309) and Chang Yuzhi (1998: 151) propose that the time division *su* refers to sometime in the night-time, an assertion with which this writer disagrees. Section 2.4, will make clear why the time division *su* does not refer to some period of the night-time.

2.3.1.1.2 *Dan*

The word *Dan* 旦 is explicitly defined as a time division in the following Chinese texts:

旦者日方出之时。 《公羊·哀公十三年注》

Dan is the time just when the sun is rising.


旦，朝。 《吕览·顺民注》¹⁰

Dan is early morning.

旦，明也。 《说文解字》

Dan is daybreak.

Strictly speaking, sunrise, early morning and daybreak do not denote the same time period. But the above records indeed show that *dan* is a time division in early Chinese texts.

In the Yin OBI, there is a graph , which has been transcribed as *dan* 旦. The following inscription shows that the word *dan* is used as a time division in the Yin OBI.

[08] 辛亥卜：翌日壬旦至食日(=时)¹¹不[雨]。

¹⁰ These two records are collected in Ruan Yuan (1967: 771).

壬旦至食日 (=时)其雨。

《屯南》 624

Crack-making on *xinhai* (day 48), [X] divined: “Next day *ren*(*zi* day 49), from *dan* to *shishi*, it will not rain.”

“On *ren*(*zi*), from *dan* to *shishi*, it perhaps¹² will rain.” *Tunnnan* 624

[09] 自旦至食日 (=时)不雨。

《屯南》 42

“From *dan* to *shishi*, it will not rain.” *Tunnnan* 42

The topic of Examples 8 and 9 is when it will rain. It fits this context perfectly to interpret the word *dan* as a time division. Since the word *dan* is also used as a time division in early Chinese texts, it seems likely that it is a time division in the Yin OBI.

However, specialists who accept the word *dan* as a time division in the language of the OBI cannot agree on the exact time to which it refers. Chen Mengjia’s hypothesis (1956: 233) is that it is 6:00 a.m. Song Zhenhao’s opinion (1985: 332) is that it corresponds to 3:00-5:00a.m. Cao Jinyan (1987: 197) assigns *dan* to the time of sunrise. Chang Yuzhi (1998: 136) follows the *Shuowen*’s definition and understood the time division *dan* as *tianming* 天明, sometime before sunrise. David N. Keightley’s translation for *dan* is “dawn” (2000: 19).

In light of the various opinions about the exact time represented by the time division *dan*, it seems problematic for Chen Mengjia (1956: 233) and Song Zhenhao (1985: 332) to fix *dan* to specific hours. According to Chen Mengjia (1956: 230), the bone graph *dan* depicts the sunrise (旦为日出大地上的象形). Because of this, one can surmise that he thinks the word *dan* refers to the time of the sunrise. But it is common knowledge that the time of sunrise always changes with season and location. For example, in Anyang, the sun rose at 5:11 am on July 5, 1166 BC and at 7:39 a.m. on December 31, 1166 BC. The sun rose at 5:06 a.m. on June 21, 2002 and at 7:30 a.m. on December 22, 2002.¹³ Clearly, the sun does not always rise

¹¹ The bone graph is often transcribed as *ri* 日 by other scholars. However, according to Ken-ichi Takashima 2003 and 2004, the word it represents is *shi* 时, ‘time,’ an interpretation with which the present writer concurs.

¹² Paul L-M Serruys (1974: 25 ff.) proposes the theory that word *qi* 其 often expresses a course of action or state that was undesirable to the Shang in complementary charges. It indeed seems true that *qi* always occurs in the undesirable charge of a set of complementary charges. But this might be the result of *qi* being a modal particle. As pointed out by Ken-ichi Takashima (1996a: 54), under certain specific conditions, *qi* adds a semantically variable element of ‘unsureness’ to the verb that it modifies.

¹³ July 5, 1166 and December 31, 1166 BC were the summer and winter solstice of that year, respectively. Similarly, June 21 and December 22 were the summer and winter solstice, respectively, of 2002. The time of the sunrise was computed by

around 6:00 a.m., either during the Yin Dynasty or in modern times. It is a fact that the time of sunrise on July 5, 1166 BC actually was 2 hours 28 minutes earlier than that on December 31, 1166 BC. Therefore, it is inaccurate for Chen Mengjia to fix the sunrise in the Yin Dynasty around 6:00 a.m. Also, the sunrise on December 31, 1166 BC was 7:39 a.m., which was 2 hours 28 minutes later than 5:00 a.m. It is therefore equally inaccurate for Song Zhenhao to fix *dan* at 3:00-5:00 a.m.

According to the *Shuowen*, *dan* refers to the time of *ming* 明. Since *ming* denotes the three quarters before the sunrise (日出前三刻为明)¹⁴, it is understandable for Chang Yuzhi (1998: 136) to interpret the time division *dan* as a time period that does not include the actual rising of the sun, or sunrise. But the sunrise is a part of the time of *dan* in early Chinese texts, as cited at the beginning of this section. Moreover, this usage is in accordance with the structure of the character *dan*. It becomes questionable for Chang Yuzhi to exclude sunrise from the time division *dan*.

If the word “dawn” can be used to refer to the time of actual sunrise and some time before sunrise in English, dawn is an appropriate translation of *dan*. But this is not a precise description for the time division *dan*. Normally, this is the point where other researchers have stopped. This author, however, would like to explore the possibility of defining the length of *dan* in terms of minutes. This does not in any way imply that the Yin already had astronomical knowledge as advanced as modern astronomy. Rather, this discussion merely represents this author’s effort to explain the time division *dan* in a new way.

Based upon the definition of *dan* in early Chinese texts, this time division generally corresponds to the time division *tianming* in modern Chinese, as proposed by Chang Yuzhi (1998: 136). *Tianming* is the time for people to do morning work. In other words, it is the time when there is no need for the assistance of any artificial illumination in order for people to conduct outdoor activities. In this sense, *tianming* might be the civil twilight in modern astronomy.

The Astronomical Applications Department of the United States Naval Observatory

the software SkyMap Pro v.9.0.9 provided by C. A. Marriot. The writer was kindly referred to this software by Mr. Liu Ciyan of Shanxi Observatory, China.

¹⁴ *Ke* 刻 is the Chinese term for a quarter hour. According to this record, which is collected by Ruan Yuan (1967: 332), the word *ming* 明 refers to 45 minutes before sunrise.

provides the public with tools to access modern astronomical knowledge. On its website <http://aa.usno.navy.mil> civil twilight is defined as:

...the limit at which twilight illumination is sufficient, under good weather conditions, for terrestrial objects to be clearly distinguished.... In the morning before the beginning of civil twilight... artificial illumination is normally required to carry on ordinary outdoor activities.

According to this definition, civil twilight in early morning is the time when people do morning work without the assistance of artificial illumination. It seems that the term civil twilight generally corresponds to the time period of *tianming* in modern Chinese or of *dan* in the Yin OBI. Since the start of civil twilight and sunrise can be accurately calculated in minutes, this provides the basis to explore the possible length of the *dan* in the language of the OBI.

In Anyang, on July 5, 1166 BC, the summer solstice, civil twilight started at 4:28 a.m. and the sun rose at 4:59 a.m. On December 31, 1166 BC, the winter solstice, the start of civil twilight was 7:10 a.m. and the sunrise 7:39 a.m.¹⁵ In both cases, it is about half an hour from the start of civil twilight to sunrise. Accordingly, I would propose that the time division *dan* in the language of the Yin OBI is about half an hour long.

2.3.1.1.2.1 The Length of *Su*

Before discussing the length of the time division *su*, it is instructive to recall Example 7:

[07] 癸戌夙伐 𠄎不雉人。

癸于旦乃伐 𠄎不雉人。

《合集》26897

On the *gui*-day, at the time of *su*, Guard will attack Zai because [that will] not exterminate [his] people.

On the *gui*-day, upon the time of *dan*, [Guard] will then attack Zai because [that will] not exterminate [his] people. *Heji* 26897

As shown in previous sections, both *su* and *dan* are time divisions in the OBI. Moreover,

¹⁵ All these specific times were calculated with Skymap.

it fits the context of this example to interpret both *su* and *dan* as time divisions. So this example can be regarded as evidence for the usage for these two words as time divisions. But the most important reason for recalling this example is to discuss the sequence of the time divisions *su* and *dan* and the possible length of *su*.

In the second inscription above, the word *yu* 于 occurs before the time division *dan* 旦. Ken-ichi Takashima (1990: 36-37) points out that “when *yu* is used, it always introduces a day more remote than *hui* does.” The reason he suggests for this is that “in the bone inscriptions the word *yu* 于 had a clear ‘futurity’ meaning. This receives further support from its etymological doublet *wang* 往 ‘to go.’” He has already cited several inscriptions with clear dates to support his opinion. Since the word *yu* had a clear “futurity” meaning, it can be inferred that the word *yu* should always introduce a day that is more remote in a pair of inscriptions, even if the word *hui* does not appear. This is certainly the case, which can be shown by the following inscriptions:

[10] 辛丑卜，巡：酉梁登辛亥。十二月。

辛丑卜：于一月辛酉酉梁登。十二月卜。 《合集》21221

Crack-making on *xinchou* (day 38), Xun [divined:] “On *xinhai* (day 48), [the king will] perform the *you*-sacrifice and offer *liang*-millet.” [Xun divined in] the twelfth month.

On *xinchou* (day 38), [Xun] divined: “On *xinyou* (day 58) of the first month, [the king will] perform the *you*-sacrifice and offer *liang*-millet.” In the twelfth month [Xun] divined.

Heji 21221

[11] 辛丑卜，贞：其于六月娩。

贞：今五月娩。 《合集》116

Crack-making on *xinchou* (day 38), [X] divined: “Perhaps, upon the coming of the sixth month, [she] will give birth.”

Divined: “In this fifth month, [she] will give birth.” *Heji* 116

In Example 10, the date after the word *yu* is day *xinyou* (day 58) of the first month and the date not being introduced by *yu* is *xinhai* (day 48). The date introduced by *yu* is 10 days later than the other date. In Example 11, the month introduced by *yu* is the sixth month, and the month not being introduced by *yu* is the fifth month. The former is one month later than the latter. These passages amount to strong evidence that the word *yu* introduces a more

remote date in a pair of inscriptions, even when the word *hui* does not occur.

In Example 7, *yu* introduces the time division *dan* but does not introduce the word *su*. Because the time introduced by *yu* is more remote than the time not being introduced by *yu*, it logically follows that the word *dan* should be a time division that comes after the time division *su*. This is, in actual fact, the order of time divisions *dan* and *su* in the language of the Yin OBI.

As for the time division *su*, there must be some compelling reason for the Yin to have established this term. To date, however, that reason has not been found in the OBI. At this juncture, it is useful to consider *su* from the point of view of modern astronomical knowledge. In the natural development of the day, before civil twilight comes nautical twilight. At the beginning of nautical twilight, under good atmospheric conditions and in the absence of other illumination, general outlines of ground objects may be distinguishable. According to the United States Naval Observatory website, before nautical twilight, “sky illumination is so faint that it is practically imperceptible.” Theoretically speaking, the change in the brightness of the sky is discernible, and it is reasonable to suppose that the Yin people would have noticed this change. This might be one possible reason for the Yin to have created a term to refer to the time period of nautical twilight. If this is the case, then by calculating the time of nautical twilight, one can establish the possible duration of the time division *su*.

In Anyang, on December 31, 1166 BC, the start and end of nautical twilight was 6:38 a.m. and 7:10 a.m., respectively. That day’s nautical twilight was about a half hour long. On July 5, 1166 BC, the nautical twilight started and ended at 3:50 a.m. and at 4:28 a.m., respectively. Its twilight was about 40 minutes long. These data imply that nautical twilight in the morning in the Yin dynasty was 30 to 40 minutes long. This author thus proposes that the time division *su* may refer to a time period of nautical twilight in the morning, which is about half an hour long.

2.3.1.1.3 *Shishi* and *Dashi*

On the bamboo strips of Qin found at Shuihudi 睡虎地 in 1975, the word *shishi* 食时 clearly is used as a time division:

日出卯，食时辰……¹⁶

Sunrise is the two-hour period *mao*, *shishi* is the two-hour period *chen* ...

日食时上。 《汉书·淮南王安传》

At the time of *shishi*, [he] handed it in.

“The biography of the King of Huainan”, *Hanshu*

The second record above is full of interest for this author because it may throw light on which word the bone graph *ri* 日 represents in the Yin OBI. The phrase *shishi* 食时 is written as *shiri* 食日 in the OBI, in which the word represented by the graph *ri* 日 is *shi* 时, as pointed out by Ken-ichi Takashima (2003, 2004, and 2004-05). In the Han dynasty, *shishi* had become one word, and the character *ri* 日 can still represent the word *shi* 时. To express the meaning “the time of *shishi* 食时,” the Han people created the phrase *rishishi* 日食时.

In any event, those two records in early Chinese texts are evidence for the usage of the word *shishi* as a time division in early Chinese. This usage of *shishi* can be found in the Yin OBI as well. The following six inscriptions are examples in which *shishi* is used as a time division:

[08] 辛亥卜：翌日壬旦至食日（=时）不[雨]。

壬旦至食日（=时）其雨。

食日（=时）至中日（=时）不雨。

食日（=时）至中日（=时）其雨。 《屯南》624

Crack-making on *xinhai* (day 48), [X] divined: “Next day *ren*(*zi* day 49), from *dan* to *shishi*, it will not rain.”

“On *ren*(*zi*), from *dan* to *shishi*, it perhaps will rain.”

“From *shishi* to *zhongshi*, it will not rain.”

“From *shishi* to *zhongshi*, it perhaps will rain.” *Tunnan* 624

[09] 自旦至食日（=时）不雨。

食日（=时）至中日（=时）不雨。 《屯南》42

“From *dan* to *shishi*, it will not rain.”

¹⁶ Those Qin bamboo strips were published in the *Yunmeng Shuihudi Qin mu* 云梦睡虎地秦墓 by the *Yunmeng Shuihudi Qin mu* bianxiezu in 1981. For the photo of this particular strip, see *Yunmeng Shuihudi Qin mu* (1981: fig. 156).

“From *shishi* to *zhongshi*, it will not rain.” *Tunnan* 42

The topic of those inscriptions above is whether it would rain in a certain time period. It makes sense to take *shishi* as a time division in these inscriptions.

To what time does *shishi* actually refer? Since *shishi* means the time of *shi* 食, ‘meal,’ as a time division, *shishi* should be related to meals in the OBI. This conclusion is accepted by specialists in the field.¹⁷

Dong Zuobin (1945.1.I: 5b) points out that, in early China, meals were commonly eaten only twice a day. Chen Mengjia (1956: 231) cites various early Chinese texts to support that statement. That people ate meals twice a day is in accordance with the Yin OBI. Up to now, there are records of *dashi* 大食, ‘big meal,’ and *xiaoshi* 小食, ‘small meal,’ in the OBI; there are no records of any other meal. It is thus highly likely that the Yin people ate only twice a day, once in the morning and once in the afternoon. If that is the case, which meal was served in the morning, the *dashi* or the *xiaoshi*?

Chao Fulin (1989: 162) proposes that *da* and *xiao* in such contexts do not refer to the size of a meal; they may refer to *zao* 早 or *zhao* 朝, ‘early,’ and *wan* 晚 or *xi* 夕, ‘late,’ respectively. According to Chao Fulin’s proposal, *dashi* should be the meal served in the morning.

However, Chao Fulin might be mistaken in saying that *da* and *xiao* in *dashi* and *xiaoshi* do not refer to the size of a meal, because the size of the meal in the morning was bigger than that in the afternoon in early China. In the Warring States Period, the meal in the morning was called *yong* 饔, and the meal in the afternoon was called *sun* 飧. In the chapter “Siyi 司仪” of the *Zhouli* 周礼, the small rite was called *sun* and the big rite was called *yongxi* (小礼曰飧, 大礼曰饔飧). In the phrase *xiaoli* 小礼, ‘small rite,’ and *dali* 大礼, ‘big rite,’ *da* and *xiao* are related to the size. In addition, one ox, one sheep and one pig were called one *lao* 牢 in early China. According to the chapter “Zhangke 掌客” of the *Zhouli*, five *lao* were served for *sun*, ‘the meal in the afternoon,’ and nine *lao* were served for *yongxi*, ‘the meal in the morning’ (飧五牢, 饔飧九牢). If these two records in the *Zhouli* are deemed credible, they

¹⁷ To name a few, see Chen Mengjia (1956: 231-232), Wen Shaofeng and Yuan Tingdong (1983: 71), Chang Yuzhi (1998: 158) and David N. Keightley (2000: 19). It should be pointed out here that these specialists read the phrase as *shiri* 食日, which is different from Ken-ichi Takashima’s interpretation of this phrase.

indicate that the size of the meal in the morning was bigger than that in the afternoon in the Warring States Period. That the meal in the morning was bigger than that in the afternoon in the Warring States Period does not prove it was so in the Yin Dynasty. But it does suggest that the meal in the morning and the meal in the afternoon are possibly called *dashi* 大食, 'big meal,' and *xiaoshi* 小食, 'small meal,' in the OBI, respectively, and these two designations may have something to do with the size of that meal.

Between the *dashi* and the *xiaoshi*, to which one does *shishi* refer? It is Chen Mengjia's opinion (1956: 232) that *shiri*, which is read as *shishi* by Ken-ichi Takashima and the present author, could be abbreviations for either *dashi* or of *xiaoshi* (卜辞“大食”“小食”皆用作朝食夕食之时, 或省称“食日”“食”). In other words, according to Chen Mengjia, it could refer to either the time in the morning when *dashi* was served or the time in the afternoon when *xiaoshi* was eaten. However, all those inscriptions in Examples 8 and 9 show that *shishi* is the time period between *dan*, 'dawn to sunrise,' and *zhongshi*, 'time in the meridian.' As a time division in the OBI, *shishi* therefore refers to the time of *dashi* in the morning. Chen Mengjia is incorrect when he says *shishi* is the abbreviation of either *dashi* or *xiaoshi*.

In the *Shiji* and the *Huainanzi* 淮南子, *zaoshi* 朝食 is a time division. David N. Keightley (2000: 20) notices that "The Former Han strips from Yinwan 尹湾 in northern Jiangsu give the 'early meal' (*zao shi* 蚤 [= 早] 食) and 'late afternoon meal' (*bu shi* 哺时) as two of the five periods into which the day was divided." So *zaoshi*, 'the meal in the morning,' is a time division in early Chinese texts. In the OBI, *dashi*, 'the meal in the morning,' is used as a time division. The following is one such example:

[12] [壬]不雨。

不启。

壬勿田，其雨。

于壬王乃田，不雨。

大食不雨。

《合集》28618

"On [*ren*-day], it will not rain."

"It will not be clear."

"On *ren*-day, [the king] should not hunt because it might rain."

“On *ren*-day, [the king] will hunt then because it will not rain.”

“At the time of *dashi*, it will not rain.” *Heji* 28618

The focus of this divination is whether it will rain on a *ren*-day. It makes good sense to take the last inscription as a charge that divines it will not rain at the time of the big meal in the morning. Because the phrase for the meal in the morning is a time division in early Chinese texts, and, because it also fits the above inscriptional context to interpret *dashi* as a time division, *dashi* can be accepted as a time division in the OBI.

As shown above, the time division *shishi* means the time of *dashi*, and the phrase *dashi* itself is a time division. *Dashi* and *shishi* are two terms referring to the same time division of the Yin day. Is it possible to specify the time of this time division?

It is Chen Mengjia’s proposal (1656: 233) that the time of *dashi* was around 8:00 a.m. Wen Shaofeng and Yuan Tingdong (1983: 71) and Song Zhenhao (1985: 330) concur without criticism. However, Chen Mengjia’s proposal is problematic.

First, there is no evidence for Chen Mengjia’s position in the Yin OBI or in early Chinese texts. His theory is merely speculation.

Second, the exact duration of time divisions changes with seasons because the starting of daytime changes with seasons. The issue concerning the start of the Yin day will be addressed later in this chapter. For the moment, consider the example of sunrise as an illustration of the duration of a time division that naturally changes with the seasons in the Yin Dynasty. For example, in Anyang, on July 5, 1166 BC, the summer solstice, the sun rose at 4:59 a.m. On December 31, 1166 BC, the winter solstice, the sun rose at 7:39 a.m. The sun rose 2 hours 40 minutes earlier on July 5 than it did on December 31, 1166 BC. Because *dashi* or *shishi* is the time division after sunrise, it surely changed, though the meal on July 5 may not exactly be 2 hours 40 minutes earlier than the meal on December 31, 1166 BC. This author had a similar experience. When he lived in Xixiahan village 西夏寒村, which is located about 15 km west of Anyang city, the time for breakfast and supper in summer indeed was different from that in winter.

Because of the foregoing two reasons, especially the second one having to do with the change in the seasons, this author believes Chen Mengjia is incorrect when he seeks to fix *dashi* at 8:00 a.m. At present, there is no evidence to establish the exact time of the time division *shishi* or *dashi*.

2.3.1.1.4 *Rizhong* and *Zhongshi*

Rizhong 日中 occurs as a time division in early Chinese texts, a fact that is proven by the following passages:

自朝至于日中昃不遑暇食。 《尚书·无逸》

From morning to midday, and from midday to sundown, he did not allow himself time to eat. (Legge 1872: 469)

日中而贾不至。 《史记·司马穰苴列传》

Jia did not arrive at midday. “The biography of Sima Rangju,” *Shiji*

In these two sentences, *rizhong* refers to the time of midday. The story in Chapter 64 of the *Shiji* shows *rizhong* means “exact noon.”¹⁸ In his latest comments, Ken-ichi Takashima tells this author that he has written a paper called “*Rizhong* 日中 and *Zhongri* 中日 in Classical Chinese,” which this author has not read yet. In this paper, he has “examined many classical texts and...[has] come to the conclusion that *rizhong* 日中 is a time division referring to noon, as well as a time duration referring to when the sun is still in its orbit in the sky with *wu* 午 as its apical point.” Those two records certainly support Ken-ichi Takashima’s conclusion.

In English, noon refers to 12:00 in the middle of the day. It also refers to time duration. In a similar way, as shown above, in Chinese the word *rizhong* can mean not only 12:00 in the middle of the day, but also a time duration. This author’s understanding is that *rizhong* refers to some time around noon when it is pertaining to time duration. For example, elementary students go to school at 8:30 a.m. Chinese do not say those students go to school at *rizhong*. Students have a recess at 10:30 a.m. Chinese people also do not say they do that at *rizhong*. When *rizhong* is used as a word implying time duration, it may correspond to *zhongwu* 中午 in modern Chinese, which means some time around noon. Whether *rizhong* refers to noon or some time around noon, it is a time division in early Chinese.

18 Sima Rangju and Zhuang Jia agreed to meet in Rangju’s camp at *rizhong* next day. When Zhuang Jia did not come to meet him at *rizhong*, Rangju immediately destroyed the water clock. Zhuang Jia finally came, and Rangju killed him as a warning to others.

Rizhong also is used as a time division in the OBI. Below is an example:

[13] 日中有大雨。

其雨。

《合集》29789

It should be at *rizhong* that there will be a big rain.

Perhaps it will rain.

Heji 29789

In this example, it makes sense to take *rizhong* as a time division. As Ken-ichi Takashima points out to this author in his comments, rain is a durative verb referring to a certain length of time when the phenomenon lasts. It sounds very strange to say that it will rain exactly at noon and probably stop after noon is passed. His analysis is correct. In Example 13, *rizhong* should refer to some time around noon. This is a piece of good inscriptional evidence for the usage of *rizhong* as a time division.

For *rizhong* as a word of time duration, Ken-ichi Takashima (2003: 5) offers more detailed analysis when he suggests that, in terms of linguistic structure, the relationship between 中日 and 日中 is very different: the former is an attributive, determiner noun phrase, and the latter consists of a “N + V” forming a noun phrase (literally “the-sun-being-in-the-middle”), translatable to “during the day.” He has noticed that while there are a few examples of the 中日 phrase collocated with the 至 + (于) + X (where X is a time word such as 昏 “dusk”, 郭兮 “late afternoon”, and 昃 “[the sun in decline:] afternoon”), no such collocation is found with the 日中 phrase. It is his belief that the significance of the lack of that kind of collocation “is that the 日中 phrase implies a certain duration of time (daytime, while the sun is still in the sky), whereas the other terms such as 旦 ‘daybreak,’ ... etc. refer to a time period shorter than the 日中 phrase.”

Again, this author accepts Ken-ichi Takashima’s analysis above, with the exception of two minor points. First, it seems that there is an example of the collocation of the phrase *rizhong* with ... *zhi yu*.... The following is the example cited by Chang Yuzhi (1998: 159).

[14] 贞：日中[至]于昃雨。

《合集》13036

Divined: “From *rizhong* to *ze*, it will rain.” *Heji* 13036

It is true, as already pointed out several times by Takashima, that this is not a perfect example of the collocation of *rizhong* with *zhi yu*, because *zhi* is supplied by Chang Yuzhi. On the other hand, her transcription is possibly correct. In addition, as cited at the beginning

of this section about *rizhong*, there is an example of the collocation of the phrase *rizhong* with the time division *zhao* and *ze* in the chapter “Wuyi” of the *Shangshu*. It is said that this chapter was created at the very beginning of the Western Zhou Dynasty, which was very close in time to the Yin Dynasty. If that is the case, it may shed light on the usage of that phrase in the Yin OBI. Given these two considerations, it is not certain that there is absolutely no collocation of the phrase *rizhong* with ... *zhi yu*....

Second, Ken-ichi Takashima mentions that other terms such as 旦 ‘daybreak,’ ... etc. refer to a time period shorter than the 日中 phrase. It would be ideal if he were to present a system for comparing durations of time divisions in the Yin OBI.

Now, the author would like to turn his attention to the word *zhongshi*. In the commentary to the *Taiyuanzhou* 太元周, there is the following record:

正午为中。

Exact noon is called *zhong*.¹⁹

In addition, Ken-ichi Takashima has found the following record in his *Siku quanshu*:

午前午后之视差，岂不分左分右渐次高庳？以正午为中。 《新法算书》卷 69

As for the difference between the view before noon and that after noon, could it possibly not [be] affected by [different positions in] the left, right, high and low? Take the exact noon as *zhong*. *Xinfa suan shu*, vol. 69

Both records show that *zhong* means “noon.” These records constitute evidence for *zhong* being used as a time division in Chinese texts. The same usage of *zhong* can be found in the Yin OBI as well. Below are two examples:

[15] 中日 (=时)至墉兮不雨。

中日 (=时)至[墉]兮[其雨]。 《屯南》 624

“From *zhongshi* to *yongxi*, it will not rain.”

“From *zhongshi* to (*yong*)*xi*, (it perhaps will rain).” *Tunnan* 624

[16] 食日 (=时)至中日 (=时)不雨。

中日 (=时)至旻不雨。 《屯南》 42

“From *shishi* to *zhongshi*, it will not rain.”

¹⁹ Ken-ichi Takashima has made efforts to locate this record, cited by Ruan Yuan (1967: 2), in his *Siku quanshu* 四库全书. But he did not find it. It thus seems impossible to find the original text.

“From *zhongshi* to *ze*, it will not rain.” Tunnan 42

The four inscriptions above divine if it would rain in a certain time period. It fits such contexts to interpret *zhongshi* as a time division. *Zhongshi* is a newly found time division of the Yin. It is Ken-ichi Takashima (2003: 4) who puts forward the theory that the phrase *zhongshi* is a time division in the OBI. He points out that “the surface ‘中日’ in the Shang language must have been 中时 ‘time in the meridian’ in the same way as 食日 and 大食日 stands for 食时 ‘(time of eating:) meal time’ and 大食时 ‘(time of big eating:)’ breakfast time.”

Following the criteria for judging a time division in the Shang language, and in light of the fact that *zhong* is a time division in Chinese texts, and because it makes sense to take *zhongshi* as a time division of the Yin OBI, this author is compelled by logic and the facts to agree with Ken-ichi Takashima that *zhongshi* is a time division.

Chen Mengjia (1956: 229), Wen Shaofeng and Yuan Tingdong (1983: 73), Song Zhenhao (1985: 307) and Chang Yuzhi (1998: 136-137) all transcribe the phrase *zhongshi* as *zhongri* 中日. All of them claim that *zhongri* is another designation of *rizhong* 日中. In spite of their consensus, this writer disagrees for the following reasons: First, they have provided no reasons as to why *rizhong* had to be written as *zhongri*. Without an explanation, their claims appear weak and arbitrary.

Second, there is no occurrence of *zhongri* as a time division in early Chinese texts. This author’s first criterion for determining a time division in the Yin language is the presence of the term in question in early Chinese texts. Because *zhongri* is absent from the early texts, this writer cannot accept *zhongri* as a time division of the Yin OBI.

Third, both textual and inscriptional evidence supports Ken-ichi Takashima’s reading, as shown above.

For these three critical reasons, this writer concludes that the time division in the Yin OBI is, indeed, *zhongshi* rather than *zhongri*.

As a time division, both *rizhong* and *zhongshi* can refer to the time of midday or noon. That is the reason this author considered both terms in the same section.

2.3.1.1.5 *Ze*

The word *ze* 昃 appears as a time division frequently in early Chinese texts. Two examples are cited below.

自朝至于日中昃不遑暇食。 《尚书·无逸》

From morning to midday, and from midday to sundown, he did not allow himself time to eat. (Legge 1872:469)

昃，日在西方时。 《说文解字》

Ze is the time when the sun is in the west. *Shuowen jiezi*

These two records are clear evidence for the usage of *ze* as a time division in the early Chinese language. Examples 14 and 16 are evidence for its usage as a time division in the Yin OBI. The following is another example.

[17] 中日 (=时)其雨。

王其省田，昃不雨。

昃其雨。 《合集》29910

“At the time of the meridian, it will perhaps rain.”

“The king will make an inspection of the field. At the time of *ze*, it will not rain.”

“At the time of *ze*, it perhaps will rain.” *Heji* 29910

The topic of these three inscriptions is whether it will rain or not at different times of that day. It fits the context to interpret *ze* as a time division. This is another piece of evidence for *ze* being a time division in the OBI.

Simply based on the shape of the bone graph of *ze*, Dong Zuobin (1945.2.II: 41) proposes that the time division *ze* refers to the span of time between 2:00-3:00 p.m. but neglects to provide any rationale. Chen Mengjia (1956: 230) states that *ze* denotes the time around 2:00 p.m., and his assertion is repeated by Wen Shaofeng and Yuan Tingdong (1983: 74), Song Zhenhao (1985: 330) and Chang Yuzhi (1998: 138). Chen Mengjia bases his statement on Kong Yingda's sub-commentary to the Chapter “Wuyi” of the *Shangshu*. However, as demonstrated by Ken-ichi Takashima (2002), Kong Yingda's interpretation of the *rong* 𠄎 sacrifice lacks credibility because it is not supported by inscriptional evidence. And, Kong Yingda's sub-commentary on the word *ze* is not supported by contemporary evidence either. It is doubtful that Kong Yingda's comments can serve as valid evidence for the interpretation of materials seen in OBI. In other words, there is no hard evidence for the

view that the word *ze* refers to the time around 2:00 p.m. To what time does the time division *ze* refer in that case? If it refers to a time period, how long is it? Both textual materials, as cited in the beginning of this section, and inscriptional materials such as Examples 14 and 16, show only that *ze* is a time division occurring after noon. There is nothing to indicate its duration.

2.3.1.1.6 *Yongxi*

The following inscriptions indicate that the word *yongxi* 壝兮²⁰ is used as a time division in the Yin OBI:

[08] 中日 (=时) 至壝兮不雨。

中日 (=时)至[壝]兮[其雨]。 《屯南》 624

“From noon to *yongxi*, it will not rain.”

“From noon to [*yong*]xi, [it perhaps will rain].” *Tunnan* 624

[18] 昃至[壝]兮其雨。

壝兮至昏不雨。

壝兮至昏其雨。 《合集》 29801

“From noon to [*yong*]xi, perhaps it will rain.”

“From *yongxi* to *hun*, it will not rain.”

“From *yongxi* to *hun*, perhaps, it will rain.” *Heji* 29801

The two inscriptions in Example 8 divine whether it will rain during the time period from noon to *yongxi*. The three inscriptions in Example 18 divine if it will rain from *yongxi* to *hun*, ‘dusk.’ All these inscriptions are about whether it will rain during a certain time period. In these five inscriptions, *zhongshi*, *ze*, *hun* are all time divisions. These contexts

²⁰ This word was transcribed as *guoxi* 郭兮 in previous drafts of this dissertation. At the advice of Ken-ichi Takashima, the present writer has read philological studies collected by Yu Xingwu (1996: 1941-1949). Among them, Wang Guowei has pointed out that the graph in question is the same as that of *guo* 郭 in the *Shuowen*. But it is also the early graph of *yong* 壝. Because of this, it seems that the graph can be transcribed either as *guo* or as *yong*. However, after comparing the word represented by this graph in the bronze inscriptions and relevant expressions in pre-Qin texts, Wang Guowei’s analysis has shown that the pronunciation of the word represented by this graph is similar to the word *yong* 庸 at that time. It is thus more accurate to transcribe it as *yong*.

suggest that the word *yongxi* is a time division in the language of the Yin OBI.

In early Chinese texts, however, the word *yongxi* never occurs, and it is impossible to find an example of *yongxi* as a time division in classical Chinese. According to the criteria this writer has adopted for determining a time division in the OBI, *yongxi* cannot be accepted as a time division of the Yin language. On the other hand, Examples 8 and 18 are compelling evidence for the usage of *yongxi* as a time division. After due consideration, this writer is making an exception to his criteria and is accepting *yongxi* as a time division in the Yin OBI. This is the only such exception.

The word *yongxi* is sometimes abbreviated as *yong*.²¹ Guo Moruo (1965: 538),²² Dong Zuobin (1945.1.I: 6b-7a) and Chen Mengjia (1956: 231) argue that it is abbreviated as *xi*, too. However, as Chang Yuzhi's analysis (1998:138, note 1) shows, their transcriptions and interpretations of these three relevant inscriptions are incorrect.

As a time division, to what time period does *yongxi* refer? It is the opinion of Guo Moruo (1965: 538) and Dong Zuobin (1945.1.I: 6b-7a) that it refers to early morning. However, these inscriptions in Examples 8 and 18 show that it is a time division between the time division *ze* and *hun*, i.e., sometime in the afternoon. Guo Moruo and Don Zuobin are shown to be mistaken, as is already suggested by Chen Mengjia (1956: 231).

Chen Mengjia (1956: 231) points to *yongxi* as a time division for a time period in the afternoon. But he creates a problem when he specifies *yongxi* as the time period around 4:00 p.m., a view also taken by Wen Shaofeng and Yuan Tingdong (1983: 74). Song Zhenhao (1985: 330) fixes the time of *yongxi* at 2:00 p.m. As shown in previous sections, the exact time of time divisions of the Yin day changes with seasons. For this reason, the present writer does not accept Chen Mengjia's and Song Zhenhao's specifications for *yongxi*.

2.3.1.1.7 *Mu*

²¹ *Heji* 30203 is a good example:

今日乙壠启，不雨。

At the time *yong* of this *yi*-day, it became clear and did not rain.

In this inscription, it makes good sense to take the word *yong* as a time division. It seems reasonable to assume it is the abbreviation of the word *yongxi*.

²² Guo Moruo's *Yinqi cui bian* 殷契萃编 was first published in Japan in 1937. In 1965, it was reprinted, which is the edition the present writer has been using.

There are many pieces of evidence to support the word *mu* 暮 as a time division in early Chinese texts. Below are two examples.

暮，日且冥也。 《说文解字》

Mu refers to the time when the day is about to darken. *Shuowen jiezi*

吾日暮途远。 《史记·伍子胥列传》

At the time of dusk, I have a long way to go. “The biography of Wu Zixu,” *Shiji*

Similar usage of *mu* can be found in the Yin OBI, as shown by the following inscriptions.

[19] 父己刂²³，𠄎暮酉。

𠄎夕酉。

《合集》27401

As for the *gui*-cut sacrifice to Father Ji, it should be at the time of *mu* that [the king will] perform the *you*-cutting sacrifice.

It should be at the time of *xi* that [the king will] perform the *you*-cutting sacrifice.

Heji 27401

[20] 祷²⁴，𠄎暮酉。

夕酉。

《合集》30845

In praying, it should be at the time of *mu* that [the king will] perform the *you*-cutting sacrifice.

At the time of *xi*, [the king will] perform the *you*-cutting sacrifice. *Heji* 30845

The topic of Examples 19 and 20 is to determine the appropriate time for performing the *you*-cutting sacrifice between *mu* and *xi* 夕, the time division for night-time in the Yin day. It fits these contexts to interpret *mu* as a time division.

These two examples show that the Yin people needed to select a period between the time division *mu* and the time division *xi*. These two examples also show that the Yin people divined the suitability of *mu* before divining that of *xi*. These two facts indicate that these two time divisions should be mutually exclusive.

As for the time period of *mu*, it is an issue that cannot be decided by inscriptional evidence yet. Since the *Shuowen* defines *mu* as the time when the day is about to darken, the tentative proposal is that it may refer to the time around sunset.

²³ For detailed analysis of the word *gui* 刂, see Ken-ichi Takashima (1996a: 418-425).

²⁴ For the rationale to transcribe the bone graph in question to *dao*, see Ji Xiaojun (1991).

2.3.1.1.8 *Hun*

Hun 昏 is a time division in classical Chinese. For instance, its definition in the *Shuowen jiezi* is *ri ming ye* 日冥也 (the day is dark). In addition, such usage of the word *hun* is supported by the following commentaries collected by Ruan Yuan (1967: 196):

日入后二刻半为昏

The time of 37 ½ minutes²⁵ after sunset is called *hun*.

日入后漏三刻为昏

By water clock, three-quarters of an hour after sunset is called *hun*.

According to these two records, the word *hun* refers to the time period of about three-quarters of an hour after sunset. These records represent evidence suggesting that *hun* is indeed a time division in early Chinese texts.

There are inscriptions in which the word *hun* appears to be a time division. For example:

[21] 壙兮至昏不雨。

壙兮至昏其雨。 《合集》 29801

“From *yongxi* to *hun*, it will not rain.”

“From *yongxi* to *hun*, perhaps, it will rain.” *Heji* 29801

[22] 壙兮至昏不雨。 《合集》 29794

“From *yongxi* to *hun*, perhaps, it will rain.” *Heji* 29794

[23] 夙今昏酉。

于今夕酉。 《合集》 30838

It should be at this *hun* that [the king will] perform the *you*-cutting sacrifice.

Upon this *xi*, [the king will] perform the *you*-cutting sacrifice. *Heji* 30838

These inscriptions in Examples 21 and 22 divine if it will rain in the time period from *yongxi* to *hun*. The two inscriptions in Example 23 divine the time for performing the *you*-cutting sacrifice. In these contexts, it does make sense to interpret *hun* as a time division.

²⁵ Chen Meidong (2003: 130-135) has described in detail how the Chinese used *ke* 刻 to measure time in the Qin and Han Dynasties. At that time, one day was divided into one hundred *ke*. The exact time of one *ke* is 14.4 minutes long, which is very close to the time of a quarter-hour in English.

As for the exact time of *hun*, Chang Yuzhi's opinion (1998: 139) is that *hun* refers to sunset only (*zhi ri luoxia, ji riru zhi shi* 指日落下, 即日入之时). Her opinion is not in agreement with those textual records cited at the beginning of this section.


Chen Mengjia (1956: 230) and Wen Shaofeng and Yuan Tingdong (1983: 75) have reached the same conclusion that *hun* refers to a time period when it becomes dark, starting from sunset. Chen Mengjia (1956: 233) further specifies that *hun* denotes some time around 6:00 p.m. Again, such a specification is problematic because the time of sunset changes with seasons. For instance, in Anyang, the sun set at 7:38 p.m. on July 5, 1166 BC. According to Chen Mengjia, *hun* started at 7:38 p.m. on that day. Clearly, this is about 1 hour 40 minutes later than 6:00 p.m.

In the corpus of the Yin OBI, there is no inscriptional evidence to show the duration of this time division *hun*. Considering those textual records cited at the beginning of this section, the writer tentatively accepts Chen Mengjia's view (1956: 230), which is that it refers to a time period when it becomes dark, starting from sunset.

2.3.1.1.9 Zhou, Du, Zhi, and Zhu: Pseudo Time Divisions

It is Song Zhenhao who first proposed *zhou* 昼, *du* 督, *zhi* 执 and *zhu* 住 as time divisions of the Yin day. However, an examination of relevant inscriptions shows that these words are not time divisions in the OBI.

2.3.1.1.9.1 Zhou

The bone graph for the alleged time division *zhou* 昼 is written as . Song Zhenhao (1991: 40) suggests that *zhou* originally meant to determine time by erecting a wooden pole and measuring its shadow under the sun; and that at a later time *zhou* is used exclusively as a time word (昼的本义或是立木测度日影以定时辰, 后来又专门以表时). Chang Yuzhi (1998: 149) accepts Song Zhenhao's conclusion. Even so, there are some problems with Song's explanation of the graph *zhou*.

First of all, the so-called original meaning of that word derives merely from Song

Zhenhao's speculation. He does not produce any textual or inscriptional evidence to justify his claim that the word *zhou* does, indeed, refer to a method of determining time.

Second, Song Zhenhao interprets the hand-held object described in that graph as a straight wooden pole. But the object is actually more like a brush. This might be the reason why the authors of the *Tunnan* transcribe this bone graph as *yuri* 聿日 rather than *zhou*.

Third, Song Zhenhao mentions that the purpose of erecting a straight pole is to measure its shadow. However, there is nothing in the graph that can be considered as the shadow of that pole.

Fourth, Song Zhenhao and Chang Yuzhi cite only one example of the word *zhou* being used as a time division in the OBI.²⁶ The fact is that this example does not provide a compelling inscriptional context to show that this word is a time division. Below is their example.

[24] 甲午卜：鬯……

二旬。

重牛。

牢。

今日。

昼。

《屯南》2392

On *jiawu* (day 31), [X] divined: “*Chang* (aromatic wine)²⁷……

Two *yous* [a word referring to a unit of measure].

It should be oxen.

Specially reared oxen.

Today.

Zhou.

Tunnan 2392


On this piece of oracle bone, that bone graph occurs alone. This certainly is not good evidence for the usage of the alleged word *zhou* as a time division in the OBI.

²⁶ Anne O. Yue mentions the occurrence of *jinzhou* 今昼 on *Heji* 22942. This is cited by Chang Yuzhi (1998: 169) as well. It is my mistake to say Chang Yuzhi has cited one example only. The rubbing of *Heji* 22942 shows that the inscription is not complete. More work needs to be done in order to understand the meaning of *jinzhou* on *Heji* 22942.

²⁷ *Chang* 鬯 should be the liquid made from grains. The translation “aromatic wine” is that of Ken-ichi Takashima (1996a: 209).

Given these four reasons, this writer cannot accept the word *zhou* as a time division in the language of the Yin OBI.

2.3.1.1.9.2 *Du*

The bone graph interpreted as *du* 督 by Song Zhenhao (1991: 34-35) is scribed as . According to him, like the graph of the so-called *zhou*, this graph also depicts the process of determining time by measuring the shadow of an erected wooden pole. He further speculates that this procedure is always done at noon, and that *du* is thus used as a time word to represent noon. As in the case of his interpretation of *zhou*, his explication of *du* is equally difficult to accept.

First, his interpretation of the graph in question is mere speculation. There is no inscriptional or textual evidence to support his interpretation.

Second, his interpretation of the graph cannot stand scrutiny. If this graph indeed depicts the process of determining time by measuring the shadow of an erected wooden pole, as Song Zhenhao claims, the pole must be as straight as possible so that its shadow can be measured accurately. But there is nothing that represents a straight wooden pole in the bone graph. In addition, in order to be able measure the shadow of a pole, the component sun must appear at the top rather than at the bottom of the graph. The so-called original meaning of this graph proposed by Song Zhenhao does not stand up to scrutiny.

Third, since the purpose of measuring the length of a pole under sunshine is to determine time, it follows that people do not know the time when they do that. If so, there is no basis for Song Zhenhao to assert that this procedure is done at noon only.

My analysis above shows that Song Zhenhao's interpretation of the graph 督 is incorrect, which casts serious doubt on its usage as a time division. More importantly, Song Zhenhao fails to provide valid evidence to support his opinion. In his article, he cites *Heji* 30893, 30894, 30599, and 30365 as his evidence. The reason he takes them as evidence is because this graph appears between words 𠂔 and 酉. However, as shown in Section 2.2.2, the occurrence of a word between 𠂔 and 酉 is not a criterion for judging a time word in the Yin

language. Therefore, none of those four examples lends any support to his opinion.

Chang Yuzhi (1998: 148) cites the following example to support the alleged word *du* as a time division in the OBI:

[25] 𠩺督[酉夕]。

夕酉。

《合集》30844

It should be at *du* that [the king will] perform [the *you*-cutting sacrifice].


[It should be at] night that [the king will] perform the *you*-cutting sacrifice.

Heji 30844

At first glance, the topic of these two inscriptions in this example is the appropriate time for performing the *you*-cutting sacrifice. However, Chang Yuzhi's transcription is not accurate. The bone graph she transcribes as *du* is severely damaged. It is far from certain that it actually is the graph *du*. As a matter of fact, the authors of the *Jiaguwen heji shiwen* transcribe this graph as *zhong* 中, 'middle.' Because of the uncertainty about the bone graph, it can hardly be considered a piece of evidence for the alleged time division *du*.

Because Song Zhenhao's interpretation of the graph 督 is mistaken, because there is no textual or inscriptional evidence to show the word represented by this graph has ever been used as a time division, the so-called time division *du* is unacceptable.

2.3.1.1.9.3 *Zhi*

Tang Lan 唐兰 (1939: 46) interprets the bone graph  as an early form of the character *zhi* 执, 'to seize.' As for the word represented by this graph, Tang Lan interprets it as *re* 热, 'hot.' He further asserts that this word is used as a time division referring to the time of *shangdeng* 上灯, 'to light the lamp.' Tang Lan's opinion is followed by Song Zhenhao (1985: 307) and Chang Yuzhi (1998: 142-145); but they have not proven *zhi* is a time division yet. There are three reasons for the shortcoming in their reasoning.

First, in early Chinese texts, there is no evidence to show the word *zhi* or *re* has ever been used as a time division.

Second, there is no compelling inscriptional evidence to support the usage of *zhi* as a

time division. Tang Lan (1939: 46) bases his stance upon the pair of phrases *zhiru* 执入 and *xiru* 夕入, whose meaning will be explained shortly. But they do not conclusively show the word *zhi* is a division of time. Two inscriptions that contain the pair of phrases *zhiru* and *xiru* are cited below.

[26] 王其执入，不遘雨。

王夕入于止，不雨。 《合集》30094 + 《合集》30113²⁸

The king might *zhi ru*, because he will not encounter rain.

The king will *xi ru* at Zhi, because it will not rain. Heji 30094 + Heji 30113

In the first inscription, the word *qi* 其 occurs before the word *zhi* 执. Ken-ichi Takashima devotes considerable time and effort to understanding the word *qi*. His conclusion is that it functions as a modal particle in the language of the OBI.²⁹ *Qi* can be construed as modifying a verb, and in this example, *qi* modifies *zhi*. So *zhi* should be interpreted as a verb rather than a noun. Since *zhi* is not a noun, it certainly cannot be a time division.

Besides the first inscription in Example 26, there are other inscriptions where the word *zhi* occurs as a verb. The following two inscriptions are apt examples:

[27] 其执。

勿执。

《合集》28939

[The king] will *zhi*.

[The king] should not *zhi*.

Heji 28939

These two inscriptions are a pair of *duizhen* 对贞, 'a set of complementary charges.' In the first inscription, the word *zhi* is again modified by the modal particle *qi*, which shows that *zhi* is a verb. In the second inscription, the word *wu* 勿 appears before *zhi*. Ken-ichi Takashima has done comprehensive studies on the negatives in the language of the OBI.³⁰ *Wu* is one of those *m-type negatives "that negate verbs whose salient feature is their 'controllability' – verbs which are thought of as being controllable by the will of living human beings" (1996a: 370). Clearly, *zhi* in the second inscription should be interpreted as a

²⁸ Chang Yuzhi (1998: 144) has rejoined these two pieces of oracle bone.

²⁹ For examples of *qi* being treated as a modal particle, see Ken-ichi Takashima (1996a: 191-192).

³⁰ For his detailed research on negatives in the OBI, readers are referred to Ken-ichi Takashima (1973, 1988 and 1996a: 364-383).

verb as well.

As for the word represented by the graph that is transcribed as *xi* 夕 above, it can be used as a verb, which is shown in Example 28. In this example, that graph represents the word *yue* 刖, ‘to amputate, to cut off a limb or other part of an animal body.’³¹

[28] 癸酉卜，争贞：翌甲戌刖十羊。 《佚》 404

Crack-making on *guiyou* (day 10), Zheng divined: “On next day *jiaxu* (day 11), [the king] will amputate ten sheep.” Yi 404

In this inscription, the word represented by the graph in question is the best candidate for a verb in this charge. Since sheep are often used in sacrifices, it makes the best sense to interpret the word represented by the graph as the verb *yue* 刖.

Now, let’s return to Example 26. As preceding analysis here has shown, since the modal particle *qi* appears before the word *zhi*, the preference should be to construe *zhi* as a verb. In addition, *xi* could be an incorrect transcription; it should more judiciously be transcribed as *yue* 刖. According to such an understanding, there would not be a single time division in Example 26. This example does not support Tang Lan’s opinion (1939: 46) that the word *zhi* is a time division in the Yin OBI.

Song Zhenhao (1985: 307) and Chang Yuzhi (1998: 142-143) further cite the following inscriptions as evidence for *zhi* as a time division in the OBI.

[29] 𠄎执酉𠄎。 《合集》 27052

*It should be at the time of *zhi* that [the king will] perform the *you*-cutting sacrifice.

Heji 27052

The translation above is based upon their understanding of the word *zhi*. The reason for them to regard this inscription as evidence for *zhi* being a time division is that the word occurs between 𠄎 and 酉𠄎. As analyzed earlier in Section 2.2.2, such an argument is untenable.

[30] 其执酉𠄎。 《合集》 30746

[The king] will *zhi* and perform the *you*-cutting sacrifice. *Heji* 30746

This is cited by Chang Yuzhi (1998: 142). Since the word *zhi* occurs after the modal

³¹ Ken-ichi Takashima (2002: 366) is the most recent study on the verb represented by the bone graph that has often been transcribed as *xi*.

particle *qi*, it should be a verb, as analyzed in Example 26.

[31] 王其田，执入，不雨。 《合集》28571

The king will hunt. [When he returns, he will] enter from *zhi* [because] it will not rain [there]. *Heji* 28571

[32] 王其省田，执入，不雨。 《合集》29003

The king will inspect fields. [When he returns, he will] enter from *zhi* [because] it will not rain [there]. *Heji* 29003

These examples are also cited by Chang Yuzhi (1998: 143) as evidence for the word *zhi* being used as a time division. But Zhang Bingquan (1959: 223) has already pointed out that *zhi* is a place name, which is supported by the following inscription.


[33] 于执入，亡灾。 《合集》28984

[When the king] enters from *zhi*, there will be no disasters. *Heji* 28984

Here, it makes sense to take *zhi* as the complement of *yu* and interpret it as a place name. If this is the case, Examples 31 and 32 are not good evidence for the usage of the word *zhi* as a time division.

In short, there is no inscriptional evidence to support the word *zhi* as a time division. There is no occurrence of *zhi* being used as a time word in early Chinese texts. Therefore, the word *zhi* cannot be accepted as a time division in the language of Yin OBI.

2.3.1.1.9.4 *Zhu*

Song Zhenhao (1987:20) transcribes the bone graph  as *zhu* 住, 'to live,' and interprets it as a time division referring to the time period from 21:00 to 23:00, which is accepted by Chang Yuzhi (1998: 145). They acknowledge that there is only one inscription in which *zhu* occurs as a time division. That inscription is as follows.

[34] 𠄎住酉𠄎。 《合集》27522

*It should be at the time of *zhu* that [the king will] perform the *you*-cutting sacrifice.

Heji 27522

Again, the reason for them to interpret *zhu* as a time division in this inscription is

because it appears between 𠄎 and 酉夕. As shown earlier in Section 2.2.2, one cannot establish a time division simply based upon the occurrence of a word between 𠄎 and 酉夕. Strictly speaking, Example 34 is not evidence for the usage of the word *zhu* as a time division.

Because the word *zhu* appears only once in the OBI, and because it is not certain whether this word is a time division in that inscription, it is safe to say that there is no example of the word *zhu* being used as a time division in the language of the Yin OBI.

2.3.1.2 Sub-divisions of *Ri* in Period I

Some time divisions of *ri* in the other four periods, including Period I, are the same as those in Period III. In such cases, this writer will only analyze inscriptions of those periods in which those time divisions appear. For those inscriptions not found in Period III, the writer will cite both textual and inscriptional evidence to prove they are indeed time divisions in the Yin OBI.

2.3.1.2.1 *Ming*

The following is an example of the word *ming* 明 as a time division in early Chinese.

明王格周庙。 《小孟鼎》

At the time of *ming*, the king arrived at the Zhou temple.

For its usage as a time division in the Yin OBI, the following is one of the most often cited examples:

[35] 丙申卜：翌丁酉酉伐³²，启。丁明雾³³，大食日 (=时) 启。一月。

³² *Fa* 伐 here refers to how sacrificial victims are handled when the *you*-cutting sacrifice is offered, which is clearer in the following inscription:

丙申卜，𠄎贞：来乙巳酉下乙。王占曰：“酉，隹有祟，其有𠄎。乙巳酉，明雨。伐既雨。《合集》11497

Crack-making on *bingshen* (day 33), Nan divined: “On the coming *yisi* (day 42), [the king will] perform the *you*-cutting sacrifice to Xiayi.” The king, having prognosticated [the omens], declared: “The performance of the *you*-cutting sacrifice means that there will be a curse [from Xiayi], and there will be thunder.” On the *yisi* day, [the king] performed the *you*-cutting sacrifice, and in the morning it rained. [When he] dismembered victims, it was already raining.

Heji 11497

The translation above is basically that of Ken-ichi Takashima (1996a: 195). In this example, *fa* clearly is a verb.

On *bingshen* (day 33), [X] divined: “On the next day *dingyou* (day 34), [when the king] performs the *you*-cutting sacrifice and dismembers victims, the weather will be clear.”

On *ding[you]*, at the time of *ming*, it was foggy. At the time of the big meal, the day became clear. [Day *bingshen* was in] the first month. Heji 40341

In the verification of this inscription, both the word *ming* and the phrase *dashishi* occur. The translation above shows that it makes good sense to interpret both of them as time divisions. Below is another example of *ming* as a time division.

[36]癸亥卜，贞：旬。二月。乙丑夕雨。丁卯明雨。戊小采日（=时）雨止，风。己明启。
《合集》21016

Crack-making on *guihai* (day 60), [X] divined: “[In the next] 10-day week, [there will be no disasters].” [Day *guihai* was in] the second month. At the night of *yichou* (day 2), it rained. At the time of *ming* on *dingmao* (day 4), it rained. At the time of *xiaocai* on *wu[chen]* the rain stopped; the wind [started]. At the time of *ming* on *ji[si]* (day 6), it became clear. Heji 21016

In this inscription, the word *ming* specifies the time when it rained on day *dingmao* and when it became clear on *jisi*. This is another piece of evidence for *ming* as a time division.

In Period I, the word *ming* is a time division. In Period III, *dan* is a time division. It is accepted by specialists in the field that both *dan* and *ming* refer approximately to the same time period of the day, for two reasons. First, as cited in Section 2.3.1.1.2, the *Shuowen* defines *dan* as *ming* (旦，明也). Second, it seems that both *dan* and *ming* are the time period immediately preceding *dashi*, ‘the time of big meal.’ In the verification of Example 36, *ming* and *dashi* occur as two time divisions of *dingyou*. Since *ming* appears before *dashi*, it should be earlier than *dashi*. Also, Examples 8 and 9 of Period III show that *dan* occurs before *shishi*. It is therefore reasonable to take *ming* and *dan* as two expressions of the same time period of the Yin day in the OBI.

³³ For studies on this bone graph, see Guo Moruo (1937: 560) and Yu Xingwu (1979: 107-111).

³⁴ Heji 13450 and Heji 40341 are *tongwen buci* 同文卜辞, a set of inscriptions of the same event. For details on *tongwen buci*, see Hu Houxuan (1947). The difference between these two inscriptions is that the four characters *riqi yiyue* 日启一月 are completely missing on Heji 13450. Because these two inscriptions are records of the same event, the four lost characters *riqi yiyue* on Heji 13450 can be supplied based upon their appearance on Heji 40341.

2.3.1.2.2 *Dashi, Dashishi and Shishi*

On *Heji* 20961, there is one example of *dashi* 大食, ‘big meal,’ as a time division.

[37] 丙戌卜：三日雨。丁亥大食雨。 《合集》 20961

On *bingxu* (day 23) divined: “In three days, it will rain.” At the time of *dashi* on *dinghai* (day 24), it rained. *Heji* 20961

In the verification of this inscription, *dashi*, ‘big meal,’ is the time when it rained. In some cases, the word *shi* is added to *dashi*, as has already been seen in Example 35.

In a few cases, *dashi shi* 大食时 is abbreviated to *shishi* 食时. There is one such example on *Heji* 11506. The inscription reads as follows.

[38] 甲寅卜，般贞：翌乙卯易日。王占曰：翌乙勿雨。乙卯允明雾，□□，食日
(=时)大星³⁵。 《合集》 11506

Crack-making on *jiayin* (day 51), Nan divined: “The next day *yimao* (day 52) will be sunny.” The king, having prognosticated the cracks, declared: “the next day *yi*, don’t let it rain.” On day *yimao*, at the time of *ming*, it was indeed foggy...at the time of [big] meal it became very sunny. *Heji* 11506

In this inscription, the time period referred to by *dashi* is written as *shishi*. What happened at the time of big meal was that it became very sunny.

2.3.1.2.3 *Dacai and Dacai Shi*

It was Dong Zuobin (1945.1.II: 5) who first proposed that the expression *dacai* 大采 in the chapter “Lu yu 鲁语” of the *Guoyu* 国语 is a time division.

是故天子大采朝日。

Therefore, the Son of Heaven at the time of *dacai* pays tribute to the sun.

It seems that Dong Zuobin’s interpretation of *dacai* in the *Guoyu* makes good sense. According to the chapter “Yao dian” of the *Shangshu*, Yao ordered Xi Zhong 羲仲

³⁵ For the usage of the word *xing* 星 as becoming sunny in the OBI, readers are referred to Yang Shuda (1954.1: 20-21) and Li Xueqin (1981).

“respectfully to receive as a guest the rising sun” (Legge 1872: 18). It is reasonable to say that early Chinese had the thought that the Son of Heaven paid tribute to the sun at the time of *dacai* in the morning.

Based upon this record, Dong Zuobin has suggested that the expression *dacai* in the OBI is a time division. The following are two examples.

[39] 乙卯卜，殷贞：今日王往于敦。之日大采雨，王不往。 《合集》12814

Crack-making on *yimao* (day 52), Nan divined: “Today the king will go to Dun.” This day it rained at the time of *dacai*, and the king did not go. *Heji* 12814

[40] 丙午卜：今日其雨。大采雨自北。 《合集》20960

On *bingwu* (day 43) [X] divined: “Today, perhaps, it will rain.” At the time of *dacai*, it rained from the north. *Heji* 20960

The translation of verifications of Examples 39 and 40 shows that it fits those contexts to take *dacai* as a time division in the language of the Yin OBI.

In some cases, the word *shi* is added to *dacai*. Two examples are cited below.

[41] 启。大采时允启。 《合集》20993

“[It will be] clear.” At the time of *dacai*, it indeed became clear. *Heji* 20993

[42] 癸亥卜，贞：旬。一月。旻雨自东。九日辛未大采各云自北。

…大采时各云自北。 《合集》21021

Crack-making on *guihai* (day 60), [X] divined: “[In the next] 10-day week, [there will be no disasters.” Day *guihai* was in] the first month. At the time of *ze*, it rained from the east. At the time of *dacai* of the ninth day *xinwei* (day 9), clouds came from the north.

… at the time of *dacai*, clouds came from the north. *Heji* 21021

Chang Yuzhi (1998: 156) cites *Heji* 11727 as another example of the phrase *dacai shi*. Her transcription reads as follows.

[43] ……贞……于祖……父。不……[大]采日……

… divined: “... to ancestor...father.” Not... the time of [*da*]*cai*...

There are three mistakes in her transcription. First, the bone graph she transcribes as *fu* 父 clearly is *chou* 丑, as transcribed by the authors of the *Jiaguwen heji shiwen*. Second, the graph for *cai* 采 itself is not complete. It is not certain that the word is indeed *cai*. Third, because the word immediately above the word *cai* is missing, it is impossible to know

whether that word is *da* 大. Therefore, it is not certain that there is the phrase *dacai* on this oracle bone; and it is risky to cite *Heji* 11727 as an example of the occurrence of *dacai shi* in the OBI.

As for the exact time referred to by *dacai*, Dong Zuobin (1945.1.II: 5) and Chang Yuzhi (1998: 156-157, 163-164) suggest that it is some time in the morning. Chen Mengjia (1956: 232), Wen Shaofeng and Yuan Tingdong (1983: 71), and Song Zhenhao (1985: 330) all agree that it refers to the time around 8:00 a.m. Judging from the record in the *Guoyu*, which is cited at the beginning of this section, it is reasonable to infer that the time division *dacai* refers to some time in the morning. If *dacai* is related to the activity of paying tribute to the rising sun, as suggested by the passage in the *Guoyu*, it is not accurate to fix *dacai* at 8:00 a.m., because the time of sunrise changes with seasons. For specific times of sunrise at Anyang, readers are referred to Section 2.3.1.1.2.

2.3.1.2.4 *Zhongshi*

The following is an examples of *zhongshi* 中时 as a time division in Period I.

[44] 口戌卜，贞：中日 (=时)不雨。 《合集》 11775

Crack-making on *X-xu* day, [X] divined: "At the time of meridian, it will not rain."

Heji 11775

2.3.1.2.5 *Ze* and *Zeshi*

On *Heji* 20967, there is an example of the word *ze* as a time division in Period I.

[45] 乙丑卜：乙丑雨。昃雨自北，小。 《合集》 20967

On *yichou* (day 2), [X] divined: "On *yichou*, it will rain." At the time of *ze*, it rained from the north, [and the rain was] light.

Heji 20967

Chang Yuzhi (1998: 161) has provided an example of the word *shi* 时 being added to the word *ze*. The phrase *zeshi* occurs on the back of *Heji* 11728.

[46]……昃日 (=时) ……

... at the time of *ze* ...

It is apparent that the context of this inscription is not complete. Because it is incomplete, there is some uncertainty as to how to understand this inscription. In any event, it is possible to read *zeshi* as ‘at the time of *ze*.’

2.3.1.2.6 *Xiaocai* and *Xiaocai Shi*

Like *dacai*, the textual evidence for *xiaocai* 小采 as a time division is also seen in the chapter “*Lu yu*” of the *Guoyu*:

[天子]少采夕月。

[The Son of Heaven] at the time of *shaocai* pays tribute to the moon.

In early Chinese, the word *shao* 少 and *xiao* 小 are interchangeable, which is common knowledge. Therefore, the phrase *shaocai* in early Chinese could appear as *xiaocai*. In the sentence above, it does make sense to take *shaocai* as a time division. It is an example of *shaocai* as a time division in early Chinese texts.

There are several inscriptions in Period I in which the word *xiaocai* occurs as a time division. Below is an example:

[47] 癸巳卜，王：旬。四日丙申昃雨自东，小采既³⁶。 《合集》20966

Crack-making on *guisi* (day 30), the king [divined]: “[In the next] 10-day week, [there will be no disasters.]” At the time of *ze* of the fourth day *bingshen* (day 33), it rained from the east; at the time of *xiaocai*, the rain stopped. *Heji* 20966

In the verification of this inscription, *xiaocai* specifies the time when the rain stopped, which is a good reason to take it as a time division. In addition, this inscription shows that *xiaocai* occurs after *ze*. It can be inferred from this fact that *xiaocai* is a time division in the afternoon.

Sometimes the word *shi* is added to *xiaocai*, as shown in the following inscription:

[36] 癸亥卜，贞：旬。二月。乙丑夕雨。丁卯明雨。戊小采日（=时）雨止，风。己

³⁶ The word *ji* 既 has several meanings in classical Chinese. When it is used as a verb, it means ‘to complete.’ One example of this usage can be found in the chapter “Ying diwang 应帝王” of the *Zhuangzi* 庄子, which reads as *wu yu ru ji qi wen* 吾与汝既其文 ‘I and you have completed its pattern.’ In this inscription, the word *ji* is related to rain. It fits the context here to interpret *ji* as ‘to complete.’ When the rain is completed, it does not rain anymore. That is the reason why the present writer translates *ji* as “stop.”

明启。

《合集》21016

Crack-making on *guihai* (day 60), [X] divined: “[In the next] 10-day week, [there will be no disasters].” [Day *guihai* was in] the second month. At the night of *yichou* (day 2), it rained. At the time of *ming* on *dingmao* (day 4), it rained. At the time of *xiaocai* on *wu[chen]* the rain stopped; the wind [started]. At the time of *ming* on *ji[si]*, (day 6), it became clear.

Heji 21016

2.3.1.2.7 *Xiaoshi*

In early Chinese texts, the phrase *mushi* 暮食, ‘late afternoon meal,’ is a time division. One piece of evidence is seen in the chapter “Tianguan shu 天官书” of the *Shiji*. It reads as follows:

暮食出，小弱。

[If Venus] appears at the time of late afternoon meal, [it] is small and dim.

David N. Keightley (2000: 20) has cited the Former Han strips from Yinwan 尹湾 to show “late afternoon meal” (*bu shi* 哺时) was one of the five time divisions. *Bu shi* 哺时 is written as *bu shi* 哺时 in the chapter “Changyi wang zhuan 昌邑王传” of the *Hanshu*. Thus:

哺时至定陶。

At the time of late afternoon meal, it arrived at Dingtao.

As mentioned in Section 2.3.1.1.3, only two meals were served in early China. Since both *mushi* and *bushi* refer to the late afternoon meal, they should be designations of the same time period. These records show that late afternoon meal is a time division in early Chinese. In the Yin OBI, *xiaoshi* 小食, ‘small meal,’ is the term for late afternoon meal. It also occurs as a time division, which is shown by the following inscription:

[48] 癸丑卜，贞：旬。甲寅大食雨自北。乙卯小食大启。丙辰中日(=时)大雨自

南。

《合集》21021

Crack-making on *guichou* (day 50), [X] divined: “[In the next] 10-day week, [there will be no disasters].” At the time of big meal on *jiayin* (day 51), it rained from the north. At the time of small meal on *yimao* (day 52), it became very clear. At the time of meridian on *bingchen* (day 53), it rained heavily from the south.



Heji 21021

In this inscription, *xiaoshi* should be taken as a time division. It specifies the time when it became clear on day *yimao*.

Chen Mengjia (1956: 232), Wen Shaofeng and Yuan Tingdong (1983: 74), Song Zhenhao (1985: 330) and Chang Yuzhi (1998: 158-159) all agree that *xiaoshi* is the meal served in late afternoon. David N. Keightley (2000: 19) puts *xiaoshi* in the morning. But a personal communication of November 21, 2002 indicates that he has changed his view and accepts *xiaoshi* as a late afternoon meal.

2.3.1.2.8 *Shuang* and *Xiang*: Pseudo Time Divisions


2.3.1.2.8.1 *Shuang*

Qiu Xigui (1992: 89) suggests that the word represented by the bone graph  or  has possibly a semantic element *yue* 月, 'the moon,' and a phonetic element *sang* 喪, 'to lose.' He further proposes that this word can possibly be read as *shuang* 爽 of *meishuang* 味爽 (这大概是从“月”“丧”声的一个字, 在上引卜辞中似可读为味爽之“爽”). His notion is followed by Chang Yuzhi (1998: 155-156) and Huang Tianshu (2001: 91-92). The difference between Qiu Xigui (1992), on the one hand, and Chang Yuzhi (1998) and Huang Tianshu (2001), on the other hand, is that Chang Yuzhi and Huang Tianshu are more assertive. For the present, *shuang* must be rejected as an alleged time division. There are three reasons for this refusal.



First, it is clear in Qiu Xigui's own words that he is not sure if that bone graph does indeed represent the word *shuang*. If so, it is mere speculation to say it is the time division *meishuang* in early Chinese texts.

Second, even if the bone graph can be read as *shuang*, it is a leap, as it were, to equate it with *meishuang*. These researchers have not provided any evidence to show how the word represented by this bone graph allegedly evolved to *meishuang*.

Third, inscriptions on *Heji* 13751 and 13752 show that the word represented by this bone graph might actually be *sang* 喪, 'to lose.' Turning to the inscription on *Heji* 13752 here:

[49] 贞：引其有疾。王占曰：引其有疾，佳丙；不，庚。³⁷二旬有一日庚申.

[X] Divined: “Jin might fall ill.” The king read the cracks and declared, “Jin might fall ill. It will be on a *bing*-day; if not, [it will be on] a *geng*-day [when he falls ill].” On the twenty-first day *gengshen* (day 57), Jin lost his sight.³⁸

Qiu Xigui, Chang Yuzhi and Huang Tianshu all take  in this inscription as a time division. However, they do not explain how they understand the meaning of this inscription. If it is indeed a time division, the meaning of the verification would not be as certain as the translation above shows. Further, the relationship between the charge and the verification would not be as clear as the translation above indicates. It appears that it is problematic to interpret  as a time division.

Given the considerations above, up to this point, the so-called *shuang* cannot be accepted as a time division of the Yin OBI.



2.3.1.2.8.2 *Xiang*

It is Chen Mengjia’s opinion (1956: 232) that the word *xiang*^羊_目 consists of two components: *yang* 羊, ‘sheep,’ on the top and *mu* 目, ‘eye,’ at the bottom. He suspects that *xiang* is a time division that is equivalent to noon. His opinion is followed by Wen Shaofeng and Yuan Tingdong (1983: 73). But Song Zhenhao (1985: 303) seriously doubts Chen Mengjia’s conclusion.

One example cited by Chen Mengjia is the following inscription on *Heji* 20397.

[50] 今日小采允大雨，^羊_目日佳启。

³⁷ The punctuation of this verification is proposed by Ken-ichi Takashima. He explains the rationale behind such punctuation, pointing out that “many specialists... take *bu hui* as a unit, with the *bu* negating *hui*. This, it is contended here, is a mistake. There should be a syntactic break after *bu*, and the main clause should begin with *hui*” (1996a: 482). As the translation above shows, his punctuation makes good sense.

³⁸ This inscription clearly is a medical record. The king prognosticated that Jin might be sick. The result seems unfortunate: on *gengshen* (day 57), Jin lost his sight. Since one component of  actually is *sang* 喪, it makes perfect sense to interpret the word represented by this graph as *sang* 喪, ‘to lose.’ It also fits the context of this inscription to read the graph  as *ming* 明, ‘sight.’

At the time of *xiaocai* of today, it indeed rained heavily, *at the time of *xiang*, it should be clear.
Heji 20397


There are two problems to considering the word *xiang* in this example as a time division. First, the position of the word *xiang* seems suspicious. This writer has never seen other time divisions appearing in sequence before the word *wei*. The occurrence of *xiang* before the word *wei* casts doubt on the proposition that *xiang* is used as a time division.

Second, as noticed by Song Zhenhao (1985: 303), Example 50 shows *xiangri* occurs after *xiaocai*. Because of this, if *xiang* is a time division, it should be a time division of the afternoon. It is impossible for the word *xiang* to refer to some time period at noon.

Chen Mengjia's interpretation of the relevant inscription appears incorrect. It follows that it is difficult to accept his opinion that *xiang* is a time division in the Yin OBI.

2.3.1.3 Sub-divisions of *Ri* in Period II

2.3.1.3.1 *Chen*

Chang Zhengguang (1982: 141-46) interprets the bone graph  as *chen* 晨, 'early morning,' an interpretation followed by Wen Shaofeng and Yuan Tingdong (1983: 68-69), Yao Xiaosui (Yu 1996: 1138) and Chang Yuzhi (1998: 155, 166-169). Because the component *chen* 辰 of this graph should be its phonetic element, just as with the element *chen* 辰 of the character *chen* 晨, the graph and the character *chen* 晨 likely represent the same word.

In early Chinese texts, the word *chen* 晨 is a time division. Cited below are two examples:

丙之晨，龙尾伏辰。
《左传·僖公五年》

Towards day-break of Bing, Wei of the Dragon lies hid in the conjunction of the sun and moon. (Legge 1872b: 146)

晨，早昧爽也。
《说文解字》

Chen means early, [referring to the same time period denoted by the time division] *meishuang* 昧爽.

These two records show the word *chen* is a time division about the time period around daybreak in early Chinese texts. This usage of the word *chen* fits inscriptional contexts as well. The inscription on *Heji* 23226 is a good example:

[51] [丁]巳卜，旅貞：父丁𠂔，佳晨𠂔。

Crack-making on [ding]si (day 54), Lu divined: “In offering the *gui*-cutting sacrifice to Father Ding, it should be at daybreak that [the king performs] the *you*-cutting sacrifice.”

Here, the word *chen* 晨 specifies the time when the *you*-cutting will be performed. This is one piece of evidence for the word *chen* as a time division in Period II.

As for the time period referred to by the time division *chen*, it can be inferred from the following passage in the *Zuozhuan*:

甲午晦，楚晨压晋军而阵……旦而战。 《左传·成公十六年》

Jiawu (day 31) was the last day of that month. At the time of *chen*, Chu came close to the army of Jin and deployed.... At the time of *dan*, [they] fought.

It is apparent that *chen* is the time division before *dan*. It should refer to the same time period as *su*.

2.3.1.3.2 Zhao

The word *zhao* 朝 is a time division in early Chinese texts, which is clearly shown by the following records.

自朝至于日中昃不遑暇食。 《尚书·无逸》

From morning to midday, and from midday to sundown,³⁹ he did not allow himself time

³⁹ In his comments to this dissertation, Ken-ichi Takashima writes: “I think his translation is wrong. *Rizhong ze* 日中昃, if quoted correctly, should be an NP which has the finer structure of NP=NP (日中) + N (昃), where the ‘+’ sign indicates the WHOLE-PART relationship.” Takashima’s interpretation of the string *rizhong ze* is possibly correct. On the other hand, Legge’s understanding is not necessarily incorrect. When a string of NP + N appears, the relationship between the NP and the N does not have to be WHOLE-PART. In the chapter “Kang gao 康诰” of the *Shangshu*, for example, there is one sentence reads as follows:

要囚，服念五六日，至于旬时。

In examining the evidence in criminal cases, reflect upon it for five or six days, yea for ten days, or three months. (Legge 1872: 390).

In this example, the string *xun shi* 旬时 has the structure of NP = N + N. The relationship between *xun* 旬 and *shi* 时 is

to eat. (Legge 1872: 469)

王朝至于商郊牧野乃誓。 《尚书·牧誓》

On that morning the king came to the open country of Mu in the borders of Shang and addressed his army. (Legge 1872: 300)

越翼日癸巳，王朝步自周，于征伐商。 《尚书·武成》

The next day was *guisi* when the king in the morning marched from Zhou to attack and punish Shang. (Legge 1872: 306)

In all these examples, the word *zhao* is translated as “morning.” Clearly, it is a time division in early Chinese texts. In the Yin OBI, *zhao* is used as a time division as well. Below is one such example.

[52] 癸丑卜，行贞：翌甲寅后祖乙刂，朝酉。 《合集》23148

Crack-making on *guichou* (day 50), Xing divined: “When the *gui*-cut sacrifice to Zu Yi is performed on the next day *jiayin* (day 51), at the time of *zhao*, [the king will] do the *you*-cutting.”
Heji 23148

In this inscription, the word *zhao* specifies the time of the *you*-cutting. In such context, it makes sense to interpret the word *zhao* as a time division.

James Legge translates *zhao* as “morning.” But it may refer to a much shorter time period in the Yin OBI. There are several pieces of evidence, though not strong, that indicate that the duration of the time division *zhao* may be the same as that of *dan*.

First, Dong Zuobin (1945.1.I: 6b) has pointed out that the bone graph for the word *zhao* depicts the time when the sun rises above grass. In the Yin OBI, there are some pictographs such as the graphs for the word *ri* 日, ‘the sun,’ and *yue* 月, ‘moon.’ The graph for the word *zhao* might be another one. If so, as a time division, the word *zhao* may refer to some time around sunrise.

Second, Dong Zuobin (1945.1.I: 6b) and Chang Yuzhi (1998: 136) notice that the definition of *zhao* in the *Shuowen* is *dan* 旦 (朝，旦也). This suggests that Xu Shen 许慎, the author of the *Shuowen*, thinks that the two time divisions *zhao* and *dan* refer to the same time period of the day.

Third, there is the phrase *chongzhao* 崇朝 in the chapter “Chuodong” of the *Shijing*.

not that of WHOLE-PART because *shi*, ‘three months,’ is not part of *xun*, ‘10-day week.’

Legge (1893: 84) interprets it as *zhongzhao* 终朝, referring to ‘the whole morning,’ i.e., “the space between dawn and breakfast.” If so, the duration of *zhao* is rather brief.

There is no inscriptional evidence to show the duration of the time division *zhao*. From those textual records above, it can be inferred that the time period of *zhao* is brief. If indeed *zhao* does refer to the time between dawn and breakfast, *zhao* and *dan* seem to be different terms for the same time period of a Yin day.

2.3.1.3.3 *Mu*

In Section 2.3.1.1.7, it has been demonstrated that the word *Mu* 暮 is a time division in Period-III inscriptions. Such usage of this word can also be found in Period-II inscriptions. *Heji* 23148 is a good example.

[53] 贞：暮酉。 《合集》 23148

[X] Divined: “At dusk, [the king will] perform the *you*-cutting sacrifice.

Heji 23148

2.3.1.3.4 *Zhou* and *Zhi*: Pseudo-Time Divisions

Chang Yuzhi (1998: 169-172) lists *zhou* 昼 and *zhi* 执 as time divisions in Period-II inscriptions. However, as analyzed in Section 2.3.1.1.9, neither *zhou* nor *zhi* are time divisions in the Yin OBI.

2.3.1.4 Sub-divisions of *Ri* in Period IV

2.3.1.4.1 *Su*?

Chang Yuzhi (1998: 178) cites *Heji* 32485 as evidence for the word *su* 夙 as a time division in Period IV inscriptions. But the rubbing of *Heji* 32485 is so unclear that the authors of the *Jiaguwen heji shiwen* transcribe the graph as *zhi* 执. There is no clear evidence for the usage of *su* as a time division in Period IV.

2.3.1.4.2 *Ze*

There is possibly one example of the word *ze* 晨 as a time division in Period IV.

[54] …… 卜，贞：晨有足雨。 《合集》 33918

... crack-making [on day xx, X] divined: “At the time of *ze*, there will be enough rain.”⁴⁰

Heji 33918

On the rubbing of *Heji* 33918, the graph *ze* seems incomplete. The transcription above is based upon that in the *Jiaguwen heji shiwen*. If this transcription is accurate, it is an example of *ze* as a time division in Period IV.

2.3.1.4.3 *Mu*?

Heji 32485 has been cited by Chang Yuzhi (1998: 178) as evidence for the word *mu* 暮 being a time division in Period IV. Here, this inscription is being transcribed as follows:⁴¹

[55] 乙未翹暮。 《合集》 32485

On *yiwei* (day 32), [the king will] X (word unknown) *mu*.

In the language of the Yin OBI, a time division normally occurs before a verb. In this inscription, the word *mu* appears at the end of the sentence. This makes it uncertain as to whether or not the word *mu* is a time division in this context. Other than this inscription, there is no other example of *mu* being used as a time division in Period IV.

2.3.1.5 Sub-divisions of *Ri* in Period V

2.3.1.5.1 *Mei*?

⁴⁰ The meaning of *zuyu* 足雨 is not certain. Here it is tentatively translated as “enough rain.”

⁴¹ Below is Chang Yuzhi (1998: 178)’s transcription:

丙午卜：畱佳餼……子酹莫。

On *bingwu* (day 43), [X] divined: “Cha should be X ... son performs the *you*-cutting sacrifice at the time of *mu*.”

It appears that her transcription mixes up two inscriptions. Even if her transcription is correct, the end of a sentence is not a position in which a time division occurs.

It was Wang Xiang (1920.12: 54) who first made the proposal that the word *mei* 妹, 'sister,' was a loan word for *mei* 昧 in the Yin OBI. Based upon this, Chen Mengjia (1956: 232) asserts that the word *mei* is equivalent to *meishuang* 昧爽, 'early morning,' a time division in early Chinese texts. Chen Mengjia's claim is repeated by Song Zhenhao (1985: 315). However, there are some problems with Chen Mengjia's interpretation.

First, even if *mei* 妹 is a loan word for *mei* 昧, *mei* 昧 is not necessarily a time division in Period V. It is apparent that *mei* is a word of one syllable; *meishuang* is a word of two syllables. The meanings of the word *mei* are related to darkness; *meishuang* is a time division. The word *mei* is apparently different from the word *meishuang*. It is not convincing to equate *mei* with *meishuang* without providing sound reasons, and these scholars have failed to do that.

Second, the following inscriptions show that the word *mei* may be a negative in Period V.
[56] 辛卯卜，贞：今日延雾。

妹延雾。 《合集》38191

Crack-making on *xinmao* (day 28), [X] divined: "Today it will continue to be foggy."

"It will not continue to be foggy." *Heji* 38191

On this bone, charges *jinri yanwu* and *mei yanwu* are inscribed in different places. Because of this, the string *mei yanwu* is not likely to be the verification of this inscription. Rather, *jinri yanwu* and *mei yanwu* should be a pair of complementary charges. In a pair of complementary charges, one is positive and the other is negative. In Example 56, the first charge is clearly positive. The second charge *mei yanwu* is thus negative. Among those three words of the second charge, the word *mei* is the only word that can be a negative.

Such a pair of complementary charges also appears on *Heji* 38192, 38194 and 38197. These four examples show that it is not by accident that the charges *jinri yanwu* and *mei yanwu* are inscribed at different places. It is better to interpret the word *mei* as a negative. If the word *mei* is a negative, it cannot be a time division.

Ken-ichi Takashima, on the other hand, does not accept *mei* as a negative. He states his reason as follows:

Mei 妹 has a **m*- initial with the final *-*ət*/-*əd*, so it is similar to the well-known **m*- type negative **mjət* 勿. Now, *wu* 雾 is a stative verb, which [does] not agree at all with the **m*- type negative. Also, **wu yan wu* 勿延雾 is, according to my theory, impossible (unless this is a prognostication, which does not appear to be [the case]). On these grounds, I think you and some other[s'] suggestion that it is a negative in these examples is incorrect.

Now, it is difficult to determine whether the word *mei* is a time division in Period V. On the one hand, there is no solid basis to interpret it as *meishuang* 昧爽, a time division in early Chinese texts. From the context shown in Example 56, it can be inferred that the word *mei* may be a negative. On the other hand, it is not in agreement with Ken-ichi Takashima's theory about negatives in the OBI. Further study is required in order to decide the usage of this word.

2.3.2 *Xi*

Xi 夕 is one of the most often seen time divisions in early Chinese texts. The followings are two examples.

命之曰：“朝夕纳诲，以辅台德。” 《尚书·说命》

He charged him, saying, “Morning and evening present your instructions to aid my virtue.” (Legge 1872: 252)

其侍御仆从，罔匪正人，以旦夕承弼厥辟。 《尚书·冏命》

Their servants, charioteers, attendants, and followers were all men of correctness, morning and evening waiting on their sovereign's wishes or supplying his deficiencies. (Legge 1872: 585)

It is also accepted by specialists in the field of the Yin calendar that the word *xi* is a time division in the Yin OBI. Below are two such examples.

[57] 丙戌卜：夕雨。 《屯南》 2287

On *bingxu* (day 23), [X] divined: “At night it will rain.” *Tunnan* 2287

[58] 庚寅卜，在宗：夕雨。 《合集》 34054

Crack-making on *gengyin* (day 27), at the temple [X divined]: “At night it will rain.”

Heji 34054

Although specialists in this field agree that *xi* is a time division of the Yin day, they cannot reach a consensus about the time period to which *xi* actually refers. There have been three opinions about the time period of *xi*. The first one is that *xi* refers to the time of dusk; the second opinion is that it refers to the whole night; and the third opinion is that it refers to the period from midnight to dawn.

In the *Shuowen*, *xi* is defined as *mu*, ‘dusk.’ (夕, 莫也) Wang Xiang (1923.1: 1) cites this record, which indicates that he may think the word *xi* refers to the time of dusk in the Yin OBI. However, such an opinion is not supported by inscriptional evidence.

There are inscriptions that show *xi* and *mu* are two different time divisions. One such inscription is cited below.⁴²

[59] 父己𠄎, 佳暮𠄎。

佳夕𠄎。

《合集》27401

In offering the *gui*-cutting sacrifice to Father Ji, it should be at dusk that [the king will] perform the *you*-cutting sacrifice.

It should be at the time of *xi* that [the king will] perform the *you*-cutting sacrifice.

Heji 27401

The topic of inscriptions in Example 59 is to select a more appropriate time for performing the *you*-cutting sacrifice. Such a context indicates that *mu* and *xi* are contrasted in the mind of Yin people, which shows that these two time divisions refer to different time periods.

How is the duration of *xi* different from that of *mu*? Could it be that *mu* is part of *xi*? Judging from the order of the two inscriptions in Example 59, that is not the case.

If *mu* were part of *xi*, the Yin people would divine performing the *you*-cutting sacrifice at *xi* before they divined performing the sacrifice at *mu*. That is the logical order. For example, one may decide if he will do something tomorrow before he decides whether he will do it tomorrow morning or tomorrow afternoon. If he has already made a decision not to do that thing tomorrow, there is no need for him to decide whether he will do it tomorrow morning

⁴² For other four examples, readers are referred to *Heji* 27396, 30845, and 41409, and *Tunnan* 1443.

or tomorrow afternoon. Therefore, if *mu* is indeed included by *xi*, the Yin should divine the appropriateness of *xi* before they divine that of *mu*. The two inscriptions in Example 59 show that the divination of performing the sacrifice at *mu* took place before that of performing the sacrifice at *xi*. Such an order suggests that *mu* cannot be part of *xi*.

Because *mu* and *xi* refer to different time periods, and since *mu* cannot be part of *xi*, they must be two mutually exclusive different time divisions in the Yin OBI. Therefore, the opinion that the word *xi* refers to dusk in the Yin OBI is incorrect.

It is Dong Zuobin's theory (1945.2.I: 4b) that a Yin night is generally called *xi* (夜则总称之曰夕也). He has reached this conclusion because he has not found other time divisions of the night. Chang Yuzhi (1998: 116-134) agrees with Dong Zuobin's view that *xi* refers to the whole night. On the other hand, Chang Yuzhi (1998: 142-152) thinks *xi* can be further divided into different time divisions.

Chen Mengjia holds two opinions about *xi*. In Chen Mengjia (1956), on page 229, he thinks *xi* refers to the whole night; but on page 239, he suggests that *xi* refers to the time period from midnight to dawn. His second opinion is based on his calculation about the time of lunar eclipses recorded in the OBI. Chen Mengjia has noticed that the eclipses on *jiawu* and *renshen* took place during the time of *xi*, while the eclipse on *gengshen* did not. It thus occurs to him that the times of these eclipses may shed light on the duration of *xi*. According to his calculations, the beginning of the partial phase of these three eclipses was 00:24 on December 17, 1229 BC, 4:00 on January 28, 1183 BC, and 23:06 on November 15, 1218 BC, respectively. It seems that the first two eclipses began after midnight but the third one started before midnight. Therefore, Chen Mengjia has reached the conclusion that *xi* refers to the time period from midnight to dawn.

One major problem with Chen Mengjia's conclusion above is that his understanding of relevant inscriptions is incorrect. Recent studies such as Qiu Xigui (1993), Chang Yuzhi (1998), Liu Xueshun (1998), and Zhang Peiyu (1999) show that what Chen Mengjia calls the *gengshen* eclipse actually occurred on the night of *jiwei*. Because he got the date of that eclipse wrong, his calculation about the time of that eclipse is also wrong. It follows that the conclusion he has drawn from those times is equally incorrect. In other words, Chen Mengjia's view that *xi* refers to the time period from midnight to dawn is mistaken.

Although Chen Mengjia has reached an incorrect conclusion, his approach to this issue

appears reasonable and practical. Since it is clearly recorded in the OBI that these eclipses occurred at night, the actual time of the eclipses certainly can show the duration of the time division *xi*. As long as all information about these eclipses is correct, a credible conclusion can be reached. It is this writer's intent to proceed to draw a conclusion now. The first step in calculating the time of those eclipses is to establish a temporal range for them. Because of the fact that both the lunar eclipse and the Chinese *ganzhi* 干支 date occur repeatedly, lunar eclipses can occur on the same *ganzhi* date in a long time period. The longer the time period is, the more lunar eclipses take place on a specific *ganzhi* date. In order to make calculations being developed here more accurate, it is absolutely necessary to determine the time range for those lunar eclipses.

All those inscriptional records of lunar eclipses belong to Period I. It follows that the time period for their absolute dates should be within Period I, which includes the reign of Yin kings Wuding 武丁 and Zugeng 祖庚.

It is unfortunate that there are no credible absolute dates for those two Yin kings, because the Chinese chronology before 841 BC remains uncertain. It therefore becomes necessary for the present writer to estimate the time period for those lunar eclipses. The estimate will be based upon the number and average length of reigns of Shang and Zhou kings before 841 BC.

The inscription on the Li *gui* 利簋 has confirmed that the Yin Dynasty was overthrown by King Wu 武王 of Zhou.⁴³ From then to 841 BC, there were the following eight Zhou kings: King Wu, Cheng 成王, Kang 康王, Zhao 昭王, Mu 穆王, Gong 共王, Yi 懿王, Xiao 孝王, Yi 夷王 and Li 厉王. From Period I to Period V, there were also eight Yin kings in the Yin OBI: Wuding, Zugeng, Zujia 祖甲, Kangding 康丁, Wuyi 武乙, Wending 文丁, Di Yi 帝乙 and Di Xin 帝辛. Lei Haizong (1931) has calculated the average length of royal reign throughout Chinese history. His conclusion is that the average length of each reign is twenty-five years. Based upon Lei's conclusion, the reigns of those eight Yin kings and eight Zhou kings should be about ($16 \times 25 =$) 400 years long. The first year of King Wuding should be about ($841 \text{ BC} + 400 =$) 1241 BC, which can be taken as the upper limit of the time range for those lunar eclipse records.

⁴³ For a comprehensive study on this inscription, readers are referred to Ken-ichi Takashima (1996-97).

The lower limit of the temporal range should be the last year of the reign of Zugeng. If the average length of a royal reign is applicable here, the length of reigns of Wuding and Zugeng would be 50 years, and the lower limit would be (1241 BC – 50 =) 1191 BC. However, according to early Chinese texts such as the chapter “Wuyi” of the *Shangshu*, the reign of Wuding was exceptionally long, about 60 years. The validity of such records is supported by the enormous number of oracle bones for Period I. For instance, the *Heji*, the biggest collection of the Yin OBI, has thirteen volumes. Among them, seven volumes are rubbings of Period I inscriptions. If calculated proportionally, the number of inscriptions in Period I alone would account for 54% of the total number of inscriptions in all five periods! In Liu Xueshun (2003), this author’s calculation for the length of those five periods is no less than 140 years. Accordingly, Period I is about 80 years long. The lower limit of the time period for those lunar eclipses should be around (1241 BC – 80 =) 1161 BC.

Among those five lunar eclipse records, the *ganzhi* date of the alleged *gengshen* eclipse is complicated, and it will be analyzed in detail in Chapter Four. Here, it will be sufficient to determine absolute dates for the other four lunar eclipses, in order to explore the time duration of *xi* in the Yin OBI. These four lunar eclipses are:

1. Eclipse on the night of *renshen* (day 9): *Heji* 11482;
2. Eclipse on the night of *guiwei* (day 20): *Heji* 11483;
3. Eclipse on the night of *yiyou* (day 22) of the Yin eighth month: *Heji* 11486;
4. Eclipse on the night of *jiawu* (day 31): *Heji* 11484.

According to Liu Baolin (1978), during the period from 1241 BC to 1161 BC, there were the following lunar eclipses on those four dates, all visible at Anyang:

Eclipse on the night of *renshen*:

- A. October 25, 1189 BC, 19:27 to 21:53.⁴⁴

Eclipse on the night of *guiwei*:

- A. August 23-24, 1232 BC, 22:53 to 1:35;
- B. November 25, 1227 BC, 4:11 to 6:36;
- C. July 11-12, 1201 BC, 22:24 to 0:54;
- D. February 18-19, 1185 BC, 22:31 to 1:15;
- E. May 22, 1180 BC, 17:22 to 20:54. The moon rose at 19:09 and the sun set at

⁴⁴ All these specific times are local time at Anyang.

19:12.⁴⁵

Eclipse on the night of *yiyou*:

- A. May 31-32, 1227 BC, 22:29 to 1:52;
- B. April 11, 1206 BC, 4:01 to 7:55. The sun rose at 6:12 and moon set at 6:16;
- C. November 25, 1181 BC, 18:02 to 21:45;

Eclipse on the night of *jiawu*:

- A. November 4, 1198 BC, 20:31 to 23:21.⁴⁶

It is apparent that there are more candidates for the eclipses on the nights of *guiwei* and *yiyou*. If an absolute date for an eclipse is picked up at random, there can be fifteen clusters of absolute dates for those eclipses. In any one of these clusters, there will be at least two lunar eclipses, i.e., the eclipse on the night of *renshen* and another on the night of *jiawu*, both of which occurred before midnight. Therefore, it is inaccurate for Chen Menjia to say *xi* refers to the period from midnight to dawn only.

It must be noted that the date above is based upon the assumption that the Yin day, like the modern day, started with midnight. If the Yin day started with the time around dawn (an opinion more popular in the field), the dates for those four lunar eclipses will certainly be different. The following are the dates for those four eclipses based upon the view that the Yin day started around dawn. Again, most dates below are from Liu Baolin (1978).

Eclipse on the night of *renshen*:

- A. October 25, 1189 BC, 19:27 to 21:53;
- B. January 28, 1183 BC, 4:04 to 6:23.

Eclipse on the night of *guiwei*:

- A. August 23-24, 1232 BC, 22:53 to 1:35;
- B. July 11-12, 1201 BC, 22:24 to 0:54;
- C. February 18-19, 1185 BC, 22:31 to 1:15;
- D. May 22, 1180 BC, 17:22 to 20:54.

Eclipse on the night of *yiyou*:

⁴⁵ The time was calculated by the software Skymap.

⁴⁶ Liu Baolin lists the eclipse on September 14, 1177 BC (that happened from 5:23 to 9:13) as one visible at Anyang. However, according to the Skymap, the sun rose at 5:55 and the moon set 5:56 on that day. It appears that the time of the actual eclipse was too short for the Yin people to observe. As a matter of fact, Homer H. Dubs (1947: 172) lists this lunar eclipse as invisible at Anyang.

A. May 31-32, 1227 BC, 22:29 to 1:52;

B. November 25, 1181 BC, 18:02 to 21:45;

Eclipse on the night of *jiawu*:

A. December 17, 1229, 0:00 to 3:00;

B. November 4, 1198 BC, 20:31 to 23:21;

There is more than one candidate for all four eclipses. If an absolute date for an eclipse is picked at random, there can be thirty-two clusters of absolute dates for those eclipses. In any one of the clusters, there will be at least two eclipses, i.e., on the nights of *yiyou* and *guiwei*, both of which occurred before midnight. Again, doubt is cast on the credibility of Chen Mengjia's view that the time division *xi* in the OBI only refers to the time period from midnight to dawn.

After analyzing the first and the third opinions (the first opinion being that of Wang Xiang (1923.1: 1), i.e., that *xi* refers to late afternoon; and the third opinion being that of Chen Mengjia (1956: 239), i.e., that *xi* refers to the period from midnight to dawn), the present author would like to address the issue of whether *xi* can be divided into different time divisions. Dong Zuobin does not think *xi* can be further divided in the OBI. But at least three other scholars do think *xi* can be divided into several time divisions.

It is Chang Yuzhi's view (1998: 152), for example, that *xi* can be divided into three time divisions: *zhi* 执, *zhu* 住, and *su* 夙. However, as shown in Section 2.3.1.1.9, both *zhi* and *zhu* are not time divisions in the OBI. As for *su*, as will be demonstrated in Section 2.4, that it does not belong to night-time. Rather, it denotes the start of the Yin day.

Huang Tianshu (2001) is the most recent study on alleged time divisions of the night in the Yin OBI. Since he thinks sunset or dusk belongs to night, his definition of night seems to be the time between sunset and sunrise, which is different from the present writer's view and that taken in this dissertation. In the present context, the definition of night refers to the time of darkness that excludes sunset and dusk. According to this definition, the time divisions of a night proposed by Huang Tianshu (2001) include: *yuechu* 月出, 'moonrise,' *xiaoye* 小夜, 'small night,' *meiren* 寐人, 'sleeping man(?),' *zhi* 卮, 'wine vessel(?),' *zhonglu* 中祿, 'mid lu,' and unknown 𠂔, 'double night(?).' Huang Tianshu does not provide any examples of those words that he proposes as time divisions of night ever being used as time divisions in early Chinese texts, which is the starting point for determining a time division in the OBI.


Therefore, the present writer is compelled not to accept any of them as a time division in the Yin language.

Moreover, it is preposterous to consider some of these proposed expressions as time divisions. Take moonrise as an example. It is a fact that the time of moonrise changes everyday. In Anyang, on July 5, 1166 BC, the moon rose at 8:38 a.m. How could that be a part of night? Also, Huang Tianshu cannot explain the meaning of the unknown 𠄎, ‘double night (?)’ Without knowing its meaning, how can he be sure it is a time division? He fails to prove any of these alleged time divisions of night.

Song Zhenhao (1985: 314) proposes that there are three time divisions of night: *zhi* 執, *xi* 夕, and *su* 夙. As shown in Section 2.3.1.1.9, *zhi* is not a time division. The time division *su* does not belong to night. Therefore, there still is only one time division for the Yin night, which is *xi*.

This writer’s foregoing analysis has discredited the first and the third view about the time period to which *xi* refers. As for the second view, there is no inscriptional evidence against it. It is actually common knowledge that *xi* can refer to the whole night. Moreover, it still is a valid conclusion that no study has proven *xi* can be further divided into sub-divisions of time. Therefore, this writer’s conclusion is that Dong Zuobin’s view about *xi* is correct: it refers to the whole night in the OBI.

2.3.2.1 *Zhuo*: a Time Division?

Ken-ichi Takashima (1996a.2: 70) and David N. Keightley (2000: 20) read the bone graph  as *zhuo* 𠄎, ‘to cut, to cleave,’ replacing an old reading *dou* 豆, ‘a vessel without cover,’ by David N. Keightley (1978: 43) and Ken-ichi Takashima (1979-80: 54). When *zhuo* occurs between two *ganzhi* dates, they suggest that it denotes a time division.⁴⁷

David N. Keightley (1978: 43), for example, states that when this word appears between two *ganzhi* dates which are always consecutive, it “apparently referred to the night-time no-

⁴⁷ Homer H. Dubs (1951: 331) has discussed the usage of this bone graph. But he fails to specify which word it represents. Qiu Xigui (1993) reads it as *xiang* 向, ‘toward.’ Neither Homer H. Dubs nor Qiu Xigui has mentioned that it can be used as a time division in the OBI. It appears that there is no point in discussing their opinions here.

man's-land between two cyclical-day dates." Keightley (2000: 20) interprets *zhuo* as a term referring to "the period during the night (*xi* 夕) when two consecutive *ganzhi* days 'cleaved' to each other." In a note about David N. Keightley (1978: 43), Ken-ichi Takashima (1979-80: 54) suggests that the basic meaning of the word *zhuo* is 'to cut'. He continues:

Applied to 'sacrificial' activity, it means 'to cut up a victim, to dismember.' When used in a context of time-expression, the verb means '(when) ... cuts (i.e., separates, demarcates) ...' ... [W]hile Keightley thinks that the word *t'ou* referred to the period which cleaved and divided two days, i.e., his 'no-man's land' time duration, my formulation would have to refer to a period of some duration in the day following the first *kan-chih* date. This is so because I am in effect suggesting the word *t'ou* is a verb and, semantically, a 'punctual' rather than a 'durative' one.

David N. Keightley's (2000: 20) treatment is so brief that he does not provide any reason for *zhuo* to be considered as a term for the period during the night. On the other hand, when he defines the period as "when two consecutive *ganzhi* days 'cleaved' to each other," this suggests that he may consider *zhuo* as a verb, 'to cleave.'⁴⁸ As for Ken-ichi Takashima, he clearly states in the citation above that the word *zhuo* is a verb in a context of time-expression. Because it is common knowledge that a verb cannot be a time division, the word *zhuo* cannot be regarded as a time division in the Yin OBI.

David N. Keightley (1978: 43) has noticed that the *zhuo* occurs between two *ganzhi* dates that are always consecutive. This is true. Below is an example.

[60] 七日己未斲庚申月有食。 《英藏》886 反

On the seventh day, when the night of the *jiwei* day "cut" the *gengshen*, the moon was eclipsed. *Yincang* 886b

In such a context, it is actually the phrase *ganzhi* + *zhuo* + *ganzhi* that refers to a time period. In Inscription 60, the expression *jiwei zhuo gengshen* specifies the time when the

⁴⁸ Edwin G. Pulleyblank points out that "The English word 'cleave' has two contradictory meanings, 'to cut apart' and 'to cling together.' When Keightley says 'cleaved to each other,' he seems to mean the second meaning." Since David N. Keightley interprets *ganzhi* + *zhuo* + *ganzhi* as "no-man's land," which implies that the time period does not belong to either *ganzhi* dates, it appears that he uses the word "cleave" to mean "to cut apart."

moon eclipsed. The word *zhuo* itself does not refer to that time duration. This analysis of the structure of *ganzhi* + *zhuo* + *ganzhi* also suggests that the word *zhuo* is not a time division in the Yin OBI.

2.3.3 Order of Time Divisions of the Yin Day

In previous sections, it has been demonstrated that the Yin day can be divided into *ri* 日, ‘daytime,’ and *xi* 夕, ‘night-time.’ As for the time division *ri* itself, it can be further divided into various distinct time divisions. In this section, this writer will first determine the order of *ri* and *xi*. Then, he will decide the order of those time divisions of *ri*.


2.3.3.1 *Ri* before *Xi*

The order of *ri* and *xi* can be deduced from the following inscription.

[61] 丙申卜，般贞：来乙巳酉下乙。王占曰：“酉佳有崇，其有酉。”乙巳酉，明雨。伐既雨，咸伐亦雨。改卯(=刘)鸟星(=晴)。乙巳夕有酉于西。

《合集》11497 正反

Crack-making on *bingshen* (day 33), Nan divined: “On the coming *yisi* (day 42), [the king will] perform the *you*-cutting sacrifice to Xiayi.” His majesty, having prognosticated [the omens], declared: “The performance of the *you*-cutting sacrifice means that there will be a curse [from Xiayi], and there will be thunder.”⁴⁹ On the *yisi* day, we performed the *you*-cutting sacrifice. At [the time of] *ming* it rained. [When the victim was being] dismembered, it was already raining. When the dismembering was done, it was still [likewise] raining. Having decapitated [the victims] and cut up a bird (?),⁵⁰ the weather became clear. On the night of *yisi*, there was thunder in the

⁴⁹ There are various transcriptions of the bone graph . As pointed out by Ken-ichi Takashima, none of those transcriptions can be assigned either a reading or a meaning. Ken-ichi Takashima suggests that this bone graph represents a word for 酉 ‘thunder’ on the basis of contextual and paleographical evidence (Takashima 1996a.2: 140-141).

⁵⁰ In his comments, David Pankenier writes that he thinks that the word *fa* “meant ‘to behead’ as a verb, sometimes ‘victims beheaded’ as a noun.” My translating *fa* here as “to dismember” is based upon Ken-ichi Takashima’s research. Ken-ichi Takashima says that

In the verification, there are two time divisions: *ming* and *xi*. From the content of this verification, it can be inferred that the time division *ming* occurs before *xi*. Since *ming* is a sub-time-division of *ri*, it is safe to say *ri* is before *xi* in the OBI.

The inscriptions on Heji 27396 also shed light on the order of *ri* and *xi*. These inscriptions can be transcribed as follows:

[62] 其又父己，~~王~~暮酉，王受佑。

[其又]自父庚，夕酉，王受佑。

于来日酉。

《合集》27396

[The king] shall make an offer to Father Ji. It should be at dusk that [he will] perform the *you*-cutting sacrifice because the king will receive assistance.

[The king shall make an offer] to Father Geng. [He will] at night perform the *you*-cutting sacrifice because the king will receive assistance.

Upon the coming day, [the king will] perform the *you*-cutting sacrifice.

Heji 27396

In these three inscriptions, there are three time words: *mu*, ‘dusk,’ *xi*, ‘night,’ and *lairi*, ‘the coming day (=next day).’ Moreover, the word *hui* occurs before *mu* and *yu* before *lairi*.

the standard interpretation of the graph *fa* holds that it depicts a man’s head being chopped off by an ax, and expresses the meaning ‘decapituri (human victims)’ or ‘prisoner.’ However, both of these traditional meanings are deduced more from the shape of the graph than from consideration of the word it represented. In a sacrificial context, where a verbal interpretation is called for, we would suggest that it meant ‘to dismember’ or ‘disintegrate’ (destroy the unitary integrity of, reduce to remnants) rather than the usual ‘to behead, decapitate; to attack (1996a: 253).

Since an enemy state of Shang can occur as the object of the verb *fa* and it is impossible to physically behead a state, Takashima’s new interpretation of the word *fa* makes better sense.

David Pankenier further writes that “I don’t think much of the translation of *liu niao* as ‘a bird was cut up’; [it] doesn’t make much sense to me. How do those who argue that *xing* ‘star’ here is actually *qing* deal with *niao*?” At first glance, the translation of *liu niao* as ‘a bird was cut up,’ which has been changed to ‘cut up a bird’ in this draft, may not make sense. On the other hand, the string *two mao niao xing* is an event in daytime when stars are invisible. It is difficult to interpret *niao xing* 鸟星 in this inscription as a star. In addition, Ken-ichi Takashima argues that the character *mao* represents the word *liu*, meaning “to split open/divide into two” (1996a.2: 88-89). He translates *liu niao* literally as “cut up a bird” and the present writer has followed him. Li Xueqin (1981), who has made the interpretation of *xing* as *qing* influential in the field, reads *niao* as the adverb *shu* 倏, ‘suddenly.’ But that is not supported by philological evidence. Before this writer may find a satisfactory interpretation of the word *niao* in this inscription, he prefers Ken-ichi Takashima’s direct translation of *niao*.

Ken-ichi Takashima (1990: 36) states that “when *yu* is used, it always introduces a day more remote than *hui* does. Conversely, of course, *hui* always introduces a day more immediate than *yu* does.” He further suggests that the compelling reason for such usage of *yu* and *hui* is because “in the bone inscriptions the word *yu* had a clear ‘futuraity’ meaning” (1990: 37). Therefore, the appearance of *mu*, *xi*, and *lairi* is a time order from recent to remote. Since *mu* is a time division of *ri*, it follows that the order of *mu*, *xi* and *lairi* can be expressed as *ri*, *xi*, and *lairi*. Again, in a Yin day, *ri* comes before *xi*.

2.3.3.2 Order of Time Divisions of *Ri*

In previous sections, textual and inscriptional evidence has been cited to demonstrate that the followings are time divisions of *ri*: *su* 夙, *chen* 晨, *dan* 旦, *ming* 明, *zhao* 朝, *dashi* 大食, *dashishi* 大食时, *shishi* 食时, *dacai* 大采, *dacaishi* 大采时, *rizhong* 日中, *zhongshi* 中时, *ze* 昃, *zeshi* 昃时, *xiaocai* 小采, *xiaocaishi* 小采时, *xiaoshi* 小食, *yongxi* 壻兮, *mu* 暮, and *hun* 昏. Among these twenty terms of time division, the following terms belong to different periods, but they refer to the same time period of the Yin day: *su* and *chen* refer to the same time period before *dan*; *ming*, *zhao*, and *dan*, all of which refer to the time of *dan*; *dashi*, *dashishi*, and *shishi*, all of which refer to the time of *dashi*; *Dacai* and *dacaishi* refer to the time of *dacai*; *rizhong* and *zhongshi* refer to midday; *ze* and *zeshi* refer to the time of *ze*; *xiaocai* and *xiaocaishi* refer to the time of *xiaocai*.⁵¹ In total, there are actually eleven time

⁵¹ In his comments to the last draft of this dissertation, David Pankenier raises very serious questions: “On p. 93 you mention the change from *yi yue* to *zheng yue*. Here you lump together all the time words without distinction as to period, which you do sort out in 2.3.3.2.6. Later you discuss the shift from inter-year to intra-year intercalation (e.g., p. 94, 108, 163-164). I kept waiting to find a discussion of what you think happened to cause these changes. Do you have any ideas about the cause of the calendar reform/change in terminology for which you provide such graphic evidence? This kind of terminology tends to be VERY conservative and resistant to Change. Something pretty radical had to happen for this change to occur. How does this relate to changes in the sacrifices, if at all? Do you really have nothing to say about this? Does anyone else have anything to say worth citing?”

Dong Zuobin (1945.1.I: 2-4) notices that there are radical changes in many aspects of the Yin culture between Period I and Period II. In Period II, new sacrifices appear, new terms in the Yin calendar are adopted, new styles of calligraphy are created, and some events in Period I have disappeared in Period II. It appears that all of a sudden these big changes happened approximately at the same time. There must be something extremely radical behind them. Dong Zuobin attributes these changes to Zujia’s ascending the throne. Dong Zuobin suggests that Zujia was a reformer and he was responsible for

divisions of *ri*: *su*, *dan*, *dacai*, *dashi*, *zhongshi*, *ze*, *yongxi*, *xiaoshi*, *xiaocai*, *mu* and *hun*. It remains now to determine the order of these time divisions.

2.3.3.2.1 The Order of *Su* and *Dan*

The order of *su* and *dan* has been analyzed in Section 2.3.1.1.2.1. The inscriptions in Example 7 show that *su* is a time division before *dan*. For convenience, that inscription is cited again here.

[07] 癸戌夙伐我不雉人。

癸于旦乃伐我不雉人。 《合集》26897

On the *gui*-day, at the time of *su*, Guard will attack Zai because [that will] not exterminate [his] people.

On the *gui*-day, upon the time of *dan*, [Guard] will then attack Zai because [that will] not exterminate [his] people. Heji 26897

In this example, both *su* and *dan* are time divisions of that *gui*-day. In the second inscription, the word *yu* occurs before *dan*. According to Ken-ichi Takashima (1990: 36-37), the word *yu* has a clear meaning of “futuraity” in the OBI and always introduces a more remote time. *Su* is thus closer to the time of the divination than *dan*. In other words, *su* comes before *dan*.

2.3.3.2.2 The Order of *Dan*, *Dacai* and *Dashi*

Dan, *dacai*, and *dashi* all are time divisions of the morning. The inscription on *Tunnan* 42 shows that *dan* comes before *dashi*. The inscription reads as follows:

[09] 自旦至食日(=时)不雨。

From *dan* to *shishi*, it will not rain.

In the pattern “from ... to...,” the complement after “from” is normally closer to the reference point than the complement after “to” is to the reference point. In this inscription,

all those changes. If so, why and how *Zujia* could bring into being those changes remain unclear. In this study, the focus is on examining and explaining principles of the Yin calendar. Those issues mentioned by David Pankenier will be topics of future research.

dan appears after “from” and *shishi* after “to.” Therefore, *dan* is earlier than *shishi*, another expression of *dashi*.

It is unfortunate that there is no inscription that clearly shows the relationship between *dacai* and *dan* or between *dacai* and *dashi*. As a result, it becomes necessary here to determine their order based only upon circumstantial evidence.

It is Dong Zuobin’s idea (1945.1.I: 5) that *dacai* is equivalent to *zhao* and *xiaocai* to *mu* (“大采”相当于“朝”，而“少采”相当于“夕”，于殷代则为“小采”与“暮”也). This opinion is followed by Chen Mengjia (1956: 232), Wen Shaofeng and Yuan Tingdong (1983: 71, 75), and Chang Yuzhi (1998: 163-164). Dong Zuobin bases his conclusion on the context in which *dacai* and *xiaocai* appear in the chapter “Lu yu” of the *Guoyu*. However, since *dacai*, *xiaocai*, *zhao* and *xi* all occur in the same passage of that chapter, it is this writer’s opinion that there should be some subtle difference between *dacai* and *zhao* and between *xiaocai* and *xi*.

According to the chapter “Lu yu” of the *Guoyu*, *dacai* was the time when the Son of Heaven paid tribute to the sun. It is easy to understand that it is proper to pay tribute to the sun shortly after sunrise. As a matter of fact, there are inscriptions showing that the Yin indeed offered sacrifice to the rising sun. Below is an example.

[63] 戊戌卜内乎雀越于出日于入日宰。

《合集》6572

Crack-making on *wuxu* (day 35), Nei [divined]: “[The king should] call Que to direct the binding-sacrifice to the rising and setting sun of a specially reared ovine.”⁵²

Heji 6572

It is also recorded in the chapter “Yao dian” of the *Shangshu* that Yao ordered He “respectfully to receive as a guest the rising sun.” (Legge 1872: 18-19) It appears that early Chinese indeed paid tribute to the rising sun, which may have been performed at the time shortly after sunrise.

These inscriptional and textual records indicate that *dacai* may refer to the time immediately after sunrise, which is the end of *dan*. This writer thus places the time division *dacai* between *dan* and *dashi*, rather than precisely at *dan* or *zhao*.

⁵² The translation of this inscription is basically that of Ken-ichi Takashima (2003a).

2.3.3.2.3 The Order of *Dashi*, *Zhongshi*, *Ze* and *Yongxi*

The following inscriptions clearly show the order of these four time divisions.

[08] 食日 (=时)至中日 (=时)不雨。

食日 (=时)至中日 (=时)其雨 《屯南》 624

“From *shishi* to *zhongshi*, it will not rain.”

“From *shishi* to *zhongshi*, perhaps, it will rain.” *Tunnan* 624

[09] 中日 (=时)至昃不雨。 《屯南》 42

“From *zhongshi* to *ze*, it will not rain.” *Tunnan* 42

[64] 昃至[壙]兮其雨。 《合集》 29801

“From *ze* to [*yong*] *xi*, it perhaps will rain.” *Heji* 29801

In inscriptions above, all these four time divisions occur in the pattern “from ... to....” Since the complement after “from” is closer to the reference point than the complement that after “to,” the order of these four time divisions, from early to late, can be determined as follows: *shishi*, *zhongshi*, *ze*, and *yongxi*.

2.3.3.2.4 The Order of *Yongxi* and *Xiaoshi*

Yongxi and *xiaoshi* are two different time divisions. But there are no inscriptions that, directly or indirectly, show the order in which they occur. Moreover, *yongxi* is the only exception, in that we cannot find an instance in which this word appears as a time division in early Chinese texts. Therefore, at the present time, there appears to be no way to determine their order with certainty.

For the time being, the intent will be to determine the order of *yongxi* and *xiaoshi* based upon the order of *dashi* and *dacai*. As shown in Section 2.3.3.2.2, *dashi* is close to *dacai*, which in turn is very close to the sunrise. We may suspect that *xiaoshi* is close to *xiaocai*, which in turn is very close to the sunset. Tentatively, it is suggested that *yongxi* be placed before *xiaoshi*.

2.3.3.2.5 The Order of *Xiaoshi*, *Xiaocai*, *Mu*, and *Hun*

In early Chinese texts, there is evidence to determine the order of *hun* and *mu*. According to the *Shuowen*, *hun* refers to the time when the day is dark (日冥也) and *mu* refers to the time when the day is going to be dark (日且冥也). Therefore, *mu* is a little earlier than *hun*. Also, it is said that the time of 45 minutes after sunset is called *hun* (see Section 2.3.1.1.8.). So it can be inferred that *mu* should refer to some time after sunset.

In Section 2.3.3.2.4, it was tentatively said that *xiaocai* is considerably before the time of sunset. So *xiaocai* should be a little earlier than *mu*. Further, the distribution of a pair of time divisions may be symmetric. Since *dashi* is after *dacai*, *xiaoshi* might be before *xiaocai*.

Based upon the considerations above, the tentative order of these four time divisions, from early to late, can be established as *xiaoshi*, *xiaocai*, *mu* and *hun*.

2.3.3.3 The Order of Time Divisions of the Yin Day

To summarize the analysis in Section 2.3.3, the order of time divisions of the Yin day in the language of the Yin OBI can be tabulated in Table 1 on next page.

2.3.4 Characteristics of Yin Time Divisions

An examination of the twelve time divisions of the Yin day in Table 1 reveals the following characteristics of those time divisions.

First, the duration of each of these time divisions is not equal, which has already been pointed out by Chang Yuzhi (1998: 180). For instance, on the one hand, the whole night-time is one division of the Yin day; on the other hand, between nautical twilight and the morning meal, there are four divisions. Also, there are three divisions in the short period around sunset. It goes without saying that each of these seven divisions is bound to be much shorter than *xi*, 'night.' The duration of each division is unequal in length.

Second, those time divisions are not consecutive. Table 1 shows that the time division *zhongshi*, 'time of meridian, midday,' comes after *dashi shi*, 'the time of big meal in the morning.' The big meal in the morning certainly is not eaten in late morning. Between *dashi shi* and *zhongshi*, there must have been a period of time. This example shows that the time divisions of the Yin day do not follow each other consecutively.

Table 1:
The Order of Time Divisions of the Yin Day

Period I	Period II	Period III	Period IV	Period V	
	<i>Chen</i> 晨	<i>Su</i> 夙			<i>Ri</i> 日
<i>Ming</i> 明	<i>Zhao</i> 朝	<i>Dan</i> 旦			
<i>Dacai</i> 大采 <i>Dacaishi</i> 大采时					
<i>Dashi</i> 大食 <i>Dashishi</i> 大食时 <i>Shishi</i> 食时		<i>Dashi</i> 大食 <i>Shishi</i> 食时			
<i>Zhongshi</i> 中时 <i>Rizhong</i> 日中		<i>Zhongshi</i> 中时 <i>Rizhong</i> 日中			
<i>Ze</i> 昃 <i>Zeshi</i> 昃时		<i>Ze</i> 昃	<i>Ze</i> 昃		
		<i>Yongxi</i> 壘兮			
<i>Xiaoshi</i> 小食					
<i>Xiaocai</i> 小采 <i>Xiaocaishi</i> 小采时					
	<i>Mu</i> 暮	<i>Mu</i> 暮			
		<i>Huu</i> 昏			
<i>Xi</i> 夕	<i>Xi</i> 夕	<i>Xi</i> 夕	<i>Xi</i> 夕	<i>Xi</i> 夕	<i>Xi</i> 夕

Third, the vast majority of those time divisions are closely related to the sun. For example, *dan* and *dacai* refer to the time around sunrise. *Zhongshi* means the sun is in the middle of the sky. A time period after the sun passes the meridian, it is called *ze*. The time around sunset is divided into three time periods: *xiaocai*, *mu* and *hun*. At the time of *xi*, the sun is not visible. One way or another, eight of those twelve time divisions are related to the sun's motion in the sky. It is thus clear that the position of the sun in the sky plays a pivotal role in dividing the daytime by the Yin.

Fourth, because most time divisions are related to the sun's motion in the sky, the exact time and length of each time division vary with the seasons. In this connection, David N.

Keightley (2000: 20-21) reminds us that the exact time of dawn and sunset varies with the seasons. For instance, according to the calculation of the Skymap, on July 5, 1166 BC, the summer solstice of that year, the sun rose at 4:59 a.m. in Anyang. On December 31, 1166 BC, the winter solstice of that year, the sunrise was 7:39 a.m. The difference between these two sunrises is 2 hours 40 minutes. Accordingly, the exact times of *dan* and *dacai* on those two days are far apart. As for the length of the time period from noon to sunset in Anyang, it is 7 hours 50 minutes on July 5, 1166 BC; and it is 5 hours 31 minutes on December 31, 1166 BC. Between noon and sunset, there are five time divisions: *ze*, *yongxi*, *xiaoshi*, *xiaocai* and *mu*. It is likely that the length of *ze* and *yongxi* on July 5, 1166 BC would be much shorter than on December 31 of that year.

Because Yin time divisions are not equal and consecutive, their length and exact time vary with the seasons, it is generally impossible and inaccurate to specify each time division of the Yin day using modern hours such as 8:00 a.m. or 7:00 p.m., etc.

In her report about this dissertation, Anne O. Yue points out that Table 1 “showing that those designating divisions of the day time far exceed the one-expression for night. It may be pointed out that this is quite natural and to be expected, since divisions during the day are intimately related to human activities daily.” Her observation is correct.

2.4 The Start of the Yin Day

Before the discovery of the Yin OBI at Anyang in 1899, there was only one view with regard to the start of the Yin day. According to the *Shangshu dazhuan* 尚书大传, the Yin day began with *jiming* 鸡鸣, ‘cockcrow.’ Since the discovery of the Yin OBI, two more opinions have been proposed. Dong Zuobin’s opinion (1945.2.II: 6b) is that the commencement of the Yin day is *zhao* 朝 or *dan* 旦, a time division that includes actual sunrise and some time before sunrise. The other opinion, which was put forward by Homer H. Dubs (1951: 330), is that the Yin day started with midnight. Neither Dong Zuobin (1945) nor Homer H. Dubs (1951) has refuted the cockcrow theory.

Below, this writer will first evaluate each of these three views. Thereafter, the present researcher’s conclusion, drawn from inscriptional evidence, will be suggested: the start of the Yin day is *su* 夙.

2.4.1 Evaluation of Previous Theories

2.4.1.1 The Midnight Theory

The midnight theory was first proposed by Homer H. Dubs' (1951: 330).⁵³ His argument proceeds as follows:

The Babylonians began the day at sunrise; the Jews and Greeks, at sunset; the Romans, at midnight, as did also China in Han times. The fact that most of these eclipses are reported as having occurred in the 'night', *si*, of a given day eliminates the Jewish and Greek 'day'. This fact also makes it possible that Shang China employed the Babylonian 'day'. Babylonia was the nearest area with a developed astronomy. Later Chinese practice however provides strong evidence that in the Shang period China used the Roman 'day'. Eclipse record IV confirms that probability.

This view is reaffirmed in Homer H. Dubs (1953: 102). The above citation shows that Dubs justifies his conclusion on two grounds. First, the Chinese day began with midnight in Han times. The other reason is that the absolute date on which he calculates an eclipse record, later published as *Yingcang* 886, coincides with his midnight theory. It appears that these two reasons are not strong enough to establish midnight as the start of the Yin day. Below the present author elaborates upon Dubs' two justifications for his conclusion.

First, the fact that the Chinese day started with midnight in Han times is not conclusive evidence for determining the beginning of the Yin day. It is true that Chinese history is continuous since the Yin Dynasty. Because of this, it is possible that the beginning of the Chinese day in Han times is the same as that of the Yin day. However, whether the start of the Yin day is actually midnight has to be decided by contemporary evidence. The fact that Dubs is aware of this requirement is clearly shown in his comments about Dong Zuobin's

⁵³ This is an article about "The Date of the Shang Period" rather than the method of recording day in the Shang Dynasty (《商代的记日法》), as translated by Chang Yuzhi (1998: 181).

reconstruction of the Yin calendar. On this subject, Dubs says:

The dating of this eclipse raises the problem concerning how much we know about the Shang calendar. Dr. Dung appears to go beyond the available evidence, fixing, by rules employed in Han times, the length of months, the interpolation of intercalary months, etc. for the whole later portion of the Shang period. It is however quite likely that astronomical calculations for the beginnings of months began to be used in China only about 600 B.C. Hence [it is] dangerous to employ a Han calendar for a period a thousand years earlier (Dubs 1951: 325).

By the same token, it is dangerous for Dubs to apply the start of a Han day for a period a thousand years earlier. The beginning of the Han day is not "strong" evidence for the start of the Yin day.

The second objection to Dubs' reasoning is that the absolute date he selects for the eclipse on the night of *jiwei* lends no support to his opinion about the start of the Yin day. According to Dubs (1951: 331), the date for that eclipse is December 27-28, 1192 BC:

It began at 8:48 p.m. local time at Anyang and became total at 9:53 p.m. Totality lasted for an hour and three-quarters. The moon began to reappear at 11:37 p.m., and the eclipse ended at 42 minutes after midnight, on the morning of cyclical day 57. The debated unknown character in the record then probably means something like 'midnight' or 'continuing into', indicating that this eclipse endured into the morning of day 57.

The reason Dubs selected this date is because he assumed that the Yin day began with midnight. If he had assumed sunrise to be the beginning of the Yin day, he would not have considered this eclipse on December 27-28, 1192 BC a candidate for this eclipse. The date he assigned to the eclipse does not confirm his opinion that the Yin day started at midnight.

Third, the credibility of Dubs' argument is weakened by possible evidence he himself mentioned (1951: 332):

For record II, there is, within half a century, in addition to the eclipse of 1198, only the partial eclipse of 1229 B.C., Dec. 17, after midnight on the morning of day 32. If this latter dating is accepted, Shang China must have employed the Babylonian 'day'.

Why does Dubs not accept that later dating? He offers no explanation. In the absence of providing any evidence to rule out this date, Dubs' opinion on the start time of the Yin day appears subjective and undermines the credibility of his assertion.

Fourth, as analyzed in Section 2.3.2, there is inscriptional evidence to support the view that the whole Yin night-time is called *xi*. In other words, the Yin people did not have the time division for midnight. Without such a time division, it would be impossible for them to be able to select midnight as the beginning of a day.

Because of these four reasons just discussed, Homer H. Dubs' view lacks solidity. Even so, his midnight theory has two followers: Chou Fa-kao (1964-1965) and Suetsugu Nobuyuki (1994).

Both Chou Fa-kao (1964-1965) and Suetsugu Nobuyuki (1994) suggest that there were different beginnings of the day in Yin times. For example, it is Suetsugu Nobuyuki's theory (1994: 12) that the common Yin people reckoned that the day started with dawn, while day began at midnight according to diviners whose work took place at night. The fact is that neither Suetsugu Nobuyuki nor Chou Fa-kao has produced clear inscriptional evidence to substantiate their theory. Their theory therefore remains to be proven.

2.4.1.2 The Cockcrow Theory

The cockcrow theory first appeared in the *Shangshu dazhuan*, whose author is Fu Sheng 伏胜. Fu Sheng lived in the beginning of the Western Han Dynasty, so it is a text of the Han times. There is no indication that this theory is based upon any contemporary sources. Its credibility is thus open to question. Moreover, in the corpus of extant Yin OBI, there still is no evidence that lends any support to such a theory. Therefore, judging by the synchronic evidential approach, it is difficult to accept that the Yin day started at the time of cockcrow.

2.4.1.3 The Dawn Theory

Based upon his research about time divisions seen in the OBI, Dong Zuobin (1945.2.I: 6b) asserts the theory that the Yin day started with dawn. But he does not reject the view that the Yin day began with the time of cockcrow. Chang Yuzhi (1998: 193) makes a justifiable criticism of such an inconsistency.

Dong Zuobin's argument is as follows: in the Yin Dynasty, a day has two parts: *ri* 日, which refers to the whole daytime, and *xi* 夕, which refers to the whole night-time; in a day, *ri* comes before *xi*. Dong Zuobin thus thinks that the earliest time division of *ri* would be the beginning of the Yin day. According to his research, the earliest time division of the daytime in the Yin OBI is *ming* 明, 'dawn'. He then reaches the conclusion that the Yin day began with dawn.

Dong Zuobin's argument seems logical. If a Yin day consists of *ri* and *xi* and the time division *ming*, 'dawn,' is indeed the earliest time division of *ri*, his conclusion would be accepted by many specialists in the field. For example, both Song Zhenhao (1985: 323) and Chang Yuzhi (1998: 188-193) agree with Dong Zuobin about dawn being the beginning of daytime in a Yin day, and they have followed his theory. However, as shown in Sections 2.3.1.1.2.1 and 2.3.3.2.1, there is the time division *su* 夙 before dawn. It is incorrect for these researchers to regard dawn as the earliest time division of *ri* and, further, to take dawn as the beginning of the Yin day.

2.4.2 *Su*: the Start of the Yin Day

As analyzed in Section 2.3, there are twelve time divisions in the Yin OBI: *su*, *dan* (or *ming*, or *zhao*), *dacai* (or *dacaishi*), *dashi* (or *dashishi*, *shishi*), *zhongshi* (or *rizhong*), *ze* (or *zeshi*), *yongxi*, *xiaoshi*, *xiaocai* (or *xiaocaishi*), *hun*, *mu*, and *xi*. It goes without saying that the commencement of the Yin day must be the earliest one among those twelve time divisions. By determining the earliest time division, one will get the start of the Yin day.

2.4.2.1 From *Dacai* to *Xi*: No Start of the Yin Day

In Example 61 cited in Section 2.3.3.1, there are two time divisions, *ming* and *xi*. Both *ming* and *xi* appear in the verification of this inscription. The content of this verification shows that these two time divisions belong to the same day *yisi*. More importantly, the order of the occurrence of *ming* and *xi* indicates that *ming* appears before *xi*. In other words, *ming* is the earliest time division between *ming* and *xi*. As shown in Table 1, from *ming* to *xi*, there are the following eleven time divisions: *ming*, *dacai*, *dashi*, *zhongshi*, *ze*, *yongxi*, *xiaoshi*, *xiaocai*, *mu*, *hun*, and *xi*. It can be deduced from Example 61 that *ming* is the earliest one of these eleven time divisions.

As mentioned above, only the earliest time division can validly be considered the beginning of the day. If there are only those eleven time divisions in the Yin OBI, *ming* would be the start of the Yin day, as Dong Zuobin (1945.2.I: 6b) proposes. The fact is that there are twelve time divisions in the OBI. The other time division is *su*. It appears that one has to determine the beginning of the Yin day between *ming* (or *dan*) or *su*. If *su* is an earlier time division than *ming* (or *dan*), then it will be the start of the Yin day.

2.4.2.2 *Su* before *Dan*

Both Song Zhenhao (1985: 307-308) and Chang Yuzhi (1998: 150-151) list *su* as a time division in the OBI. Also, both Song Zhenhao (1985: 312) and Chang Yuzhi (1998: 150-151) agree that *su* is the last time period of the Yin day, which would make *dan* the earliest time division of the Yin day. Therefore, they have reached the conclusion that the Yin day begins with dawn.

They have cited three examples to show *dan* is the first time division of the present day and *su* is the last one of the previous day.⁵⁴ However, their interpretations of those three examples are incorrect. Each interpretation will now be analyzed in turn.

Their first example includes inscriptions on two oracle bones.

[65] 𠄎𠄎。

𠄎物。

𠄎今夙酉。

⁵⁴ The first two are cited by Song Zhenhao (1985: 323), and all three are cited by Chang Yuzhi (1998: 188-191).

[于翌日]旦 [酉刂]. 《安明》 1685

It should be a red cow.

It should be a cow with different colors.

It should be at this *su* that [the king will] perform the *you*-cutting sacrifice.

[Upon] the dawn [of next day, the king will perform the *you*-cutting sacrifice.]

Anming 1685

[66] 于翌日旦大雨。 《英藏》 2336

Upon the dawn of next day, it will rain heavily. *Yingcang* 2336

Chang Yuzhi (1998: 189) acknowledges that the last inscription of Example 65 is damaged severely. Actually, only part of the graph *dan* survives. When Chang Yuzhi reconstructs that last inscription as “upon the dawn of next day, the king will perform the *you*-cutting sacrifice,” she creates two problems.

First, Chang Yuzhi’s transcriptions (1998: 150 and 189) for this last inscription are different. On page 150, her transcription is *hui dan you*, ‘it should be at dawn that [the king will] perform the *you*-cutting sacrifice.’ On page 189, it is transcribed as *yu yi ri dan you*, ‘upon the dawn of next day, [the king will] perform the *you*-cutting sacrifice.’ She is not certain what the inscription really is.

Second, the inscriptions in Example 65 are about the time to perform the *you*-cutting sacrifice. On the other hand, the inscription in Example 66 is about whether it will rain the next day. There is no direct link between these two examples. There is no reason for Song Zhenhao and Chang Yuzhi to reconstruct the last inscription in Example 65 as *yu yi ri dan you* solely based upon Example 66. If that is the case, there is no pair of *jinsu* and *yiri dan* in Example 65, and no definite conclusion about the start of the Yin day that can be drawn from these inscriptions.

Their second example is two inscriptions on *Heji* 26897, which has been analyzed already in Section 2.3.1.1.1. To cite it again:

[07] 癸戌夙伐 戔不雉人。

癸于旦乃伐 戔不雉人。 《合集》 26897

On the *gui*-day, at the time of *su*, Guard will attack Zai because [that will] not exterminate [his] people.

On the *gui*-day, upon the time of *dan*, [Guard] will then attack Zai because [that will] not exterminate [his] people. *Heji* 26897

Song Zhenhao (1985: 323) and Chang Yuzhi (1998: 189-190) have not offered any analysis of this example. They simply claim that this is a piece of evidence to support the view that the Yin day starts with *dan*.

As analyzed in Section 2.3.1.1.2.1, the two inscriptions in this example show *su* to be the time division before *dan*. Chen Mengjia (1956: 227) and Ken-ichi Takashima (1990: 36-37) have pointed out that the word *yu* 于 is used before a time word that is more distant. The reason is because *yu* has a clear “futurity” in the OBI. (Takashima 1990: 37) In the second inscription of this example, the word *yu* appears before *dan*. Therefore, *dan* is more remote than *su*. If so, *dan* is not the earliest time division of that *gui*-day and the start of that *gui*-day could not be *dan*, which contradicts Song Zhenhao’s and Chang Yuzhi’s conclusion.

The third example cited by Chang Yuzhi (1998: 190) is an inscription on *Heji* 34601.

[67] 丁卯卜，戊辰复旦。勿复旦，其延。⁵⁵ 《合集》34601

On *dingmao* (day 4), [X] divined: “On *wuchen* (day 5), [the king will] repeat (?) *dan*. [The king] should not repeat (?) *dan*, [he] should continue.” *Heji* 34601

Again, Chang Yuzhi does not explain how this example supports the view that the Yin day starts with the time division *dan*. On page 190, she first cites Yu Xingwu’s interpretation that *wuchen fu dan* means that *wuchen* is the next day of *dingmao* (戊辰复旦，戊辰即丁卯之翌日也). Then, she pronounces that this inscription also shows that *dan*, i.e., dawn, is the beginning of the Yin day.

It must be pointed out that it is extremely difficult to see any relation between Yu Xingwu’s explanation of the phrase *fudan* and the start of the Yin day. It is a fact that *wuchen* is the next day of *dingmao*. Why would that make *dan* the beginning of the Yin day? There is no connection between Yu’s interpretation of *wuche fudan* and Chang Yuzhi’s conclusion.

It also needs to be pointed out that the meaning of Example 67 is unclear. It appears that there is a pair of complementary charges in this example. In the second charge, negative *wu* appears before the phrase *fudan*. Since the word *wu* is an *m-type negative that negates verbs

⁵⁵ This writer believes what Chang Yuzhi transcribes here is a pair of complementary charges rather than one inscription.

“whose salient feature is their ‘controllability’ – verbs which are thought of as being controllable by the will of living human being,”⁵⁶ *fu* must be a controllable verb. If so, Example 67 might have nothing to do with the beginning of a Yin day, even though the meaning of *fudan* remains mysterious.

The foregoing analysis demonstrates that those inscriptions cited by Song Zhenhao and Chang Yuzhi do not support their opinion that *su* is the last time division and *dan* is the first one of the Yin day. Rather, Example 7 advances evidence to show that *su* is the time division before *dan*.

2.4.2.3 *Su*: the Beginning of the Yin Day

There are the following twelve time divisions in a Yin day: *su*, *dan* (or *ming*, *zhao*), *dacai* (or *dacaishi*), *dashi* (or *dashishi*, *shishi*), *zhongshi* (or *rizhong*), *ze* (or *zeshi*), *yongxi*, *xiaoshi*, *xiaocai* (or *xiaocaishi*), *hun*, *mu*, and *xi*. It makes perfect sense to take the earliest time division as the beginning of the Yin day.

The inscription in Example 61 indicates that none of these eleven time divisions from *dacai* to *xi* is the earliest time division of the Yin day, making *dan* (or *ming*) and *su* two candidates for the start of the Yin day. Moreover, it can be deduced from inscriptions in Example 7 that *su* is the time division before *dan*. The time division *su* is thus the beginning of the Yin day.

⁵⁶ For more details about *m-type negatives, see Ken-ichi Takashima (1996a: 370-375).

CHAPTER THREE

“THE MONTH” IN THE YIN CALENDAR

3.1 Introduction

It takes about 29 days 12 hours 44 minutes for the moon to revolve round the earth once. This period forms a unit for lunar-solar calendars that is called *yue* 月, ‘month,’ in Chinese. In the corpus of the Yin OBI, there are an enormous number of month notations, a fact that testifies to the existence of the month in the Yin calendar.

This chapter will deal with the following issues: the number of the month in the Yin year (3.2), the length of the Yin month (3.3), the start of the Yin month (3.4) and the arrangement of Yin months (3.5).

3.2 The Number of the Month in a Yin Year

The months of a year are numbered, starting from number one to number twelve, or from number one to number thirteen, as is clearly shown by the following inscriptions.

[01] 癸亥[卜], 宾[贞]: 旬[亡祸]。一月。

癸酉卜, 宾贞: 旬亡(=无)祸。

癸未卜, 宾贞: 旬亡(=无)祸。二月。 《合集》16649

Crack-making on *guihai* (day 60), Bin [divined]: “[In the next] 10-day week, [there will be no disasters.” Day *guihai* was in] the first month.

Crack-making on *guiyou* (day 10), Bin divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guiwei* (day 20), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiwei* was in] the second month. *Heji* 16649

[02] 癸卯卜, 宾贞: 旬亡(=无)祸。二[月]。

癸丑卜, 宾贞: 旬亡(=无)祸。三月。 《合集》16661

Crack-making on *guimao* (day 40), Bin divined: “[In the next] 10-day week, there will

be no disasters.” [Day *guimao* was in] the second [month].

Crack-making on *guichou* (day 50), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guichou* was in] the third month. Heji 16661

[03] 癸卯卜，宾贞：旬亡(=无)祸。三月。

癸丑卜，宾贞：旬亡(=无)祸。四月。《合集》16657

Cracking on *guimao* (day 40), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the third month.

Crack-making on *guichou* (day 50), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guichou* was in] the fourth month. Heji 16657

[04] 癸亥卜，宾贞：旬亡(=无)祸。四月。

癸酉卜，宾贞：旬亡(=无)祸。五月。《合集》16668

Crack-making on *guihai* (day 60), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the fourth month.

Crack-making on *guiyou* (day 10), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiyou* was in] the fifth month. Heji 16668

[05] 癸亥卜，宾贞：旬亡(=无)祸。五月。

癸酉卜，宾贞：旬亡(=无)祸。六月。《合集》16685

Crack-making on *guihai* (day 60), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the fifth month.

Crack-making on *guiyou* (day 10), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiyou* was in] the sixth month. Heji 16685

[06] 癸卯卜，宾贞：旬亡(=无)祸。六月。

癸丑卜，宾贞：旬亡(=无)祸。七月。《合集》16689

Crack-making on *guimao* (day 40), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the sixth month.

Crack-making on *guichou* (day 50), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guichou* was in] the seventh month. Heji 16689

[07] [癸]亥卜，宾贞：旬亡(=无)祸。七月。

癸酉卜，宾贞：旬亡(=无)祸。八月。《合集》16716

Crack-making on [*gui*]hai (day 60), Bin divined: “[In the next] 10-day week, there will

be no disasters.” [Day *guihai* was in] the seventh month.

Crack-making on *guiyou* (day 10), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiyou* was in] the eighth month. *Heji* 16716

[08] 癸卯卜，贞：旬亡(=无)祸。八月。

癸丑卜，贞：旬亡(=无)祸。九月。 《合集》 16733

Crack-making on *guimao* (day 40), divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the eighth month.

Crack-making on *guichou* (day 50), divined: “[In the next] 10-day week, there will be no disasters.” [Day *guichou* was in] the ninth month. *Heji* 16733

[09] 癸亥卜，宾贞：旬亡(=无)祸。九月。

癸酉卜，宾贞：旬亡(=无)祸。十月。 《合集》 16738

Crack-making on *guihai* (day 60), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the ninth month.

Crack-making on *guiyou* (day 10), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiyou* was in] the tenth month. *Heji* 16738

[10] 癸丑卜，中贞：旬亡(=无)祸。十月。

癸亥卜，中贞：旬亡(=无)祸。十一月。 《合集》 16748

Crack-making on *guichou* (day 50), Zhong divined: “[In the next] 10-day week, there will be no disasters.” [Day *guichou* was in] the tenth month.

Crack-making on *guihai* (day 60), Zhong divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the eleventh month. *Heji* 16748

[11] 癸未卜，宾贞：旬亡(=无)祸。十一月。

癸巳卜，宾贞：旬亡(=无)祸。十二月。 《合集》 16755

Crack-making on *guiwei* (day 20), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiwei* was in] the eleventh month.

Crack-making on *guisi* (day 30), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guisi* was in] the twelfth month. *Heji* 16755

[12] 癸巳卜，贞：旬亡(=无)祸。十二月。

癸卯卜，贞：旬亡(=无)祸。一月。 《合集》 22404

Crack-making on *guisi* (day 30), divined: “[In the next] 10-day week, there will be no

disasters.” [Day *guisi* was in] the twelfth month.

Crack-making on *guimao* (day 40), divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the first month. *Heji* 22404

In Example 12, the first month occurs immediately after the twelfth month, which shows that from the first month to the twelfth month is a cycle. However, this is not the only cycle. There is inscriptional evidence showing that a thirteenth month sometimes occurs between a twelfth month and a first month. Below is one such example.

[13] 癸卯卜，史貞：旬亡(=无)祸。十二月。

癸亥卜，史貞：旬亡(=无)祸。十三月。

《合集》16770

Crack-making on *guimao* (day 40), Shi divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the twelfth month.

Crack-making on *guihai* (day 60), Shi divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the thirteenth month. *Heji* 16670

[14] 癸未卜，貞：旬亡(=无)祸。十三月。

癸巳卜，貞：旬亡(=无)祸。[一]月。

癸卯卜，貞：旬亡(=无)祸。一月。

《合集》26582

Crack-making on *guiwei* (day 20), [X] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiwei* was in] the thirteenth month.

Crack-making on *guisi* (day 30), [X] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guisi* was in the first] month.

Crack-making on *guimao* (day 40), [X] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the first month. *Heji* 26582

Examples 13 and 14 are proof for the occurrence of a thirteenth month between the twelfth and first month. It is apparent that in the Yin calendar from the first month to the thirteenth month is another cycle.

There are two points that need to be made clear. The first point is that, from Period II to Period V, there is the expression *zhengyue* 正月, ‘right month.’¹ Judging from the position of

¹ David N. Keightley (2000: 43) translates *zheng yue* as “regulating moon.” In his comments to the draft of this dissertation, Ken-ichi Takashima points out that such a translation is possibly incorrect. “Keightley took *zheng* 正 to have meant ‘to regulate,’ which meaning is possible as a verb *zheng* 正, ‘to rectify,’ [is] wrongly written as in *zhengfa* 征伐; so *zhengyue* 正

the *zhengyue*, it can be deduced that it refers to the first month. The following inscriptions show that a *zhengyue* appears between a twelfth month and a second month:

[15] 癸巳卜，行贞：旬亡(=无)祸。在十二月。

癸卯卜，行贞：旬亡(=无)祸。在正月。 《合集》26517

Crack-making on *guisi* (day 30), Xing divined: “[In the next] 10-day week, there will be no disasters.” [Day *guisi*] was in the twelfth month.

Crack-making on *guimao* (day 40), Xing divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao*] was in the *zheng* month. Heji 26517

[16] 癸亥卜，行贞：旬亡(=无)祸。在正月。

癸酉卜，行贞：旬亡(=无)祸。在二月。 《合集》26513

Crack-making on *guihai* (day 60), Xing divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai*] was in the *zheng* month.

Crack-making on *guiyou* (day 10), Xing divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiyou*] was in the second month. Heji 26513

Since inscriptions in Examples 12 and 1 show that the first month occurs between the twelfth month and the second month as well, it appears that both the first month and *zhengyue* occupy the same position. Moreover, if *zhengyue* is not the first month of the year, i.e., the year to which the inscriptions in Examples 15 and 16 belong, the year would have to start with the second month, which would make that year incomplete. Given these two reasons, it can be deduced that *zhengyue* is the new designation for the first month from Period II to Period V.² Since then, it has become the standard designation for the first month in Chinese calendars.

月 should accordingly be analyzed as a V + O structure, rather than Adj. + N structure. Yet, the latter analysis is most likely applicable to *zhengyue* 正月, which probably should be analyzed meaning ‘correct /right /just month,’ not ‘regulating.’”

² David Pankenier has written in his comments to this thesis that “This kind of terminology tends to be VERY conservative and resistant to change. Something pretty radical had to happen for this change to occur. How does this relate to changes in the sacrifices, if at all? Do you really have nothing to say about this? Does anyone else have anything to say worth citing?”

He is right in suggesting that such a change of the designation for the first month is related to the change in sacrifices, and that there is probably something radical behind them. As Dong Zuobin (1945.1.1: 2b-4b) has made clear, this change of the terminology for the first month and changes in sacrifices, divination patterns and calligraphy of inscriptions all happened in Period II, which indicates something rather radical must have happened. Dong Zuobin suggests that it was Yin King Zujia who made these changes. Whether Dong Zuobin’s opinion is correct or not is still an open question.

The second point worth noting is that the phrase *shisan yue* 十三月, 'the thirteenth month,' only occurs in inscriptions from Period I and Period II. In inscriptions from Periods III to V, it disappears. The lack of this phrase in those inscriptions does not mean that there is only one cycle of twelve months, from the first to the twelfth month, in those periods. Rather, the reason for the disappearance of the phrase *shisan yue* is that a different method of intercalation is employed in late periods, which will be discussed in full detail in Section 3.5. The cycle of thirteen months still exists in those periods.

As shown above, Yin months can form two cycles. One is twelve months long and the other one thirteen months long. The twelve-month cycle is a normal Yin year and the thirteen-month cycle an intercalary Yin year.

3.3 The Length of the Yin Month

The average time for the moon to revolve round the earth is roughly twenty-nine-and-half days. Since the number of days in a month has to be a round figure, it is easy to understand that the length of a lunar month is either 29 days or 30 days. As for the length of the Yin month, however, there are differing opinions. Below, each opinion is evaluated against inscriptional evidence so as to determine which one is likely correct.

3.3.1 Yin Month Not Always 30 Days Long

Liu Zhaoyang (1933: 151) and Sun Haibo (1935: 123) hold the opinion that the Yin month is normally 30 days long, starting with a *jia* 甲-day. If their opinion is correct, the Yin month would always start with a *jia*-day, as they state. It follows that their theory would be incorrect if the Yin month does not always begin with a *jia*-day.

A number of examples clearly show that the first day of the Yin month is not a *jia*-day. This kind of evidence is first presented by Hu Houxuan (1944a). He cites what is later published as *Heji* 26308, 26235 and 26293, as evidence that weighs against the opinion that the Yin month always starts with a *jia*-day. These same inscriptions are repeated by Chen Mengjia (1956: 219-220), Wen Shaofeng and Yuan Tingdong (1983: 109- 110) without giving due credit to Hu Houxuan. Below is one of those three examples first discovered by

Hu Houxuan.

[17] 丙申卜，旅贞：今夕亡祸。在十月。

丁酉卜，旅贞：今夕亡祸。在十月。

戊戌卜，旅贞：今夕亡祸。在十月。

己亥卜，旅贞：今夕亡祸。在十月。

庚子卜，旅贞：今夕亡祸。在十月。

辛丑卜，旅贞：今夕亡祸。在十月。

壬寅卜，旅贞：今夕亡祸。在十一月。³

癸卯卜，旅贞：今夕亡祸。在十一月。

《合集》26308

Crack-making on *bingshen* (day 33), Lu divined: "There will be no disasters tonight."

[Day *bingshen*] was in the tenth month.

Crack-making on *dingyou* (day 34), Lu divined: "There will be no disasters tonight."

[Day *dingyou*] was in the tenth month.

Crack-making on *wuxu* (day 35), Lu divined: "There will be no disasters tonight." [Day *wuxu*] was in the tenth month.

Crack-making on *jihai* (day 36), Lu divined: "There will be no disasters tonight." [Day *jihai*] was in the tenth month.

Crack-making on *gengzi* (day 37), Lu divined: "There will be no disasters tonight." [Day *gengzi*] was in the tenth month.

Crack-making on *xinchou* (day 38), Lu divined: "There will be no disasters tonight." [Day *xinchou*] was in the tenth month.

Crack-making on *renyin* (day 39), Lu divined: "There will be no disasters tonight." [Day *renyin*] was in the eleventh month.

Crack-making on *guimao* (day 40), Lu divined: "There will be no disasters tonight." [Day *guimao*] was in the eleventh month.

Heji 26308

There are eight inscriptions in this example. Day *xinchou* (38) of the sixth inscription and day *renyin* (39) of the seventh are consecutive. The post-faces of the sixth and seventh inscriptions clearly record that these two days belong to the tenth and eleventh months,

³ The authors of *Jiaguwen heji shiwen* transcribe it as the tenth month. Although the rubbing is not very clear, the present writer can discern that it is the eleventh month, and so does Chang Yuzhi (1998: 319).

respectively. This means that day *xinchou* is the last day of the tenth month, and that day *renyin* is the first day of the eleventh month. This is a piece of strong evidence against the view that the start of the Yin month is always a *jia*-day.

Chang Yuzhi (1998: 320-321) believes that she has found two more examples. But only the following example is valid evidence against the opinion that the Yin month has to begin with a *jia*-day.

[18] 甲午卜，旅貞：今夕亡禍。在十一月。

乙未卜，旅貞：今夕亡禍。在十二月。

丙申卜，旅貞：今夕亡禍。在十二月。

丁酉卜，旅貞：今夕亡禍。在十二月。 《合集》26306

Crack-making on *jiawu* (day 31), Lu divined: "There will be no disasters tonight." [Day *jiawu*] was in the eleventh month.

Crack-making on *yiwei* (day 32), Lu divined: "There will be no disasters tonight." [Day *yiwei*] was in the twelfth month.

Crack-making on *bingshen* (day 33), Lu divined: "There will be no disasters tonight." [Day *bingshen*] was in the twelfth month.

Crack-making on *dingyou* (day 34), Lu divined: "There will be no disasters tonight." [Day *dingyou*] was in the twelfth month. *Heji* 26306

These are the four inscriptions on this piece of oracle bone. It is clearly recorded in the first two inscriptions that the divination date of the first inscription, *jiawu*, and the date of the second inscription, *yiwei*, belong to the eleventh and twelfth months, respectively. Since *jiawu* (day 31) and *yiwei* (day 32) are consecutive, it can be inferred that *jiawu* is the last day of the eleventh month and *yiwei* is the first day of the twelfth month. This is a good example illustrating that the first day of a Yin month is not a *jia*-day.

The uncertain example cited by Chang Yuzhi (1998: 320-321) consists of the following two inscriptions scribed on *Tunnan* 4516.

[19] 丁酉卜：今生十月王敦通，受又。

己亥卜：王敦通，今十月，受又。 《屯南》4516

On *dingyou* (day 34), [X] divined: "In this next tenth month, the king will attack Tong and [he will] receive assistance."

On *jihai* (day 36), [X] divined: “The king will attack Tong in this tenth month and [he will] receive assistance.”

Tunnan 4516

Chang Yuzhi’s understanding of this example is based on Chen Mengjia’s interpretation of the word *sheng* 生 (1956: 117-118). Chen Mengjia has observed that the phrase *jin* 今 + month notation and *sheng* 生 + month notation often form a pair. In such a context the word *sheng* always introduces a month notation that immediately follows a month notation introduced by *jin*, ‘this.’ From this observation, he infers that the word *sheng* in this context actually means “next.”

After mentioning such usage of the word *sheng*, Chang Yuzhi infers that the string *jin sheng shiyue* 今生十月, ‘this next tenth month,’ indicates that the first divination was done on *dingyou* (day 34) of the ninth month; and that *jin shiyue* 今十月, ‘this tenth month,’ indicates that the second divination was done on *jihai* (day 36) of the tenth month. She further deduces that the tenth month starts either with *wuxu* (day 35) or with *jihai* (day 36), neither of them is a *jia*-day. This is her rationale according to which Example 19 is evidence showing that the beginning of a Yin month may not be a *jia*-day.

It is the present writer’s opinion that there are uncertainties inherent in her argument. First, as cited above, Chen Mengjia has made it clear that the word *sheng* means “next” when it occurs in a context such as *jin* + month notation paired with *sheng* + month notation. *Sheng* may have a different meaning outside that context. For example, on *Heji* 10270, there is a string *qi huo sheng lu* 其获生鹿, ‘[the king] may capture a living deer,’ in which the word *sheng* means “living.” Is there the context of a pair of *jin* + month notation and *sheng* + month notation in Example 19? Apparently, there is not. This casts doubt on Chang Yuzhi’s interpretation of *sheng* as “next.” From this consideration, it appears that Chang Yuzhi’s reading of *jinsheng* in Example 19 may not be accurate. Example 19 is therefore not a piece of strong evidence showing that the start of the Yin month may not be a *jia*-day.

Beside those examples that have been discovered by other scholars, this writer has found two additional examples showing that the start of a Yin month can be a day other than a *jia*-day. The first example refers to the following inscriptions on *Heji* 26249.

[20] 戊戌卜，行贞：今夕亡祸。在十月。

己亥卜，行贞：今夕亡祸。在十月。

庚子卜，行貞：今夕亡禍。在十一月。

[辛]丑卜，行貞：今夕亡禍。在十一月。

《合集》26249

Crack-making on *wuxu* (day 35), Xing divined: "There will be no disasters tonight."

[Day *wuxu*] was in the tenth month.

Crack-making on *jihai* (day 36), Xing divined: "There will be no disasters tonight."

[Day *jihai*] was in the tenth month.

Crack-making on *gengzi* (day 37), Xing divined: "There will be no disasters tonight."

[Day *gengzi*] was in the eleventh month.

Crack-making on [*xin*]chou (day 38), Xing divined: "There will be no disasters tonight."

[Day *xinchou*] was in the eleventh month. Heji 26249

Day *jihai* (day 36) and *gengzi* (day 37) are two consecutive days. The post-faces of the second and the third inscription clearly show that these two days actually belong to two consecutive months: *jihai* in the tenth month and *gengzi* in the eleventh month. In other words, day *jihai* is the last day of the tenth month and *gengzi* the first day of the eleventh month. Without doubt, the beginning of the eleventh month is not a *jia*-day.

[21] 庚戌卜，行貞：今夕亡禍。在正月。

辛亥卜，行貞：今夕亡禍。在正月。

癸丑卜，行貞：今夕亡禍。在二月。

《合集》26264

Crack-making on *gengxu* (day 47), Xing divined: "There will be no disasters tonight."

[Day *gengxu*] was in the first month.

Crack-making on *xinhai* (day 48), Xing divined: "There will be no disasters tonight."

[Day *xinhai*] was in the first month.

Crack-making on *guichou* (day 50), Xing divined: "There will be no disasters tonight."

[Day *guichou*] was in the second month. Heji 26264

In this example, *xinhai* (day 48) and *guichou* (day 50) belong to the first and second months, respectively. Unlike the previous examples, *xinhai* and *guichou* are not two consecutive days. There is but a single day, *renzi* (day 49), between them. It appears that *renzi* can belong either to the first or second month. If *renzi* belongs to the first month, it would be the last day of the first month and *guichou* would be the first day of the second month. If *renzi* belongs to the second month, *xinhai* would be the last day of the first month and *renzi* would be the first day of the second month. No matter which day the first day of

the second month is, *renzi* or *guichou*, it certainly is not a *jia*-day.

The four examples cited above clearly show that *renyin* (day 39), *yiwei* (day 32), *gengzi* (day 37), and *renzi* (day 49) or *guichou* (day 50) are the first day of different Yin months. None of them is a *jia*-day, a fact that cannot be explained by the view that the Yin month is always 30 days long. It is thus incorrect to say that the Yin month must start with a *jia*-day and that the Yin month is always 30 days long.

3.3.2 No Yin Month of 40 or 50 days

Liu Zhaoyang (1933: 151) and Sun Haibo (1935: 123-124) reach the same conclusion, namely, that under some circumstances, 10 or 20 days might be added to a Yin month. According to such a conclusion, the length of a Yin month can be 40 or 50 days long. Edwin G. Pulleyblank suggests, in his comments to the draft of this dissertation, that there is no point in refuting this old theory that no one would take seriously nowadays. Notwithstanding, the present writer will briefly state his argument against this old theory.

First, Liu Zhaoyang and Sun Haibo have produced no decisive inscriptional evidence to support their view. All inscriptions they have cited can be better explained by in-year intercalation.

Second, they interpret adding 10 or 20 days to a month as intercalation of the Yin calendar. This is pure speculation. As will be shown in Section 3.5.3, the Yin calendar employs an intercalary month to adjust the difference between the length of the solar year and that of the Yin civil year.

Third, the period of a rotation of the moon around the earth is about 29.5 days. This determines that the length of the month in the lunar-solar calendar must be approximately 29 days. As a matter of fact, it is common knowledge that the lunar month in Chinese calendars has been either 29 days or 30 days long ever since the Spring and Autumn Period. These factors make it impossible to accept the opinion that the Yin month can be 40 or 50 days long.

3.3.3 No Yin Month of 31 Days

Yabuuchi Kiyoshi's hypothesis (1956: 72-74) is that the Yin month began upon the

actual observation of the crescent moon. Since the observation of the crescent moon is affected by many factors, weather being one of them, the interval between one new moon and another can be as long as 31 days. He thus suggests that it is natural for the Yin month to be 31 days long. In the section about the Yin calendar, Yabuuchi Kiyoshi (1974: 24-31) states the same opinion without offering analysis of any inscriptions. Among Chinese scholars, Wen Shaofeng and Yuan Tingdong (1983: 104-109) and Chang Yuzhi (1998: 276-281) hold a view that is identical to that of Yabuuchi Kiyoshi.

A preliminary examination of inscriptions cited by Yabuuchi Kiyoshi (1956: 71-73) and Wen Shaofeng and Yuan Tingdong (1983: 104-109) has been made by Liu Xueshun (1992). Here, the present writer will make a more thorough investigation of all those examples cited by Yabuuchi Kiyoshi (1956), Wen Shaofeng and Yuan Tingdong (1983) and Chang Yuzhi (1998: 276-281). In total, they have listed nine examples to support their opinion. Each one will now be examined.

Example I:

[22] 癸丑卜，兄贞：旬亡(=无)祸。

癸巳卜，兄贞：旬亡(=无)祸。十月。

癸巳卜，兄贞：旬亡(=无)祸。

癸卯卜，兄贞：旬亡(=无)祸。

癸卯卜，兄贞：旬亡(=无)祸。十二月。

癸亥卜，兄贞：旬亡(=无)祸。

癸卯卜，兄贞：旬亡(=无)祸。

癸巳卜，兄贞：旬亡(=无)祸。十三月。

《合集》26681

Crack-making on *guichou* (day 20), Xiong divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guisi* (day 30), Xiong divined: “[In the next] 10-day week, there will be no disasters.”[Day *guisi* was in] the tenth month.

Crack-making on *guisi* (day 30), Xiong divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guimao* (day 40), Xiong divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guimao* (day 40), Xiong divined: “[In the next] 10-day week, there will be no disasters.” [Day *guichou* was in] the twelfth month.

Crack-making on *guihai* (day 60), Xiong divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guimao* (day 40), Xiong divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guisi* (day 30), Xiong divined: “[In the next] 10-day week, there will be no disasters.” [Day *guisi* was in] the thirteenth month. *Heji* 26681

The transcriptions above are made by Yabuuchi Kiyoshi (1956: 73). His interpretation of these inscriptions is as follows: since *guisi* (day 30) is in the tenth month, *guichou* (day 50) in the twelfth month, and *guisi* (day 30) again in the thirteenth month, there must be four *gui*-days in the tenth month: *guisi* (day 30), *guimao* (day 40), *guichou* (day 50), and *guihai* (day 60). This is accepted by Chang Yuzhi (1998: 279-280) as one of her two possible explanations of these inscriptions.

However, there are some mistakes in Yabuuchi Kiyoshi's transcription. The correct divination dates of the first and fifth inscriptions are *guisi* and *guichou*, respectively. More seriously, the correct month notation of the second inscription is twelve rather than ten. It is unfortunate that Chang Yuzhi, a member of the team of the *Jiaguwen heji* project, has failed to check her transcription against the rubbing and correct these mistakes.

Since the month notation in the second inscription is twelve, not ten, there are no direct inscriptions of the tenth month. Yabuuchi Kiyoshi's conclusion that the tenth month has four *gui*-days thus becomes baseless.

Wen Shaofeng and Yuan Tingdong (1983: 107) transcribe these inscriptions correctly. On the other hand, they argue that, since there are seven *gui*-days from the *guisi* of the twelfth month to the *guisi* of the thirteenth month, one of these two months must have four *gui*-days. Such an argument lacks certainty, not only because both Mo Feisi (1936: 303) and Chang Yuzhi (1998: 279-280) regard it as possible evidence for two consecutive intercalary months in a Yin year, but also because how to understand these inscriptions is a significant question. From the second to the last inscription, if their order is from early to late, there would be nineteen *xuns*, ‘10-day week,’ from the *guisi* of the twelfth month to the *guisi* of the thirteenth month. It is absolutely impossible for two or three months to have 190 days.

Without a reasonable explanation for this significant problem, any conclusion drawn from these inscriptions will remain uncertain.

Example II:

[23] 癸巳……贞：旬……七……。

癸卯卜，疑贞：旬亡(=无)祸。八月。

癸丑卜，疑贞：旬亡(=无)祸。八月。

癸亥卜，疑贞：旬亡(=无)祸。八月。

癸酉卜，疑贞：旬亡(=无)祸。八月。

……未卜，疑贞：旬……九月。

《合集》26667

[Crack-making on] *guisi* (day 30), [Yi] divined: “[In the next] 10-day week, [there will be no disasters.” Day *guisi* was in] the seventh [month].

Crack-making on *guimao* (day 40), Yi divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the eighth month.

Crack-making on *guichou* (day 50), Yi divined: “[In the next] 10-day week, there will be no disasters.” [Day *guichou* was in] the eighth month.

Crack-making on *guihai* (day 60), Yi divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the eighth month.

Crack-making on *guiyou* (day 10), Yi divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiyou* was in] the eighth month.

[Crack-making on *gui*]wei (day 20), Yi divined: “In 10-day week, [there will be no disasters.” Day *guiwei* was in] the ninth month. *Heji* 26667

Again, the transcriptions above are made by Yabuuchi Kiyoshi (1956: 73). There is one significant mistake in his transcription. In the first inscription, there is no trace for the number seven at all. The transcription provided in the *Jiaguwen heji shiwen* does not have the alleged number seven either. Without number seven, it is not certain that there are exactly four *gui*-days in the eighth month, because *guisi* could be in the eighth month as well. If that were the case, the eighth month would be at least 51 days long. Since no Yin month can be that long, and since an intercalary month would explain why so many days are present with the same month notation, this should be taken as evidence for in-year intercalation in the Yin calendar. Because of these considerations, this example cannot be considered as representing

evidence suggesting the existence a Yin month of 31 days.

This example is also cited by Wen Shaofeng and Yuan Tingdong (1983: 104-106) and Chang Yuzhi (1998: 278-279). They have still not proven that the number seven appears on the rubbing. The present writer's analysis of this example in the previous paragraph remains valid. This is not an example of a Yin month of 31 days.

Example III:

[24] 癸未卜，兄贞：旬亡(=无)祸。六月。

癸丑卜，大贞：旬亡(=无)祸。六月。

癸亥卜，大贞：旬亡(=无)祸。六月。

癸酉卜，大贞：旬亡(=无)祸。

癸巳卜，兄贞：旬亡(=无)祸。

癸卯卜，贞：旬亡(=无)祸。

癸丑卜，出贞：旬亡(=无)祸。七月。

癸巳卜，兄贞：旬亡(=无)祸。

《合集》26643

Crack-making on *guiwei* (day 20), Xiong divined: "[In the next] 10-day week, there will be no disasters." [Day *guiwei* was in] the sixth month.

Crack-making on *guichou* (day 50), Da divined: "[In the next] 10-day week, there will be no disasters." [Day *guichou* was in] the sixth month.

Crack-making on *guihai* (day 60), Da divined: "[In the next] 10-day week, there will be no disasters." [Day *guihai* was in] the sixth month.

Crack-making on *guiyou* (day 10), Da divined: "[In the next] 10-day week, there will be no disasters."

Crack-making on *guisi* (day 30), Xiong divined: "[In the next] 10-day week, there will be no disasters."

Crack-making on *guimao* (day 40), divined: "[In the next] 10-day week, there will be no disasters."

Crack-making on *guichou* (day 50), Chu divined: "[In the next] 10-day week, there will be no disasters." [Day *guichou* was in] the seventh month.

Crack-making on *guisi* (day 30), Xiong divined: "[In the next] 10-day week, there will be no disasters."

Heji 26643

This is the third example cited by Yabuuchi Kiyoshi (1956: 71) as evidence for the Yin month of 31 days. However, he acknowledges that this example is not decisive but that it can be used as a piece of evidence for in-year intercalation. Indeed, Both Chang Yuzhi (1998: 314-315) and Liu Xueshun (1992: 5-6) offer this third example as evidence for two consecutive intercalary months in a single Yin year. The issue of the presence of two intercalary months in a single Yin year will be dealt with in Section 3.5. It thus appears that *Heji* 26643 is not strong evidence for the long Yin month of 31 days.

Example IV:

[25] 癸未卜，中贞：旬亡(=无)祸。……邕出。

癸卯卜，中贞：旬亡(=无)祸。十一月。

癸酉卜，中贞：旬亡(=无)祸。十一月。

癸未卜，中贞：旬亡(=无)祸。十二月。

癸巳卜，中贞：旬亡(=无)祸。十二月。 《合集》16751

Crack-making on *guiwei* (day 20), Zhong divined: “[In the next] 10-day week, there will be no disasters.” Yong came out.

Crack-making on *guimao* (day 40), Zhong divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the eleventh month.

Crack-making on *guiyou* (day 10), Zhong divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiyou* was in] the eleventh month.

Crack-making on *guiwei* (day 20), Zhong divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiwei* was in] the twelfth month.

Crack-making on *guisi* (day 30), Zhong divined: “[In the next] 10-day week, there will be no disasters.” [Day *guisi* was in] the twelfth month. *Heji* 16751

Both Wen Shaofeng and Yuan Tingdong (1983: 106) and Chang Yuzhi (1998: 277-278) point out that this bone clearly records that both *guimao* and *guiyou* belong to the eleventh month. Between that *guimao* and that *guiyou*, there are four *gui*-days: *guimao*, *guichou*, *guihai* and *guiyou*. Therefore, they argue that this eleventh month has four *gui*-days and it is 31 days long.

It is true that the second and the third inscription show both *guimao* and *guiyou* belong to the eleventh month. This fact means that the eleventh month already has four *gui*-days. It does not mean this eleventh month has those four *gui*-days only, because those inscriptions

do not specify that *guimao* and *guiyou* are the first and last day, respectively, of that month. So it is not certain that the eleventh month does not include any day before *guimao* or after *guiyou*. If this month does include days after *guiyou* and before *guimao*, a possibility that cannot be ruled out, it would be deemed as evidence for in-year intercalation. Because of this, one cannot be sure that the eleventh month has 31 days only. This example is not good evidence for the Yin month of 31 days.

Example V:

[26] 癸巳卜，贞：旬亡(=无)祸。十二月。

癸卯卜，贞：旬亡(=无)祸。一月。

癸丑卜，贞：旬亡(=无)祸。

癸亥卜，贞：旬亡(=无)祸。二月。

癸酉卜，贞：旬亡(=无)祸。

癸巳卜，贞：旬亡(=无)祸。四月。

《合集》22404

Crack-making on *guisi* (day 30), [X] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guisi* was in] the twelfth month.

Crack-making on *guimao* (day 40), [X] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the first month.

Crack-making on *guichou* (day 50), [X] divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guihai* (day 60), [X] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the second month.

Crack-making on *guiyou* (day 10), [X] divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guisi* (day 30), [X] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guisi* was in] the fourth month. *Heji* 22404

The above transcriptions are those of Wen Shaofeng and Yuan Tingdong (1983: 106). Based upon these inscriptions, they have reconstructed a calendar follows.

Table 2:
Reconstruction of the Calendar for *Heji* 22404

12 th month			<i>Guisi</i>	
1 st month	<i>Guimao</i>	<i>guichou</i>		
2 nd month	<i>Guihai</i>	<i>guiyou</i>	[<i>guiwei</i>]	
3 rd month	[<i>guisi</i>]	[<i>guimao</i>]	[<i>guichou</i>]	
4 th month	[<i>guihai</i>]	[<i>guiyou</i>]	[<i>guiwei</i>]	<i>guisi</i>

Wen Shaofeng and Yuan Tingdong argue that their reconstruction makes it clear that there are possibly four *gui*-days in the fourth month. But they also acknowledge that there are other possibilities. If the second or third month has four *gui*-days, then *guisi* could occur in the fourth month. In any event, it is their opinion that either the second, third, or fourth month has to have four *gui*-days. Thus, they regard these inscriptions as evidence of a Yin month of 31 days.

However, their interpretation is not necessarily correct. There are other competing interpretations of these inscriptions. It is true that *guisi* is a day of the fourth month. But these inscriptions do not specify that day *guisi* is the last day of the fourth month. It is only one possible understanding to say *guisi* is the last day of the fourth month. There are other possibilities. Here is one scenario. If there is an intercalary month after the second or third month, and if those several months from the first to the fourth month are long and short months alternately, *guisi* is the second day of the fourth month. Another scenario is as follows: if there is an intercalary fourth month, *guisi* is the second day of this intercalary month. More interpretations can be proposed. It appears that Wen Shaofeng and Yuan Tingdong's understanding at the very best is but one of several possible interpretations. This example is thus not decisive evidence for a Yin month of 31 days.

Example VI:

[27] 癸丑卜，宾贞：旬亡(=无)祸。一月。

癸亥卜，宾贞：旬亡(=无)祸。二月。

癸酉卜，宾贞：旬亡(=无)祸。

癸未卜，宾贞：旬亡(=无)祸。二月。

癸巳卜，宾贞：旬亡(=无)祸。二月。

癸卯卜，宾贞：旬亡(=无)祸。三月。

癸亥卜，允贞：旬亡(=无)祸。

癸酉卜，宾贞：旬亡(=无)祸。四月。

癸未卜，宾贞：旬亡(=无)祸。四月。

《合补》4939

Crack-making on *guichou* (day 50), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guichou* was in] the first month.

Crack-making on *guihai* (day 60), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the second month.

Crack-making on *guiyou* (day 10), Bin divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guiwei* (day 20), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiwei* was in] the second month.

Crack-making on *guisi* (day 30), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guisi* was in] the second month.

Crack-making on *guimao* (day 40), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the third month.

Crack-making on *guihai* (day 60), Yun divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guiyou* (day 10), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiyou* was in] the fourth month.

Crack-making on *guiwei* (day 20), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiwei* was in] the fourth month. *Hebu* 4939

This is a rejoined piece of *Heji* 16644, 16649, and 16660, done by Cai Zhemao (1999: 69, 365). The transcriptions above belong to Chang Yuzhi (1998: 276). Based upon her transcription, Chang Yuzhi argues that the second month has four *gui*-days, i.e., *guihai*, *guiyou*, *guiwei*, and *guisi*; and the second month is 31 days long.

It must be pointed out that there is a serious mistake in her transcription. On the rubbings, both in *Hebu* and *Heji*, the month notation of *guisi* in the fifth inscription is not clear at all, and it is left blank both in the *Jiaguwen heji shiwen* and the *Jiaguwen heji bubian shiwen*. Apparently, the month notation of the *guisi* in the fifth inscription is uncertain. Chang Yuzhi

(1998: 276-277) has not explained why she is so sure that the month number is two not three. If that month notation is three, as Cai Zhemao (1999: 359) has transcribed, the second month would have only three *gui*-days: *guihai*, *guiyou*, and *guiwei*, and the month could not possibly be 31 days long. Therefore, *Hebu* 4939 does not support the view that the length of a Yin month can be 31 days.

Example VII:

[28] 癸酉卜，出贞：旬亡(=无)祸。四月。

[癸]卯卜，出贞：旬[亡祸]。四月。

《合集》26564

Crack-making on *guiyou* (day 10), Chu divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiyou* was in] the fourth month.

Crack-making on [*gui*]*mao* (day 40), Chu divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the fourth month. *Heji* 26564

It is clear in these two inscriptions that both *guiyou* and *guimao* are in the fourth month. Based upon this fact, Chang Yuzhi (1998: 278) suggests that between *guiyou* and *guimao* there are the following two *gui*-days: *guiwei* and *guisi*. Then, she reaches a conclusion that there are four *gui*-days in the fourth month and that this month is 31 days long.

It is true that the inscriptions on *Heji* 26564 show the fourth month having four *gui*-days. What is not easy to see is how these inscriptions are supposed to show that the fourth month has those four *gui*-days only. It is a fact that those two inscriptions do not specify *guiyou* and *guimao* as the first and last day of that month. There is no way to exclude the possibility that this month includes days before *guiyou* and/or after *guimao*. If so, the fourth month certainly would have more than 31 days. Also, there is in-year intercalation in Period II, and *Heji* 26564 belongs to this period. If there is an intercalary fourth month, it is not unusual for the fourth month to have four *gui*-days. This scenario cannot be ruled out. Given these two reasons, it appears rather subjective and arbitrary to assert that *Heji* 26564 represents evidence for the existence of a Yin month of 31 days.

Example VIII:

[29] 癸酉王卜，贞：旬亡(=无)祸。……在二月。……隹王八祀。⁴

⁴ The inscriptions in this example are rather long. In order to save space, only relevant parts of these inscriptions are transcribed here.

癸未王卜，贞：旬亡(=无)祸。……在三月。……

癸巳王卜，贞：旬亡(=无)祸。……在三月。……

癸卯王卜，贞：旬亡(=无)祸。……在三月。……

癸丑王卜，贞：旬亡(=无)祸。……在三月。……

癸亥王卜，贞：旬亡(=无)祸。……在四月。……

On *guiyou* (day 10), the king made cracks and divined: “[In the next] 10-day week, there will be no disasters.”... [Day *guiyou*] was in the second month.... [It] was the king’s eighth year.

On *guiwei* (day 20), the king made cracks and divined: “[In the next] 10-day week, there will be no disasters.”... [Day *guiwei*] was in the third month....

On *guisi* (day 30), the king made cracks and divined: “[In the next] 10-day week, there will be no disasters.”... [Day *guisi*] was in the third month....

On *guimao* (day 40), the king made cracks and divined: “[In the next] 10-day week, there will be no disasters.”... [Day *guimao*] was in the third month....

On *guichou* (day 50), the king made cracks and divined: “[In the next] 10-day week, there will be no disasters.” ... [Day *guichou*] was in the third month....

On *guihai* (day 60), the king made cracks and divined: “[In the next] 10-day week, there will be no disasters.” ... [Day *guihai*] was in the fourth month.... *Hebu* 10958

The above transcriptions are provided by Chang Yuzhi (1998: 280-281). According to her transcriptions, *guiwei*, *guisi*, *guimao*, and *guichou* are all in the third month. Based upon this, she concludes that there are four *gui*-days in this third month and that this month is at least 31 days long.

Her transcriptions, however, are uncertain because the month notation of the first inscription is open to different interpretations. Dong Zuobin (1948: 184) mentions that he asked Wu Jinding to check the month notation, and Wu Jinding told him it was two not three. This is followed by Chang Yuzhi, as her transcription above shows. On the other hand, both the drawing by Frank H. Chalfant and the rubbing in the *Hebu* show the number to be three, which is confirmed by the transcription in the *Jiaguwen heji bubian shiwen*. When Frank H. Chalfant made the drawing, he certainly examined the bone. In addition, it is difficult to understand how the graph “three” can appear on the rubbing if the graph in question indeed is “two.” It is probably accurate to transcribe that graph as “three.” If so, the third month

would have five *gui*-days and its length can be 59 days. It is better to take this example as evidence for an intercalary third month; it is not an example of a Yin month of 31 days.

Example IX:

[30] 甲午卜，贞：……兹月亡（=无）祸……

乙丑卜，贞：……兹月亡（=无）祸……在九月。

甲午卜，贞：……兹月亡（=无）祸……

……兹月亡（=无）祸……

《甲骨缀合集》256

Crack-making on *jiawu* (day 31), [X] divined: “... [In] this month, there will be no disasters....”



Crack-making on *yichou* (day 2), [X] divined: “... [In] this month, there will be no disasters....” [Day *jiawu* was] in the ninth month.

Crack-making on *jiawu* (day 31), [X] divined: “... [In] this month, there will be no disasters....”

“... [In] this month, there will be no disasters....” *Jiagu zhuiheji* 256

Qiu Xigui (2002: 185) cites this example as decisive evidence for the existence of the Yin month of 31 days. Before analyzing whether it is valid evidence for the Yin month of 31 days, it is important to discuss the transcription of the key word of these inscriptions.

The most important word in these transcriptions is *yue*, ‘month.’ In the *Jiaguwén hejī shīwén*, what is transcribed above as *zī yue wú huò* 兹月亡（=无）祸, ‘there will be no disasters in this month,’ is transcribed as *zī xī 夕 wú huò*, ‘there will be no disasters tonight.’ If the bone graph represents the word *xī*, ‘night,’ there will be no relation between these inscriptions and the length of the Yin month. On the other hand, if it indeed represents the word *yue*, it seems that they are related to the length of Yin months. Therefore, the question is: should the bone graph be transcribed as *xī* or as *yue*?

As shown in the transcription above, the phrase *zai jiuyue*, ‘in the ninth month,’ occurs in the second inscription. In this context, the interpretation or reading of the bone graph for *yue* is certain; it also is clear that this graph is scribed as . In the string *zī yue/xī wú huò*, the graph in question is scribed as . It appears that the structures of these two graphs are the same. Therefore, the transcription *zī yue wú huò* is correct.

Dong Zuobin (1945.2.VII: 1-2) has noticed the inscriptions on what is later published as *Heji* 36542. He reads those inscriptions from top to bottom, which is opposite to the normal order of inscriptions on a scapula, which is from bottom to top. His reading of those inscriptions is thus inaccurate, as pointed out by Qiu Xigui (2002: 185).

Qiu Xigui reads those inscriptions in the order from bottom to top. Since the first inscription is located below the second inscription, he infers that the first inscription is earlier than the second one. Further, in the post-face of the second inscription, there occurs the phrase *zai jiuyue*, 'in the ninth month.' He deduces that the first inscription should be in the eighth month. Moreover, these two inscriptions divine that there will be no disasters in a month. From such divination content, he infers that the divination date *jiawu* (day 31) and *yichou* (day 2) should be the first day of the eighth and ninth months, respectively, which indicates that *jiazi* (day 1) is the last day of the eighth month. From *jiawu* to *jiazi*, the duration of the eighth month, there are 31 days. Therefore, he considers the eighth month to be 31 days long.

In Qiu Xigui's argument, there is a big assumption: the first inscription is only one month earlier than the second one. This assumption is not necessarily valid. First, among those 154,604 pieces of oracle bone discovered so far, an estimate made by Hu Houxuan (1984), there are only two pieces of oracle bone that bear inscriptions divining whether there would be no disasters in a month. It appears that such inscriptions are too few to establish a pattern that the divination about disasters in a month was done on a regular basis during the Yin Dynasty.

Second, even if the divination about disasters in a month had been done on a regular basis, it is not certain those inscriptions without month notations are records of consecutive divinations, which can be shown by inscriptions divining disasters during a 10-day week. Among those 41,956 pieces of oracle bone published in the *Heji*, 2,331 pieces bear inscriptions whose content is about disasters in a 10-day week (Liu Xueshun 2003: 20-21). This kind of inscription is so numerous that such divination must have been done once per 10-day week. Even so, there are many examples to show that these inscriptions on the same oracle bone are not complete records of consecutive divinations. Below is one such example:

[31] 癸亥卜，宾贞：旬亡(=无)祸。五月。

癸卯卜，宾贞：旬亡(=无)祸。八月。

癸亥卜，宾贞：旬亡(=无)祸。九月。

《合集》16684

Crack-making on *guihai* (day 60), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the fifth month.

Crack-making on *guimao* (day 40), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the eighth month.

Crack-making on *guihai* (day 60), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the ninth month. *Heji* 16684

It is obvious that these three inscriptions belong to three different months: the fifth, eighth and ninth month. From *guihai* of the fifth month to *guihai* of the ninth month, there are 13 *gui*-days, by inclusive counting method. Accordingly, there should be thirteen inscriptions on this oracle bone if the complete records of the divination about disasters in a 10-day week are scribed on this bone. But the fact is that there are only three inscriptions on *Heji* 16684. These three inscriptions do not comprise complete records of the divinations that were performed on a regular basis.

For the same reason, it is not certain that those inscriptions in Example 30 are complete records of consecutive divinations about disasters in a month. If so, there is no inscriptional basis to consider that the first divination in Example 30 was done in the eighth month. It is therefore risky to say that the eighth month in Example 30 is 31 days long.

Up to now, only nine oracle bones are alleged as evidence for the Yin month of 31 days. The analysis above shows that none of them is conclusive. This makes barely credible the view that the Yin month can be 31 days long.

3.3.4 No Yin Month as Short as 25 Days

Chang Yuzhi (1998: 290-291) is the only specialist who proposes that a Yin month can be as short as 25 days. She bases her belief on the following inscription:

[32] 辛未卜，争贞：生八月帝令多雨。丁酉雨，至于甲寅，旬有八日。九月。

《合集》10976

Crack-making on *xinwei* (day 8), Zheng divined: “In the next eighth month, Di will order much rain.” On *dingyou* (day 34), it rained. Till *jiayin* (day 51), [it rained for] 18 days. [Day xx was in] the ninth month. *Heji* 10976

After accepting Chen Mengjia's opinion (1956: 118) that the phrase *sheng X yue* 生几月 often refers to the next month, Chang Yuzhi (1998: 290-292) interprets the eighth month as the next month of the divination date *xinwei* (day 8). In other word, *xinwei* is in the seventh month. In addition, she relates the phrase *jiuyue*, 'the ninth month,' to both *dingyou* (day 34) and *jiayin* (day 51). Then she argues that, if *xinwei* is the last day of the seventh month, and if *dingyou* is the first day of the ninth month, then the eighth month would start with *renshen* (day 9) and end with *bingshen* (day 33); i.e., the month would be only 25 days long.

There is a big problem with Chang Yuzhi's understanding of this inscription. In the verification, there are two dates *dingyou* and *jiayin* and one month notation *jiuyue*. As Qiu Xigui (2002: 187) suggests, one cannot say with assurance that both *dingyou* and *jiayin* are in the ninth month. From the charge of this inscription that divines much rain in the eighth month, Qiu Xigui infers that *jiayin* and many other days of the period from *jiayin* to *dingyou* must be in the eighth month. If so, the eighth would not be just 25 days long.

The present writer agrees with Qiu Xigui's analysis of the verification of this inscription. When there is more than one date and a month notation in the verification, it is certain that the month notation is related to the latest date. Whether other dates are related to the month notation is a question that needs to be worked out case by case. This process can be demonstrated by reference to Example 33.

[33] 癸卯卜，争贞：旬亡(=无)祸。甲辰……之夕斲乙巳……五月。在敦。

癸丑卜，争贞：旬亡(=无)祸。三日乙卯……丁巳……四日庚申……甲辰……五日戊申……六月。在敦。⁵

《合集》137

Crack-making on *guimao* (day 40), Zheng divined: "[In the next] 10-day week, there will be no disasters." On *jiachen* (day 41).... [When] that night cut into *yisi* (day 42)... the fifth month. [The king was] in Dun.

Crack-making on *guichou* (day 50), Zheng divined: "[In the next] 10-day week, there will be no disasters." On the third day *yimao* (day 52) ... on *dingsi* (day 54) ... on the fourth day *gengshen* (day 57) ... on *jiachen* (41).... On the fifth day *wushen* (day 45).... the sixth month. [The king was] in Dun.

Heji 137

⁵ This inscription is lengthy. In order to save space, this writer only transcribed those parts that are related to the relationship between dates and the month notation in the verification of an inscription.

In this example, these two inscriptions are scribed on the same piece of scapula, their divination dates only 10 days apart, and they have been made at the same place, as recorded in their verifications. It thus seems certain that the two inscriptions are records of two consecutive divinations about disasters in the next 10-day week.

In the verification of the first inscription, dates *jiachen* (day 41) and *yisi* (day 42) and the month notation *wuyue*, 'the fifth month,' appear. Because *yisi* is the latest date in the verification, it is certainly in the fifth month. In the verification of the second inscription, there are the month notation *liuyue*, 'the sixth month,' and five dates: *yimao* (day 52), *dingsi* (day 54), *gengshen* (day 57), *jiachen* (day 41), and *wushen* (day 45). Among these dates, *gengshen* is the latest. One can say with certainty that *gengshen* is in the sixth month.

Since *yisi* (day 42) and *gengshen* (day 57) are in the fifth and sixth month, respectively, it can be inferred that the sixth month starts with a day in the period from *bingwu* (43) to *gengshen*. But there is not enough information to determine which day is in fact the first day of the sixth month.

Following Chang Yuzhi's interpretation of the verification of Example 31, one would think that all of those five dates in the verification of the second inscription of Example 32 are in the sixth month. However, because it is not certain which day among those fifteen days from *bingwu* (day 43) to *gengshen* (day 57) is the first day of the sixth month, whether *wushen* (day 45), *yimao* (day 52), and *dingsi* (day 54) are in the sixth month or not, remains uncertain. As for *jiachen* (day 41), it can be deduced from its appearance in the verification of the first inscription that *jiachen* is in the fifth month.

Jiachen occurs in the second verification in which the month notation *liuyue*, 'the sixth month,' appears. If Chang Yuzhi's understanding of Example 31 is correct, *jiachen* would be a day in the sixth month. As analyzed in the previous paragraph, *jiachen* actually is a day in fifth month, which contradicts the conclusion that Chang Yuzhi would be expected to draw. By the same token, it is thus risky to say that all dates in the verification of Example 32 belong to the sixth month.

The above analysis shows that, in verification, a month notation can only be related to the latest dates with certainty. Therefore, as Qiu Xigui (2002: 187) points out, not all 18 days from *dingyou* (day 34) to *jiayin* (day 51) are in the eighth month. It is a mistake for Chang Yuzhi (1998: 290-291) to interpret otherwise. There is no inscription to demonstrate the

existence of a Yin month of 25 days.

3.3.5 Yin Month is 29 Days or 30 Days Long

Dong Zuobin is the most eminent scholar in the field of the Yin calendar. One of his great contributions is that he has cited inscriptional evidence showing that the Yin month can be 29 or 30 days long. Below is an example cited by Dong Zuobin (1931: 503-504).

[34] 癸酉卜，争贞：旬亡(=无)祸。十月。

癸巳卜，宾贞：旬亡(=无)祸。十一月。

癸卯卜，𠄎贞：旬亡(=无)祸。十一月。

癸丑卜，品贞：旬亡(=无)祸。十二月。

癸酉卜，工贞：旬亡(=无)祸。十二月。

癸巳卜，𠄎贞：旬亡(=无)祸。十二月。

癸酉卜，𠄎贞：旬亡(=无)祸。二月。

癸未卜，𠄎贞：旬亡(=无)祸。二月。

癸酉[卜，𠄎]贞：旬亡[祸]。四月。

癸巳卜，𠄎贞：旬亡(=无)祸。四月。

癸卯卜，𠄎贞：旬亡(=无)祸。五月。

癸丑卜，𠄎贞：旬亡(=无)祸。五月。

癸亥卜，允贞：旬亡(=无)祸。五月。

《合集》11546

Crack-making on *guiyou* (day 10), Zheng divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiyou* was in] the tenth month.

Crack-making on *guisi* (day 30), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guisi* was in] the eleventh month.

Crack-making on *guimao* (day 40), Dun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the eleventh month.

Crack-making on *guichou* (day 50), Pin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guichou* was in] the twelfth month.

Crack-making on *guiyou* (day 10), Gong divined: “[In the next] 10-day week, there will

be no disasters.” [Day *guiyou* was in] the twelfth month.

Crack-making on *guisi* (day 30), Dun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guisi* was in] the thirteenth month.

Crack-making on *guiyou* (day 10), Dun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiyou* was in] the second month.

Crack-making on *guiwei* (day 20), Dun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiwei* was in] the second month.

Crack-making on *guiyou* (day 10), Dun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiyou* was in] the fourth month.

Crack-making on *guisi* (day 30), Dun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guisi* was in] the fourth month.

Crack-making on *guimao* (day 40), Dun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the fifth month.

Crack-making on *guichou* (day 50), Dun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guichou* was in] the fifth month.

Crack-making on *guihai* (day 60), Yun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the fifth month. *Heji* 11546

The inscriptions above are those that have month notations on *Heji* 11546. Based upon these inscriptions, Dong Zuobin has reconstructed a calendar for the period from the tenth to the fifth month, as shown by Table 3 on next page.

Since *guiyou* (day 10) is both in the twelfth month and the second month, there could be only 59 days, from *jiayu* (day 11) to *renshen* (day 9), for the two months in between, i.e., the thirteenth month and the first month. Based upon this inference, Dong Zuobin proposes that one of these two months must be 30 days long and the other one 29 days long.

Dong Zuobin’s analysis of these inscriptions is generally accepted in the field of the Yin calendar. This example is repeated by Chen Mengjia (1956: 219), Wen Shaofeng and Yuan Tingdong (1983: 103-104), and Chang Yuzhi (1998: 272-275). Among specialists of the Yin calendar, only Zheng Huisheng (1983: 110-111) raises questions about Dong Zuobin’s interpretation of this example. He argues that those 59 days do not necessarily mean that one month is 30 days long and the other one 29 days long, because it is possible that one month is 28 days and the other 31 days.

Table 3:
Reconstruction of the Calendar for *Heji* 11546

10 th month			<i>Guiyou</i>
11 th month	[<i>Guiwei</i>]	<i>Guisi</i>	<i>Guimao</i>
12 th month	<i>Guichou</i>	[<i>Guihai</i>]	<i>Guiyou</i>
13 th month	[<i>Guiwei</i>]	<i>Guisi</i>	[<i>Guimao</i>]?
1 st month	[<i>Guimao</i>]?	[<i>Guichou</i>]	[<i>Guihai</i>]
2 nd month	<i>Guiyou</i>	<i>Guiwei</i>	[<i>Guisi</i>]
3 rd month	[<i>Guimao</i>]	[<i>Guichou</i>]	[<i>Guihai</i>]
4 th month	<i>Guiyou</i>	[<i>Guiwei</i>]	<i>Guisi</i>
5 th month	<i>Guimao</i>	<i>Guichou</i>	<i>Guihai</i>

Theoretically speaking, 59 days can be divided into 31 days and 28 days; so Zheng Huisheng's argument seems possible. However, his argument totally ignores the fact that the average length of a lunar month is about 29.5 days, i.e., a lunar month is normally either 29 days or 30 days. Without this fact being the basis for research into the question of the length of the Yin month, it would be impossible to make that determination. If one follows Zheng Huisheng's logic, one will never be certain about the length of those two months. One may ask why the length of those two months is not 20 and 39 days, respectively? Why not 10 days and 49 days? Zheng Huisheng's argument is useless for making that determination; and it is for this reason that it is a bad argument.

Based upon information on this oracle bone, Mark Halpern has calculated the range of the length of Yin months. Below are his calculations.

Month 11 \leq 39 days;

Month 13, 1 \leq 59 days, which means a month is \leq 29.5 days;

Month 11, 12, 13, 1 \leq 119 days, which implies a month is \leq 29.75 days;

Month 11, 12, 13, 1, 2, 3 \leq 179 days, which means a month is \leq 29.83 days;

Month 11, 12, 13, 1, 2, 3, 4 \leq 209 days, which means a month is \leq 29.86 days.

He has clearly shown that on average a Yin month is about 30 days long. If so, one should disregard Zheng Huisheng's argument and accept the above example as evidence for the view that the length of the Yin month must be either 29 or 30 days long.

Chang Yuzhi (1998: 283-286) claims that she has found another example of two months having 59 days. Below are relevant inscriptions.

[35] 癸未卜, 𠄎贞: 旬亡(=无)祸。三月。

癸巳卜, 𠄎贞: 旬亡(=无)祸。三月。

癸亥卜, 𠄎贞: 旬亡(=无)祸。四月。

癸未卜, 𠄎贞: 旬亡(=无)祸。五月。

癸巳卜, 𠄎贞: 旬亡(=无)祸。五月。

癸卯卜, 𠄎贞: 旬亡(=无)祸。

癸丑卜, 𠄎贞: 旬亡(=无)祸。六月。

癸巳卜, 𠄎贞: 旬亡(=无)祸。八月。

癸卯卜, 𠄎贞: 旬亡(=无)祸。八月。

癸丑卜, 𠄎贞: 旬亡(=无)祸。八月。

癸酉卜, 𠄎贞: 旬亡(=无)祸。九月。

癸未卜, 𠄎贞: 旬亡(=无)祸。九月。

癸巳卜, 𠄎贞: 旬亡(=无)祸。十月。

癸卯卜, 𠄎贞: 旬亡(=无)祸。十月。

癸丑卜, 𠄎贞: 旬亡(=无)祸。十月。

癸酉卜, 𠄎贞: 旬亡(=无)祸。十一月。

《合集》11546+18933+16721+16725+16752

Crack-making on *guiwei* (day 20), Dun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiwei* was in] the third month.

Crack-making on *guisi* (day 30), Dun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guisi* was in] the third month.

Crack-making on *guihai* (day 60), Dun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the fourth month.

Crack-making on *guiwei* (day 20), Dun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiwei* was in] the fifth month.

Crack-making on *guisi* (day 30), Dun divined: “[In the next] 10-day week, there will be

no disasters.” [Day *guisi* was in] the fifth month.

Crack-making on *guimao* (day 40), Dun divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guichou* (day 50), Dun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guichou* was in] the sixth month.

Crack-making on *guisi* (day 30), Dun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guisi* was in] the eighth month.

Crack-making on *guimao* (day 40), Dun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the eighth month.

Crack-making on *guichou* (day 50), Dun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guichou* was in] the eighth month.

Crack-making on *guiyou* (day 10), Dun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiyou* was in] the ninth month.

Crack-making on *guiwei* (day 20), Dun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiwei* was in] the ninth month.

Crack-making on *guisi* (day 30), Dun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guisi* was in] the tenth month.

Crack-making on *guimao* (day 40), Dun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the tenth month.

Crack-making on *guichou* (day 50), Dun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guichou* was in] the tenth month.

Crack-making on *guiyou* (day 10), Dun divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiyou* was in] the eleventh month.

Heji 11546+18933+16721+16725+16752

According to the transcriptions above, *guisi* appears both in the fifth and eighth months. Between them, there are 59 days, which should be the length of the sixth plus the seventh month. Chang Yuzhi (1998: 286) proposes that this is an example of two months that, added together, total 59 days long, with one of them being 30 days and the other 29 days long.

However, her conclusion is not on firm ground. Although Chang Yuzhi (1998: 284) still maintains that these five pieces of bone can be rejoined, the fact is that, *Heji* 16676 and 18933 on the one hand, and *Heji* 16721, 16725 and 16752 on the other hand, cannot be

joined together physically. Cai Zhemao (1999: 390), who suggested such a rejoining in 1984, acknowledges that those two groups of bone cannot be rejoined. If this is the situation, the fifth and eighth inscriptions may not belong to the same year, which would make it impossible to assert that the sixth month plus the seventh month total 59 days.

Dong Zuobin (1931) not only produces inscriptional evidence to show that a long plus a short month total 59 days, but also presents evidence to show a Yin month of 29 days long. *Heji* 11485 is one such example.

[36] 癸亥卜，争贞：旬亡(=无)祸。一月。

癸未卜，争贞：旬亡(=无)祸。二月。

癸卯卜，争贞：旬亡(=无)祸。二月。

癸卯卜，争贞：旬亡(=无)祸。五月。

癸未卜，争贞：旬亡(=无)祸。

癸未卜，争贞：旬亡(=无)祸。三日乙酉夕月有食，昏。八月。

Crack-making on *guihai* (day 60), Zheng divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the first month.

Crack-making on *guiwei* (day 20), Zheng divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiwei* was in] the second month.

Crack-making on *guimao* (day 40), Zheng divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the second month.

Crack-making on *guimao* (day 40), Zheng divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the fifth month.

Crack-making on *guiwei* (day 20), Zheng divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guiwei* (day 20), Zheng divined: “[In the next] 10-day week, there will be no disasters.” On the night of the third day *yiyong* (day 23), there was a lunar eclipse, and [the day became] dim. [Day *guiwei* was in] the eighth month.

Heji 11485

Based upon dates and month notations above, Dong Zuobin (1952: 288) has reconstructed a calendar for those eight months as shown in Table 4 on next page.

In this example, day *guimao* occurs in both the second and the fifth months. Between

these two *guimaos*, there are 59 days. Between the second and fifth months there are the third and fourth months. Chang Yuzhi (1998: 287) thus suggests that there must be a short and a long month in these two months. However, if the fact that day *guiwei* appears in the eighth month is taken into consideration, Dong Zuobin's reconstruction is the only one that can make *guimao* occur both in the second and fifth months. According to Dong Zuobin's reconstruction, there are only 29 days for the third month. Example 40 is a piece of evidence for a Yin month of 29 days.

Table 4:
Reconstruction of Calendar for *Heji* 11485

1 st month	[<i>guichou</i>]	<i>Guihai</i>	[<i>Guiyou</i>]
2 nd month	<i>Guiwei</i>	[<i>Guisi</i>]	<i>Guimao</i>
[3 rd month]	[<i>Guichou</i>]	[<i>Guihai</i>]	
[4 th month]	[<i>Guiyou</i>]	[<i>Guiwei</i>]	[<i>Guisi</i>]
5 th month	<i>Guimao</i>	[<i>Guichou</i>]	[<i>Guihai</i>]
[6 th month]	[<i>Guiyou</i>]	[<i>Guiwei</i>]	[<i>Guisi</i>]
[7 th month]	[<i>Guimao</i>]	[<i>Guichou</i>]	[<i>Guihai</i>]
8 th month	[<i>Guiyou</i>]	<i>Guiwei</i>	

Chang Yuzhi (1998: 288-290) mentions *Heji* 22404 as another example.

[37] 癸巳卜，贞：旬亡(=无)祸。十二月。

癸卯卜，贞：旬亡(=无)祸。一月。

癸丑卜，贞：旬亡(=无)祸。

癸亥卜，贞：旬亡(=无)祸。二月。 《合集》22404

Crack-making on *guisi* (day 30), [X] divined: "[In the next] 10-day week, there will be no disasters." [Day *guisi* was in] the twelfth month.

Crack-making on *guimao* (day 40), [X] divined: "[In the next] 10-day week, there will be no disasters." [Day *guimao* was in] the first month.

Crack-making on *guichou* (day 50), [X] divined: "[In the next] 10-day week, there will be no disasters."

Crack-making on *guihai* (day 60), [X] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the second month. *Heji* 22404

It is clear from these inscriptions that day *guisi* belongs to the twelfth month while *guihai* belongs to the second month. Between these two dates, there are only 29 days. Between the twelfth and the second month is the first month. Therefore, this first month is 29 days long.

David N. Keightley (personal communication dated May 20, 2002) notices that the eighth month on *Heji* 16706 is 29 days long.

[38] 癸巳卜，争贞：旬亡(=无)祸。七月。

癸亥卜，争贞：旬亡(=无)祸。九月。

Crack-making on *guisi* (day 30), [Zheng] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guisi* was in] the seventh month.

Crack-making on *guihai* (day 60), [Zheng] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the ninth month. *Heji* 16706

Between the *guisi* of the seventh month and *guihai* of the ninth month, there are 29 days. Between the seventh and ninth month is the eighth month. The eighth month is 29 days long.

Chang Yuzhi (1998: 287-288, 292-293) provides another two valid examples. The first example consists of the following inscriptions:

[39] 癸丑[卜]，贞：王旬亡(=无)祸。在十月。

癸亥卜，贞：王旬亡(=无)祸。在十月。

癸酉卜，贞：王旬亡(=无)祸。在十月又一。

癸未卜，贞：王旬亡(=无)祸。在十月又一。

癸巳卜，贞：王旬亡(=无)祸。在十月又二。

癸卯卜，贞：王旬亡(=无)祸。在十月又二。

癸丑王卜，贞：王旬亡(=无)祸。在十二月。

《英藏》2627+《合集》37970+37974

[Crack-making] on *guichou* (day 50), [X] divined: “As for the king, [in the next] 10-day week, there will be no disasters.” [Day *guichou*] was in the tenth month.

Crack-making on *guihai* (day 60), [X] divined: “As for the king, [in the next] 10-day week, there will be no disasters.” [Day *guihai*] was in the tenth month.

Crack-making on *guiyou* (day 10), [X] divined: “As for the king, [in the next] 10-day week, there will be no disasters.” [Day *guiyou*] was in the eleventh month.

Crack-making on *guiwei* (day 20), [X] divined: “As for the king, [in the next] 10-day week, there will be no disasters.” [Day *guiwei*] was in the eleventh month.

Crack-making on *guisi* (day 30), [X] divined: “As for the king, [in the next] 10-day week, there will be no disasters.” [Day *guisi*] was in the twelfth month.

Crack-making on *guimao* (day 40), [X] divined: “As for the king, [in the next] 10-day week, there will be no disasters.” [Day *guimao*] was in the twelfth month.

On *guichou* (day 50), the king made cracks and divined: “As for the king, [in the next] 10-day week, there will be no disasters.” [Day *guichou*] was in the twelfth month.

Yingcang 2627 + *Heji* 37970 + *Heji* 37974

Chang Yuzhi (1998: 292-293) has rejoined those three pieces of oracle bone. She points out that since day *guihai* (day 60) occurs in the tenth month, and *guisi* (day 30) occurs in the twelfth month, there are only 29 days between them. Between the tenth and twelfth months is the eleventh month. So the eleventh month must have 29 days only.

Another example cited by Chang Yuzhi (1998: 287-288) is *Heji* 26682 that bears the following inscriptions.

[40] 癸丑卜，口贞：旬亡(=无)祸。口月。

癸卯卜，兄贞：旬亡(=无)祸。九月。

癸丑卜，逐贞：旬亡(=无)祸。九月。

癸亥卜，逐贞：旬亡(=无)祸。

癸酉卜，出贞：旬亡(=无)祸。十月。

癸卯卜，兄贞：旬亡(=无)祸。

癸未卜，出贞：旬亡(=无)祸。一月。 《合集》26682

Crack-making on *guichou* (day 50), [X] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guichou* was in the Y] month.

Crack-making on *guimao* (day 40), Xiong divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the ninth month.

Crack-making on *guichou* (day 50), Zhu divined: “[In the next] 10-day week, there will be no disasters.” [Day *guichou* was in] the ninth month.

Crack-making on *guihai* (day 60), Zhu divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guiyou* (day 10), Chu divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiyou* was in] the tenth month.

Crack-making on *guimao* (day 40), Xiong divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guiwei* (day 20), Chu divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiwei* was in] the first month. *Heji* 26682

In this example, day *guichou* occurs in the ninth month and *guiwei* in the first month. Between these two months, there are the tenth, eleventh, and twelfth months. Since the length of the lunar month is about 29.5 days, the length of these three months would be approximately 88.5 days. On the other hand, between day *guichou* and *guiwei*, there are 89 days. Therefore, the length of these three months is 89 days and can be divided into three parts: 30 days, 30 days, and 29 days, which correspond to two months of 30 days and one month of 29 days. *Heji* 26682 is thus an example of the Yin month of 29 days.

Chang Yuzhi (1998: 295) alleges that there are three more such examples. An examination of relevant inscriptions shows that they are not valid evidence for the existence of a Yin month of 29 days. Each of Chang Yuzhi's three examples will be analyzed, starting with *Heji* 37893. Below are Chang Yuzhi's transcriptions (1998: 293-295):

[41] 癸未卜，贞：王旬亡(=无)祸。在二月。

癸卯卜，贞：王旬亡(=无)祸。在三月。

[癸]亥卜，贞：[王旬]亡(=无)祸。

[癸未]卜，贞：[王旬]亡(=无)祸。[在]五月。 《合集》 37893

Crack-making on *guiwei* (day 20), [X] divined: “As for the king, [in the next] 10-day week, there will be no disasters.” [Day *guiwei*] was in the second month.

Crack-making on *guimao* (day 40), [X] divined: “As for the king, [in the next] 10-day week, there will be no disasters.” [Day *guimao*] was in the third month.

Crack-making on [*gui*]hai (day 60), [X] divined: “[As for the king, in the next 10-day week], there will be no disasters.”

Crack-making on [*guiwei*] (day 20), [X] divined: “[As for the king, in the next 10-day week], there will be no disasters.” [Day *guiwei* was in] the fifth month. *Heji* 37893

Chang Yuzhi offers two interpretations for this example. First, she points out that day *guiwei* appears in both the second and fifth months. In order to provide the longest period between these two months, i.e., the third and fourth months, she assumes that *guiwei* is the last day of the second month and the first day of the fifth month, respectively. Even so, she finds that there are only 59 days between the *guiwei* of the second month and that of the fifth month, which means that the longest time period for the third and fourth month is 59 days, from which she deduces that one of the those months must be 29 days and the other 30 days long.

At first glance, her interpretation seems logical. However, there is a serious mistake in her transcriptions. On the rubbing of *Heji* 37893, the divination date of the last inscription is almost entirely lost. The authors of the *Jiaguwen heji shiwen* do not transcribe that date. After examining the rubbing, the present writer thinks that date is more likely *guimao* than *guiwei*, because there are two dots that may be the ends of two vertical strokes. In any event, to identify the divination date of the inscription of the fifth month as *guiwei* is far from certain. There is no solid basis for Chang Yuzhi to say that these inscriptions show that there are only five *gui*-days for the two months in question. Therefore, *Heji* 37893 is not evidence for a Yin month of 29 days.

Chang Yuzhi's second interpretation is that the *guiwei* in the second month is not the last day of that month. In that case, there would be only four *gui*-days in the third and fourth months. Both months would have only two *gui*-days, i.e., both are short months of 29 days each.

The longest period of four *gui*-days is 49 days, which is pointed out by Qiu Xigui (2002: 184). That is nine days shorter than the time period for two lunar months. Her calculation is simply wrong. Therefore, Chang Yuzhi's second interpretation cannot possibly be correct.

The second alleged example mentioned by Chang Yuzhi (1998: 282-283) is *Heji* 557, which bears the following relevant inscriptions.

[42] 癸未卜，贞：勿隹尿令。一月。

甲午卜，贞：复翌，于甲寅酉。

贞：勿复，酉。一月。

丁未卜，贞：不佳。二月。

癸丑卜，贞：小示侑羌。

贞：勿侑。二月。

癸酉卜，贞：其自禽有来艰。

贞：不自禽有来艰。十一月。 《合集》557

Crack-making on *guiwei* (day 20), [X] divined: "It should not be Niao whom [the king will] order." [Day *guiwei* was in] the first month.

Crack-making on *jiawu* (day 31), [X] divined: "[The king will] perform the *yi*-sacrifice again; upon *jiayin* (day 51), [he will] perform the *you*-cutting sacrifice."

[X] divined: "[The king] should not [perform the *yi*-sacrifice] again; [he will] perform the *you*-sacrifice."

Crack-making on *dingwei* (day 44), [X] divined: "It is not [...]." [Day *dingwei* was in] the second month.

Crack-making on *guichou* (day 50), [X] divined: "To small ancestor tablets, [the king will] offer Qiang."

[X] divined: "Do not offer." [Day *guichou* was in] the second month.

Crack-making on *guiyou* (day 10), [X] divined: "Perhaps, [there will be someone] bringing alarming news from Qin."

[X] divined: "[There will] not [be someone] bringing alarming news from Qin." [Day *guiyou* was in] the eleventh month. *Heji* 557

Based upon her transcriptions above, Chang Yuzhi (1998: 283) lists that the first month has *guiwei* (day 20) and *jiawu* (day 31), the second month *dingwei* (day 44) and *guichou* (day 50), and the eleventh month *guiyou* (day 60). Then she asserts that there are three *gui*-days (*guiwei*, *guisi* and *guimao*) in the first month and that *guichou* is the first *gui*-day of the second month. She further calculates that, from the second to the eleventh month, if each month had three *gui*-days, the eleventh month would not have *guiyou*; if one of the nine months from the second to the tenth month had only two *gui*-days, *guiyou* could appear in the eleventh month. Therefore, she believes that there is one month of two *gui*-days among the nine months.

Her argument is problematic. First, she misreads the crack notation *yi*, 'the first,' as a month notation. There is no inscription that indicates *jiawu* is in the first month. Second, even if both *guiwei* and *jiawu* are in the first month, those two dates do not imply the first *gui*-day of the second month is *guichou*, because it can possibly be *guimao*. If, from the

second to the eleventh month, each month has three *gui*-days, *guiyou* would have appeared in the eleventh month. There is no need to assume one of these months must have only two *gui*-days only.

Because Chang Yuzhi's transcriptions are mistaken and there is no need to assume one of those months has two *gui*-days only, it is clear that *Heji* 557 is not evidence for the existence of a Yin month of 29 days.

Heji 454 is the third invalid example cited by Chang Yuzhi (1998: 290). She cites the following three inscriptions from *Heji* 454.

[43] 贞：于翌甲辰用羌。允用。

勿于翌甲辰用羌。三月。

辛未卜，般贞：妇女娩嘉。王占曰：其佳庚娩嘉。三月。 《合集》454

[X] divined: "Upon the next day *jiachen* (day 41), [the king⁶ will] use Qiang [in sacrifice]." [The king] indeed used [them in sacrifice].

"[The king] should not use Qiang [in sacrifice] upon the next day *jiachen*." [It was in] the third month.

Crack-making on *xinwei* (day 8), Nan divined: "Lady Nu's childbirth will be blessed."

The king made prognostication and declared, "[If] it should be a *geng*-day [that she] gives birth, it will be blessed." [Day *xinwei* was in] the third month. *Heji* 454

Based upon her statistics that the word *yi* 翌 often refers to the next day, Chang Yuzhi supplies *guimao* as the divination date for the first two inscriptions. Then, she infers from the postscript of the second inscription that *guimao* is in the third month. The month notation *sanyue*, 'the third month,' appears in the post-face of the third inscription as well, from which she infers that *xinwei* is in the third month. From *guimao* (day 40) to *xinwei* (day 8), there are 29 days. She thus reaches a conclusion that that third month has at least 29 days. She acknowledges that she is not sure if the third month may be longer than 29 days. Therefore, this is strong evidence to point to a short Yin month of 29 days.

Dong Zuobin (1931: 504-505) tries to find inscriptional evidence for a long Yin month

⁶ In his comments on the last draft of this dissertation, Ken-ichi Takashima raises the following question: "How do you know it was the king?" The basis for my supplying "the king" is that the vast majority of the Yin OBI is remains of the Yin royal house. Generally speaking, divinations are made on behalf of Yin kings. Because of this, when the subject of a charge is missing, it is likely to be a Yin king, unless it can be deduced otherwise.

of 30 days. The example he cites is what is published later as *Heji* 339. On this oracle bone, there are the following inscriptions relevant to the length of Yin month:

[44] 丙寅卜，宾贞：翌丁卯侑于丁。

贞：勿侑于丁。五月。


丁卯卜，宾贞：岁卜不兴，亡害。五月。

丁未卜，宾贞：今日侑于丁。六月。

壬子卜，宾贞：敦北不死。

贞：其死。六月。

丁巳卜，宾贞：侑于丁一牛。六月。

丙寅卜，贞：翌丁卯侑于丁。

贞：勿侑。七月。


辛未卜，宾贞：翌王逐。


贞：呼逐。七月。

癸丑卜，贞：令见取启及十人于.

贞：勿令。八月。

甲寅卜，贞：翌乙卯十牛、羌十人。

贞：勿侑羌，牛。八月。

乙卯卜，贞：十牛、羌十人。用。八月。

甲子卜：翌日侑于祖乙。 《合集》339

Crack-making on *bingyin* (day 3), Bin divined: "Next day *dingmao* (day 4), [the king] will make an offer to Ding."

[X] divined: "[The king] should not make an offer to Ding." [Day *bingyin* was in the] fifth month.

Crack-making on *dingmao* (day 4), Bin divined: "In this season divination does not yield

results,⁷ there will be no harm.” [Day *dingmao* was in the] fifth month.

Crack-making on *dingwei* (day 44), Bin divined: “Today, [the king will] make an offer to Ding.” [Day *dingwei* was in the] sixth month.

Crack-making on *renzi* (day 49), Bin divined: “Dun and Bei will not die.”

[X] divined: “Perhaps, [they will] die.” [Day *renzi* was in the] sixth month.

Crack-making on *dingsi* (day 54), Bin divined: “[The king will] offer Ding one ox.” [Day *dingsi* was in the] sixth month.

Crack-making on *bingyin* (day 3), Zhong divined: “Next day *dingmao* (day 4), [the king will] make an offer to Ding.”

[X] divined: “[The king] should not offer.” [Day *bingyin* was in the] seventh month.

Crack-making on *xinwei* (day 8), Bin divined: “Next day, the king will chase.”

[X] divined: “[The king will] order [somebody] to chase.” [Day *xinwei* was in the] seventh month.

Crack-making on *guichou* (day 50), [X] divined: “[The king will] order Jian to fetch Qi and ten people from X (word unknown).”

[X] divined: “[The king] should not order.” [Day *guichou* was in the] eighth month.

Crack-making on *jiayin* (day 51), [X] divined: “Next day *yimao* (day 52), [the king will] X (word unknown) ten oxen and ten Qiang people.”

[X] divined: “[The king] should not offer Qiang. It should be oxen [that he should offer].” [Day *jiayin* was in the] eighth month.

Crack-making on *yimao* (day 52), [X] divined: “[The king will] X (word unknown) ten oxen and ten Qiang people.” [This divination was] adopted. [Day *yimao* was in the] eighth month.

[X] divined on *jiazi* (day 1): “Next day, [the king will] make an offer to Zu Yi.”

Heji 339

Based upon the above dates and month notations, Dong Zuobin reconstructs the calendar for those four months as shown in Table 5.

Dong Zuobin’s reconstruction for those four months is based upon three crucial dates

⁷ For an example of the usage of the word *sui* 岁 as “season,” see *Heji* 24225. The word *xing* 兴 means to “get up” in classical Chinese. But it does not make much sense to say the divination “does not get up.” What the string *bu bu xing* 卜不兴 means, it is surmised, is that the divination does not yield results.

and their month notations: *bingyin* of the fifth and seventh months and *jiazi* of the eighth month. It is unfortunate that there is a fatal mistake in his transcription of these inscriptions: no post-face states that *jiazi* is in the eighth month, and no inscription indicates *jiazi* is in the eighth month. The authors of the *Jiaguwen heji shiwen* place *jiazi* between *dingsi* in the sixth month and *xinwei* in the seventh month, which suggests that *jiazi* is in one or the other of these two months. If *jiazi* is not in the eighth month, there would be no crucial date to make his reconstruction the only one for those four months. Accordingly, *Heji* 339 is not a good example to show that a Yin month is exactly 30 days long.

Table 5:

Reconstruction of Calendar for *Heji* 339

5 th month (long)	<i>bingyin</i> (1 st day)	<i>dingmao</i> (2 nd day)	<i>xinwei</i> (6 th day)
	[<i>bingzi</i>] (11 th day)		
	[<i>bingxu</i>] (21 st day)		
6 th month (long)	[<i>bingshen</i>] (1 st day)		
	[<i>bingwu</i>] (11 th day)	<i>dingwei</i> (12 th day)	<i>renzi</i> (17 th day)
	[<i>bingchen</i>] (21 st day)	<i>dingsi</i> (22 nd day)	
7 th moth (short)	<i>bingyin</i> (1 st day)	<i>xinwei</i> (6 th day)	
	[<i>bingzi</i>] (11 th day)		
	[<i>bingxu</i>] (21 st day)		
8 th month (long)	[<i>yiwei</i>] (1 st day)		
	[<i>yisi</i>] (11 th day)	<i>guichou</i> (19 th day)	<i>jiayin</i> (20 th day)
	<i>yimao</i> (21 st day)		<i>jiazi</i> (30 th day)

The best inscriptional evidence to demonstrate that a Yin month is 30 days long is *Heji* 24440, a piece of oracle bone already cited in Section 1.2 of this dissertation. This oracle bone bears the following inscription.

[45] 月一正曰食麦。甲子、乙丑、丙寅、丁卯、戊辰、己巳、庚午、辛未、壬申、癸酉、甲戌、乙亥、丙子、丁丑、戊寅、己卯、庚辰、辛巳、壬午、癸、甲申、乙酉、丙戌、丁亥、戊子、己丑、庚寅、辛卯、壬辰、癸巳。二月父禾玄。甲午、乙未、丙申、丁酉、戊戌、己亥、庚子、辛丑、壬寅、癸卯、甲辰、乙巳、丙午、

丁未、戊申、己酉、庚戌、辛亥、壬子、癸丑、甲寅、乙卯、丙辰、丁巳、戊午、己未、庚申、辛酉、壬戌、癸
《合集》24440

Month/one/right/ called eating wheat: *jiazi, yichou, bingyin, dingmao, wuchen, jisi, gengwu, xinwei, renshen, guiyou, jiaxu, yihai, bingzi, dingchou, wuyin, jimao, gengchen, xinsi, renwu, gui, jiashen, yiyong, bingxu, dinghai, wuzi, jichou, gengyin, xinmao, renchen, guisi*. The second month [called] father *xuan*: *jiawu, yiwei, bingshen, dingyou, wuxu, jihai, gengzi, xinchou, renyin, guimao, jiachen, yisi, bingwu, dingwei, wushen, jiyong, gengxu, xinhai, renzi, guichou, jiyin, yimao, bingchen, dingsi, wuwu, jiwei, gengshen, xinyou, renxu, gui*.
Heji 24440

The above inscription is not a record of divination. It appears to be a copy of the calendar table of the first and second month of a Yin year. What is relevant here is that this inscription indeed shows that the length of the first month is 30 days. As for the second month, since the *ganzhi* date of its last day is not complete, it is not certain whether the second month does have 30 days. In any event, this inscription at least records a Yin month that is exactly 30 days long. It is the strongest inscriptional evidence for the existence of a Yin month of 30 days.

Qiu Xigui (2002: 181-183) suggests the followings as an example of Yin months of 30 days.

[46] 癸巳卜，贞……[兹月亡(=无)祸]。

壬戌卜，贞：……兹月亡(=无)祸……

辛卯卜，贞：……兹月亡(=无)祸……

辛酉卜，贞：……兹月亡(=无)祸……

辛卯卜，贞：……兹月亡(=无)祸……

□□卜，贞：……兹[月]亡(=无)祸…… 《甲骨缀合新编》315

Crack-making on *guisi* (day 30), [X] divined: “... [In this month, there will be no disasters.]”

Crack-making on *renxu* (day 59), [X] divined: “... [In] this month, there will be no disasters....”

Crack-making on *xinmao* (day 28), [X] divined: “... [In] this month, there will be no disasters....”

Crack-making on *xinyou* (day 58), [X] divined: "... [In] this month, there will be no disasters...."

Crack-making on *xinmao* (day 28), [X] divined: "... [In] this month, there will be no disasters...."

Crack-making on [XX], [Y] divined: "... [In] this month, there will be no disasters"

Jiagu zhuihe xinbian 315

In Qiu Xigui's opinion (2002: 183), these inscriptions are records of consecutive divination about the auspiciousness of a whole month. Based upon this assumption, he proposes the following lengths for those months on this bone:

Month I: from *guisi* (day 30) to *xinyou* (day 58), 29 days, short month.

Month II: from *renxu* (day 59) to *gengyin* (day 27), 29 days, short month.

Month III: from *xinmao* (day 28) to *gengshen* (day 57), 30 days, long month.

Month IV: from *xinyou* (day 58) to *gengyin* (day 27), 30 days, long month.

While Qiu Xigui's reconstruction above seems tidy, there are some problems with his interpretations. Example 30 in Section 3.3.3, i.e., *Jiagu zhuihe ji* 256, is very similar to this example. That section has already analyzed why such inscriptions cannot be taken as complete records of consecutive divinations about each month's auspiciousness. That analysis applies here. It still is risky to take this example as evidence for the length of the Yin month.

In this section, inscriptional evidence for the length of the Yin month has been examined. Among them, *Heji* 11485, 16706, 22404, 26682 and the rejoined piece of *Heji* 37970 + 37974 + *Yingcang* 2627 are clear evidence for the existence of a Yin month of 29 days. *Heji* 24440 is strong evidence for the existence of a Yin month of 30 days. *Heji* 11546 is evidence demonstrating that two Yin months are 59 days long. All these pieces of evidence lead to the conclusion: the Yin month can be either 30 or 29 days long.

3.3.6 No Reference to *Dayue* or *Xiaoyue*

In Chinese calendars since the Qin Dynasty, the month of 30 days has been called *dayue* 大月, 'long month,' and the month of 29 days has been called *xiaoyue* 小月, 'short month.' In these two expressions, both *da* and *xiao* are adjectives that modify *yue*. As evidence in

Section 3.3.5 shows, the Yin month is either 30 days (long month) or 29 days (short month). There are long and short months, then, but are they called *dayue* and *xiaoyue* in the language of the Yin OBI?

It is Chang Yuzhi's opinion (1998: 275, 282) that there are indeed references to *dayue* and *xiaoyue* in the OBI. She cites the following inscriptions as direct references to *xiaoyue*. The word-by-word translations below do not make complete sense, which indicates that there are difficulties with Chang Yuzhi's interpretation of the references to 'short month.'

[47] 贞：王小生七月[入]于商。 《合集》 7790

* [X] divined: "The king [will enter] Shang in the short next seventh month."

Heji 7790

[48] 贞：王小生七月入于商。 《合集》 7791

* [X] divined: "The king will enter Shang in the short next seventh month."

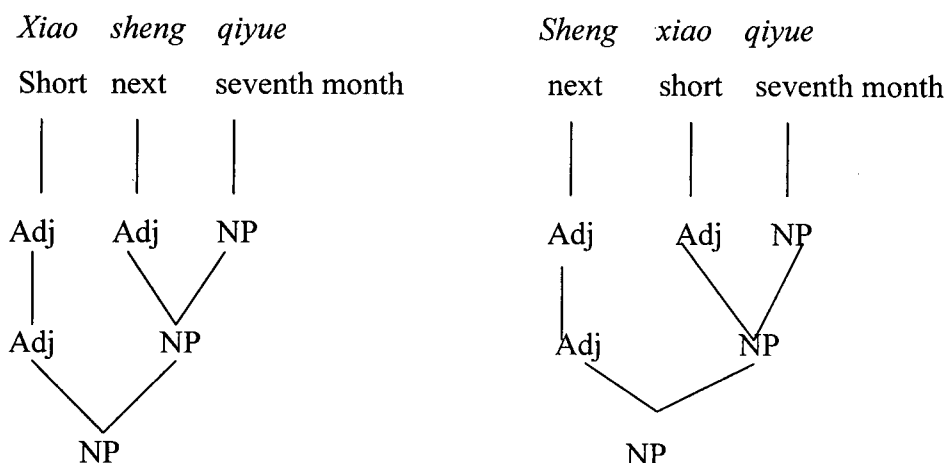
Heji 7791

[49] 壬寅卜，贞：小五月我有事。 《合集》 21637

*Crack-making on *renyin* (day 39), [X] divined: "In the short fifth month, we will hold a [religious] service." *Heji* 21637

Chang Yuzhi interprets *xiao wuyue* and *xiao sheng qiyue* as "the short, fifth month" and "the short, next, seventh month," respectively. That is the reason for her to regard them as direct references of the *xiaoyue*, 'short month,' in the OBI.

However, there are several problems with her interpretations. First, if the string *xiao sheng qiyue* 小生七月 indeed means 'the next, short, seventh month,' it should be written as **sheng xiao qiyue* 生小七月. The difference between these two strings is shown below:



If the word *xiao* means ‘short’ and is a modifier for *qiyue*, the structure of the expression for ‘the next, short, seventh month’ should be like that one on the right. But what appears on the surface level in the examples above is that on the left. Such structure of the string *xiao sheng qiyue* indicates that *xiao* does not modify *qiyue* and that it does not mean “short.”

Second, the complete context for the string *xiao wuyue*, as cited in Example 50, implies that the word *xiao* does not mean short.

[50] 壬寅卜，贞：小，五月我有事。

弗小。

Crack-making on *renyin* (day 39), [X] divined: “**Xiao**, in the fifth month, we will hold a [religious] service.”

“Not **xiao**.” *Heji* 21637

The word *xiao* often means ‘small.’ Such a meaning, however, does not fit the context of Example 50. In these two inscriptions, *xiao* and *fu xiao*, form a pair of complementary charges. Between the two, the second inscription is the negative charge with *fu* being its negative. According to Ken-ichi Takashima (1996a: 365), *fu* is a **p*-type negative that “negates verbs whose salient feature is their ‘uncontrollability’ – that is, verbs expressing actions which are beyond the control of living persons.” It appears that the word *xiao* in this context should be taken as an uncontrollable verb.

If the word *xiao* is an uncontrollable verb, what does that imply? There is no answer to this question yet, which is the reason why the present writer cannot translate *xiao*. The fact is that the occurrence of *fu* before *xiao* in the second inscription of Example 50 shows that *xiao* is a verb. It is not the adjective *xiao*. Because *xiao* is not an adjective, it is impossible that *xiao* means “short.” If so, it is not related to the length of the fifth month.

The foregoing analysis shows that it is problematic to interpret *xiao wuyue* and *xiao sheng qiyue* as ‘the short, fifth month’ and ‘the next, short, seventh month,’ respectively. There is no evidence to support Chang Yuzhi’s view.

As for references to *dayue* 大月 in the OBI, the following inscriptions are cited by Chang Yuzhi (1998: 275) as her evidence. The word-by-word translation below appears ungrammatical, which indicates a possible problem with taking them as references to *dayue* in the Yin OBI.

[51] 贞：大今三月雨。

《合集》12528

*[X] divined: “In the big this third month, it will rain.” *Heji* 12528

[52] 大今二⁸月不其雨。

《合集》12529

*“In the big this second month, it perhaps will not rain.” *Heji* 12529

Both “big this second month” and “big this third month” are literal translations. Professor Takashima’s comment is that they are impossible English, i.e., they cannot be rendered into grammatical English. To some degree, the absurdity of the translation shows the awkwardness of interpreting those expressions as references to *dayue*. In this writer’s opinion, the grammatical analysis of the string *xiao sheng qiyue* is applicable to both *da jin sanyue* and *da jin eryue*. From the point view of grammar, *da jin sanyue* and *da jin eryue* cannot mean ‘this big third month’ and ‘this big second month.’ They are not references to *dayue* in the OBI.

Chang Yuzhi is the only scholar who suggests that there are direct references to the *dayue* and *xiaoyue* in the Yin OBI. The analysis above shows that her interpretations of all those relevant inscriptions are problematic. To date, no direct references to either *dayue* or *xiaoyue* have been found in the OBI.

3.4 The Commencement of the Yin Month

With regard to the commencement of the Yin month, there are three theories: the Yin month starts with a *jia*-day 甲日, *fei* 朏, or *shuo* 朔. The first theory is proposed by Liu Zhaoyang (1933: 151) and followed by Sun Haibo (1935: 123). Section 3.3.1 cited inscriptional evidence to show that the Yin month does not always start with a *jia*-day. This theory turns out to be incorrect.

There also are problems with the second theory that was proposed by Yabuuchi Kiyoshi (1956: 72). It is his opinion that the Yin had not reached the stage of compiling a prescriptive calendar, and that instead the Yin month started with actual observation of the new moon. His opinion is followed by Zhang Peiyu, Lu Yang and Xu Zhentao (1984: 70), Chang Yuzhi (1998: 324-340) and David N. Keightley (2000: 43). Since the Chinese term for the

⁸ The authors of the *Jiaguwen heji shiwen* transcribe this graph as *san*, ‘the third,’ rather than *er*, ‘the second.’ Since the graph in question represents the word *er* on the rubbing of *Heji* 12529, Chang Yuzhi’s transcription is correct.

observable new month is *fei*, 'the first waxing crescent,' Yabuuchi Kiyoshi's theory can be paraphrased as follows: the start of the Yin month is *fei*.

Those who believe in the second theory assert two reasons in support of their position. First, Yabuuchi Kiyoshi and other scholars assume that the Yin people were not able to calculate the time of new moon, a position clearly articulated by Chang Yuzhi (1998: 324).

天文学尚不够发达的殷人是不可能推算出朔日的。

The Yin people, whose astronomy was not developed enough, could not possibly calculate the time of the new moon.

These scholars, however, do not specify how developed astronomy must be for early people to be able to calculate the time of the new moon. This position thus appears rather subjective. For example, to Chang Yuzhi (1998: 324), Chinese people were still not able to calculate the new moon in the Western Zhou Dynasty. But the fact is that the following passage in the chapter "Shiyue zhi jiao 十月之交" of the *Shijing* demonstrates that the new moon was already the start of a month in Western Zhou:

十月之交，

朔日辛卯。

日有食之，

亦孔之丑。

At the conjunction [of the sun and month] in the tenth month,

On the first day of the month, which was *xinmao*,

The sun was eclipsed,

A thing that is a very evil omen. (Legge 1872a: 320-321)

It is the standard view that this chapter of the *Shijing* was written in the Western Zhou, as James Legge (1872a: 321) states clearly: "L1-3 give us a certain date for the composition of this ode, and determine it as belonging to the reign of king You [of the Western Zhou]...." In this piece of contemporary record, new moon is already been used as the start of that tenth month. It is the proof that the people in Western Zhou were already able to calculate the new moon, even though Chang Yuzhi does not think that the astronomy at that time was advanced

enough for them to do so. Clearly, Chang Yuzhi has drawn an inappropriate conclusion. By the same token, Chang Yuzhi's and others' assumption that the Yin astronomy was not developed enough for people to calculate the new moon does not mean that the Yin calendar did not start with the new moon. This assumption is not sufficient justification for their theory that *fei* is the start of the Yin month.

Their second reason derives from the fact that in some ancient calendars, such as the Babylonian, Hebrew and Greek calendars, the month started with actual observation of the new crescent moon. This historical fact is not sufficient justification for their position either. The start of the lunar month may differ in ancient calendars. For example, consider the beginning of a day: "For 'days' have not always begun at the same time. The Babylonians began the day at sunrise; the Jews and Greeks, at sunset; the Romans, at midnight" (Dubs 1951: 330). If the start time for the day in those calendars was so different one from the other, how can one be sure that all ancient calendars had the same commencement of the month?

Moreover, none of those scholars who hold the second theory has produced clear-cut inscriptional evidence to show the Yin month actually starts with *fei*. To date, there is no solid basis to say the Yin month begins with actual observation of the new crescent moon.

Specialists such Dong Zuobin, Chen Mengjia and Feng Shi hold the view that the Yin month begins with *shuo*, 'new moon.' Among these scholars, Feng Shi (1990) produces important research about the commencement of the Yin month. He distinguishes the astronomical *shuo* from *shuo* as the beginning of the Yin month. The astronomical *shuo* can be calculated to seconds, while *shuo* marking the beginning of the Yin month refers to one of the two days when the moon cannot be observed. The astronomical new moon is thus much more precise than the new moon defined as the start of a lunar-solar month. It is Feng Shi's opinion (1990: 155) that, based on the observation of the moon, early people could choose one of the two days when moon was not visible as the start of a month. More importantly, Feng Shi (1990: 149-154) reconstructs the commencement of Yin months based upon the absolute date of the lunar eclipse on *yiyou*. His approach is in agreement with the synchronic evidential approach.

Feng Shi's discussion about those inscriptions of the *yiyou* eclipse indicates that he was not aware of the work of Dong Zuobin (1952) that was previously evaluated in Section 3.3.5. Dong Zuobin's reconstruction is the only one that can accommodate all dates and month

notations recorded in the inscriptions of this eclipse. We should make best use of it by citing Dong Zuobin's reconstruction below:

- 1st month: from *yisi* (day 42) to *guiyou* (day 10), short month.
- 2nd month: from *jaxu* (day 11) to *guimao* (day 40), long month.
- 3rd month: from *jiachen* (day 41) to *renshen* (day 9), short month.
- 4th month: from *guiyou* (day 10) to *renyin* (day 39), long month.
- 5th month: from *guimao* (day 40) to *xinwei* (day 8), short month.
- 6th month: from *renshen* (day 9) to *xinchou* (day 38), long month.
- 7th month: from *renyin* (day 39) to *gengwu* (day 7), short month.
- 8th month: from *xinwei* (day 8) to...

The astronomical new moons that correspond to the above Yin months are as follows:⁹

Table 6:
New Moons in 1228 BC and 1227 BC

Yin month	Gregorian date	<i>Ganzhi</i> date	Astronomical new month
1 st month	Oct. 22, 1228 BC	<i>Jiachen</i> (day 41)	13:36
2 nd month	Nov. 21, 1228 BC	<i>Guiyou</i> (day 10)	0:35
3 rd month	Dec. 20, 1228 BC	<i>Guimao</i> (day 40)	12:21
4 th month	Jan. 19, 1227 BC	<i>Renshen</i> (day 9)	0:43
5 th month	Feb. 17, 1227 BC	<i>Renyin</i> (day 39)	13:41
6 th month	Mar. 19, 1227 BC	<i>Renshen</i> (day 9)	3:24
7 th month	Apr. 17, 1227 BC	<i>Xinchou</i> (day 38)	17:53
8 th month	May 17, 1227 BC	<i>Xinwei</i> (day 8)	9:8

A comparison of *ganzhi* dates in this table and those *ganzhi* dates of Yin months reconstructed by Dong Zuobin shows that six Yin months begin one day after the astronomical new moon and two Yin months begin with the astronomical new moon. It appears that the start of the Yin month is consistently closely related to the astronomical new

⁹ These specific times for new moons are cited from Zhang Peiyu (1990: 475). Their *ganzhi* dates are based on the view that the Yin day started with *su*, which corresponds to nautical twilight in the morning.

moon.

On the other hand, it is common knowledge in the field that the observable new crescent moon is two days after the astronomical new moon when a lunar month is a long one, or three days after the astronomical new moon when a lunar month is a short one. In Dong Zuobin's reconstruction, none of the eight Yin months starts two days after the astronomical new moon. This contradicts the theory that the Yin month starts with *fei*, 'the first crescent new moon.'

In short, the reconstruction of first days of those eight Yin months related to the lunar eclipse on *yiyou* demonstrates that the start of the Yin month is consistently closely related to the astronomical new moon. It is strong evidence for the view that the Yin month starts with *shuo*, 'new moon.'

3.5 The Arrangement of Yin Months

A Yin month is either 30 days or 29 days long. In a lunar calendar, the order most often seen is that long and short months occurring alternately. In Section 3.3, there are some examples where a long and a short Yin month appear alternately¹⁰. Are there other orders such as consecutive long Yin months or consecutive short months? Also, the Yin calendar is a lunar-solar calendar. It has to employ intercalation to adjust the difference between the

¹⁰ Chang Yuzhi (1998: 295-297) cites *Heji* 6 as new evidence for the alternation of short and long Yin months. However, she has made a mistake in calculation. The following are relevant dates on that oracle bone:

The 4 th month	<i>jiyou</i> (day 46)			
The 5 th month	<i>jiaxu</i> (day 11)	<i>yihai</i> (day 12)	<i>dingchou</i> (day 14)	
The 6 th month	<i>xinmao</i> (day 28)	<i>guisi</i> (day 30)	<i>jiawu</i> (day 31)	<i>yiwei</i> (day 32)
	<i>dingyou</i> (day 34) <i>guimao</i> (day 40)			
The 7 th month	<i>guihai</i> (day 60)	<i>yichou</i> (day 2)	<i>xinwei</i> (day 8)	<i>wuyin</i> (day 15) <i>guiwei</i> (day 20)?
The 8 th month	<i>gengyin</i> (day 27) <i>xinmao</i> (day 28)			

It is true that *xinmao* appears in both the sixth and eighth month and that there are 59 days between them. This does not mean that the total number of days in the sixth and seventh months, is 59, as Chang Yuzhi suggests. Only after establishing that both the sixth and eighth months indeed start with *xinmao* is it certain that the sixth and seventh months together total 59 days. However, there are no inscriptions on *Heji* 6 that show the first day of the sixth and eighth month is *xinmao*. There is no basis to say that the number of days in the sixth and seventh months totals 59 and that one of these months is a long month and the other a short one. Therefore, *Heji* 6 is not evidence for alternation of a long Yin month with a short Yin month.

length of a Yin civil year and that of a solar year. Where does one put the intercalary month in an intercalary year? These are issues to be addressed in this section.

3.5.1 Consecutive Long Yin months

The appearance of consecutive long months is not unusual in lunar-solar calendars. For instance, the first, second, fourth, fifth month in the Chinese year 2003 are all 30 days long. They are two examples of consecutive long months in one year. If consecutive long months occur in the Yin calendar, it should not be a surprise.

Dong Zuobin (1931: 505) has touched on this issue when he demonstrates the length of a long Yin month, suggesting that there are consecutive long Yin months in the Yin calendar. Relevant inscriptions are those of Example 44 in Section 3.3.5. As analyzed in that section, Dong Zuobin transcribes one crucial date incorrectly. Accurate transcriptions of Example 44 neither confirm nor deny the existence of consecutive long Yin months.

Chang Yuzhi (1998: 297-299) also cites Example 44 as evidence for the occurrence of consecutive long Yin months. Her argument is as follows: because *bingyin* (day 3) appears in both the fifth and seventh month, the number of days in the fifth and sixth month, totaled together, must be 60 days. Therefore, she reaches the conclusion that the fifth and sixth months are both 30 days long and offers her conclusion as an example of two long months appearing consecutively.

It has already been pointed out by Qiu Xigui (2002: 183)¹¹ that Chang Yuzhi made a mistake in her calculations. It is true that *bingyin* appears in the fifth and seventh months, but that does not mean that the number of days in the fifth and sixth months total 60. Only when *bingyin* is the first day of the fifth and of the seventh months can one be certain that these two months add up to 60 days. Without this condition, it is baseless to claim that they are 60 days long and that both of them are long Yin months. It follows that Example 44 cannot be regarded as evidence for consecutive long Yin months in the Yin OBI.

Both Chen Mengjia (1956: 219) and Chang Yuzhi (1998: 295) cite Example 45 as evidence for possible consecutive long months. Since the last character *hai* is not inscribed, it is not certain whether the second month indeed ends with *guihai*. In addition, Qiu Xigui

¹¹ Qiu Xigui mistakes *Heji* 339 as *Heji* 389.

(2002: 183) points out that the nature of Example 45 needs to be studied further. It seems that the uncertainties about this inscription are far too strong.

Qiu Xigui (2002: 181-183) proposes Example 46 as evidence for the existence of consecutive long Yin months in the Yin calendar. As already analyzed in Section 3.3.5, Qiu Xigui has not established that those inscriptions are complete records of consecutive divination about the auspiciousness in a month. Because of this, one cannot draw a conclusion about lengths of consecutive Yin months. Example 46 is therefore not evidence for consecutive long Yin months.

Consecutive long months are not unusual in lunar-solar calendars. Because the Yin calendar is a lunar-solar calendar, it may have consecutive long months. However, so far, there is no clear-cut evidence for this phenomenon in the Yin calendar.

3.5.2 Consecutive Short Yin Months

In his introduction of Chinese calendar, Ran Xuezhen (1984: 1) makes it clear that it is common for a lunar-solar calendar to have consecutive short months. This is true. Take Chinese year 2003 as an example. In this year, the eighth month is a short month. So is the ninth month. This is an example of consecutive short months in the present Chinese calendar. Consecutive short months may appear in the Yin calendar as well.

Dong Zuobin (1931: 505) mentions the existence of consecutive short months in the Yin calendar. After Dong Zuobin's publication, other researchers such as Xu Jinxiong, Chang Yuzhi and Qiu Xigui published their studies on consecutive short months of the Yin calendar.

Xu Jinxiong (1985: 177-178) has rejoined eight pieces of oracle bones: *Heji* 37840+35529, *Heji* 37846+35422, *Heji* 37838+35756, *Heji* 35424+35534, *Heji* 35585+35649+35700, *Heji* 35653+35752, *Heji* 35409+35416 and *Heji* 35892+38274. According to Xu Jinxiong, inscriptions on these eight bones show *guiyou* (day 10) is the last *gui*-day of the eleventh month of the third year of Diyi, and *guiwei* (day 20) is the first *gui*-day of the fifth month of the seventh year of Diyi. After assuming that *jiaxu* (day 11) is the first day of the twelfth month of the third year, and that long and short Yin months occur alternately, he finds that the first day of the fifth month of the seventh year would be *jiashen* (day 21), i.e., the next day of *guiwei* (day 20). In order to make *guiwei* the first day of the

fifth month of the seventh year of Diyi, he suggests that there must be two short Yin months occurring consecutively during the period from the twelfth month of the third year to the fifth month of the seventh year.

It is necessary to immediately point out that Xu Jinxiong's reconstruction is only one of a number of possible interpretations of these inscriptions. It is true that *guiyou* (day 10) is the last *gui*-day of the eleventh month, and *guiwei* (day 20) is the first *gui*-day of the twelfth month of the third year. But these two *gui*-days do not necessarily make *jiaxu* (day 11) the first day of the twelfth month. Rather, any day from *jiaxu* (day 11) to *guiwei* (day 20) could be the first day. In addition, the five-ritual cycle has two periods, which certainly affect the reconstruction of those inscriptions. Moreover, as will be demonstrated shortly, in-year intercalation is adopted in Period V. This is a factor Xu Jinxiong neglects to consider. Taking all these factors into consideration, the possibility of Xu Jinxiong's construction being correct is very slight. Accordingly, Xu Jinxiong's reconstruction is not proof for consecutive short months in the Yin OBI.

Chang Yuzhi (1998: 287-288) cites *Heji* 26682, Example 40 of this chapter, as evidence for consecutive short Yin months. She has argued that if *guichou* is the second *gui*-day of the ninth month, or that *guiwei* is the second *gui*-day of the first month, then two months out of the tenth, eleventh and twelfth months would be short months.

Chang Yuzhi's argument is invalid because she makes a simple but very serious mistake in calculation that has been noticed by Zhang Peiyu and Qiu Xigui (2002).¹² If *guichou* is the second *gui*-day of the ninth month, as Chang Yuzhi has claimed, these four months can only be reconstructed as follows:

The 9 th month:	<i>guimao</i> (day 40)	<i>guichou</i> (day 50)	<i>guihai</i> (day 60)
The 10 th month:	<i>guiyou</i> (day 10)	[<i>guiwei</i>] (day 20)	[<i>guisi</i>] (day 30)
	<i>guimao</i> (day 40)	[<i>guichou</i>] (day 50)	[<i>guihai</i>] (day 60)
	[<i>guiyou</i>] (day 10)		
The 1 st month:	<i>guiwei</i> (day 20)		

Apparently, there are seven *gui*-days for the period between the tenth, eleventh, and twelfth months. The longest time period for seven *gui*-days is 79 days, which is 8 days shorter than three consecutive short Yin months. Chang Yuzhi's interpretation of *Heji* 26682

¹² According to Qiu Xigui (2002: 184), Zhang Peiyu informed him about Chang Yuzhi's miscalculation.

does not make sense.

Chang Yuzhi (1998: 293-295) also cites *Heji* 37983, Example 41 in this chapter, as possible evidence for consecutive short Yin months in the OBI. But she makes yet another mistake in calculating which has been discussed in Section 3.3.5. Again, there is no evidence here for consecutive short Yin months of the Yin calendar.

Qiu Xigui (2002: 181-183) regards Example 46 as evidence for consecutive short months in the Yin calendar. However, since the nature of the inscriptions in Example 50 is very uncertain, Qiu Xigui has not established that they are complete records of consecutive divination about auspiciousness in a whole month. As analyzed in Section 3.3.5, no credible conclusion can be drawn from Example 46 with regard to the length of the Yin month. Needless to say, those inscriptions are not solid evidence for consecutive short months in the Yin Dynasty.

It is Xu Jinxiong's opinion (1985: 181) that consecutive short months are something irregular (不正常). Qiu Xigui (2002: 184-185) also thinks this occurrence cannot take place in a calendar whose month starts with *shuo*, 'new moon.' However, as presented in the first paragraph of this section, the fact is that even the present Chinese calendar has consecutive short months. Xu Jinxiong and Qiu Xigui's opinions about consecutive short months do not correspond with the facts. Consecutive short months in a lunar-solar calendar, is not a rare phenomenon, and it is possible that it occurs in the Yin calendar as well. On the other hand, there is so far no good evidence to prove the existence of consecutive short months in the Yin calendar.

3.5.3 Intercalation in the Yin Calendar

One lunar year is about 354 days long and a solar year is 365 days long. There is a difference of 11 days between a lunar year and a solar year. In order to adjust this difference, lunar-solar calendars have employed intercalations. The Yin calendar is not an exception.

3.5.3.1 The Existence of Intercalation of the Yin Calendar

In Section 3.2 it has been demonstrated that a Yin year can be twelve or thirteen months

long. When it has twelve months, it is a normal year; when it has thirteen months, it is a leap year with one intercalary month. The Yin calendar does employ intercalation.

3.5.3.2 Year-end Intercalation

In inscriptions of Period I and Period II, the phrase *shisan yue* 十三月, ‘the thirteenth month,’ occurs in 147 inscriptions (Chang Yuzhi 1998: 302). It is Luo Zhenyu (1914.2.VII: 14) who first points to the fact that this is the designation for the intercalary month in the Yin OBI. All scholars except Liu Zhaoyang (1933: 143-145) and Sun Haibo (1935: 101-114) accept this view. Liu Zhaoyang and Sun Haibo take the phrase *shisan yue* to be another expression for *yi yue* 一月, ‘the first month.’ However, such an opinion runs against the grain, as it were, of inscriptional evidence.

[53] 贞：帝其及今十三月令雷。

帝其于生一月令雷。

《合集》14127

[X] divined: “Di may happen to [be able to] order Thunder in this thirteenth month.”

“Di may happen to [be able to] order Thunder upon the next first month.”

Heji 14127

In these two inscriptions, both the phrase *jin shisan yue*, ‘this thirteenth month,’ and the phrase *sheng yiyue*, ‘the next first month,’ appear. Moreover, they are used contrastively. It is thus clear that phrase *shisan yue* is not another expression of *yiyue*. Liu Zhaoyang and Sun Haibo are mistaken.

As shown in Section 3.2, a Yin year can end with either the twelfth or thirteenth month. It appears that the thirteenth month is an “extra” month, which should be regarded as the intercalary month of a leap year. The phrase *shisan yue* in the OBI is direct evidence for the year-end intercalation in the Yin calendar.

3.5.3.3 In-year Intercalation

Dong Zuobin (1945.2.V: 1-24), Chen Mengjia (1956: 220-222), Chang Yuzhi (1998: 307-318) and other scholars have offered inscriptional evidence to show the existence of in-year intercalation of the Yin calendar. However, Yabuuchi Kiyoshi (1956: 68-74), Chang

Zhengguang (1981: 105-106), Zheng Huisheng (1983: 111-114), and Zhang Peiyu (1984: 70-71) do not accept this view. Yabuuchi Kiyoshi, Chang Zhengguang, Zheng Huisheng and Zhang Peiyu hold the opinion that sophisticated astronomical knowledge is necessary for people to actually use the in-year intercalation. It is their assumption that the Yin people did not have such advanced astronomical knowledge, and therefore these scholars refuse to accept evidence for the in-year intercalation in the Yin calendar.

The view of Yabuuchi Kiyoshi, Chang Zhengguang, Zheng Huisheng and Zhang Peiyu appears subjective. It remains a fact that none of them has established a criterion for how advanced astronomical knowledge would have to have been to enable people to employ the in-year intercalation. Without such a criterion, there is no way to pass judgment about the relationship between Yin astronomy and the in-year intercalation in the Yin calendar. It is merely an unsupported assertion for researchers to say that Yin astronomy was not advanced enough for the Yin to adopt the in-year intercalation. In this writer's opinion, their assertion does not lead in any productive direction.

Moreover, these researchers reject the inscriptional evidence for the in-year intercalation presented by Dong Zuobin (1945), Chen Mengjia (1956), Wen Shaofeng and Yuan Tingdong (1983), Yang Shengnan (1986), Liu Xueshun (1992), and Chang Yuzhi (1998) by claiming that there must have been errors in engraving or that these inscriptions are interpreted incorrectly. If this claim is correct, it is a real challenge to the view that the Yin people adopted the in-year intercalation. It would be very difficult for any serious scholar to accept in-year intercalation in the Yin calendar if such a view is based on evidence that is flawed or interpreted inaccurately. On the other hand, if the evidence is valid, it would be unreasonable not to accept the in-year intercalation in the Yin calendar. Therefore, it is essential to make a thorough evaluation of all inscriptional evidence discovered so far, in order to determine if there is indeed the in-year intercalation in the Yin calendar.

As discussed briefly in Chapter One, the Yin OBI can be divided into five periods. Below, inscriptional evidence for the in-year intercalation is presented and analyzed one period at a time.

3.5.3.3.1 Evidence in Period I

There are three examples of the in-year intercalation in Period I. The first example is *Heji* 10111. It bears the following relevant inscriptions.

[54] 丁酉卜，貞：大示五牛。九月。

癸亥卜，貞：禱年自上甲至于多后。九月。

甲子卜，貞：禱年自上甲。九月。

己巳卜，貞：其[禱]年于上甲。九月。

Crack-making on *dingyou* (day 34), Dun divined: "To big temple tablets, [the king will offer] five oxen." [Day *dingyou* was in] the ninth month.

Crack-making on *guihai* (day 60), Dun divined: "[The king will] pray for harvest to many kings, starting with Shangjia." [Day *guihai* was in] the ninth month.

Crack-making on *jiazi* (day 1), Dun divined: "[The king will] pray for harvest, starting with Shangjia." [Day *jiazi* was in] the ninth month.

Crack-making on *jisi* (day 6), Dun divined: "[The king] may happen to [be able to pray for] harvest to Shangjia." [Day *jisi* was in] the ninth month. *Heji* 10111

This evidence is presented by Yang Shengnan (1986). He points out that all month notations in these inscriptions refer to the ninth month. Then he proposes that all the divination dates are in the ninth month. For those divination dates, he suggests two possible orders. One order is from *jiazi* (day 1) to *guihai* (day 60), whose time span is 60 days; the other one is from *dingyou* (day 34) to *jisi* (day 6), whose time span is 33 days. The time period of those two orders, whichever may have been the case, exceeds the length of a Yin month, because a Yin month is either 30 or 29 days long. In order to explain such a long period for the ninth month, Yang Shengnan infers that there is an intercalary ninth month. He thus takes these inscriptions as evidence for the in-year intercalation of the Yin calendar.



David N. Keightley (personal communication dated May 20, 2002) notices that Akatsuka Kiyoshi (1977: 548-49) lists these inscriptions, starting with the divination on *guihai*. Keightley notes that this reading gives "ninth month" dates spanning 35 days, i.e., from *guihai* to *dingyou*. He also mentions that Yao Xiaosui (1988: 240-241) starts the series with the divination on *jiazi*, which gives "ninth month" dates spanning 54 days, i.e., from *jiazi* to *dingyou*.

These two more orders for the divination dates of *Heji* 10111 do not negate Yang Shengnan's conclusion. Because the time span of both orders still exceeds the length of a Yin

month, it is still necessary to use an intercalary ninth month to accommodate these long time periods.

Among those four possible orders above, only the one from *dingyou* to *jisi* would place these inscriptions in a sequence neatly ordered from left to right across this scapula. The other three would place these inscriptions randomly. For this reason, the order from *dingyou* to *jisi* is likely the correct one.

David N. Keightley, however, does not think this is strong evidence for the in-year intercalation in the Yin calendar. It is his opinion that the divination date *dingyou* ought possibly to be read as *jiyou* (day 46); the rubbing at least permits this possibility. He further argues that if the date were *jiyou*, then all the "ninth month" inscriptions would fit into a 21-day period from *jiyou* (day 46, not *dingyou*, day 34) to the putative *jisi* (day 6), thus removing any need for an in-year intercalary ninth month.

Is the date *dingyou* possibly *jiyou*? An examination of the rubbing of *Heji* 10111 shows that it is impossible. On *Heji* 10111, the graph in question is scribed as , and the graph for *ji* is scribed as . In the first graph, there is no trace of a third horizontal stroke. The first graph should, therefore, still be transcribed as *ding*.

For the four divination dates – *ji*zi, *jisi*, *dingyou*, and *guihai* -- of *Heji* 10111, there are four possible orders. The time span of each of the four dates exceeds the length of a Yin month. Because these four dates all belong to the ninth month, it is correct for Yang Shengnan to propose an intercalary ninth month to accommodate such a long time period. *Heji* 10111 is a piece of strong evidence for the in-year intercalation in the Yin calendar.

The second example is *Heji* 22404, on which there are the following inscriptions.

[55] 癸巳卜，贞：旬亡(=无)祸。十二月。己亥大雨。

癸卯卜，贞：旬亡(=无)祸。一月。

癸丑卜，贞：旬亡(=无)祸。

癸亥卜，贞：旬亡(=无)祸。二月。

癸酉卜，贞：旬亡(=无)祸。

(癸)未卜.....

癸巳卜，贞：旬亡(=无)祸。三月。不获。

癸卯贞：旬亡(=无)祸。

癸丑贞：旬亡(=无)祸。

癸亥卜，贞：旬亡(=无)祸。四月。

(癸)未卜，贞：旬亡(=无)祸。五月。 《合集》22404

Crack-making on *guisi* (day 30), [X] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guisi* was in] the twelfth month. On *jihai* (day 36), it rained heavily.

Crack-making on *guimao* (day 40), [X] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the first month.

Crack-making on *guichou* (day 50), [X] divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guihai* (day 60), [X] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the second month.

Crack-making on *guiyou* (day 10), [X] divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guiwei* (day 20), [X] divined...

Crack-making on *guisi* (day 30), [X] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guisi* was in] the third month. [The king did] not catch [any game].

Crack-making on *guimao* (day 40), [X] divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guichou* (day 50), [X] divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guihai* (day 60), [X] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the fourth month.

Crack-making on *guiwei* (day 20), [X] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiwei* was in] the fifth month. *Heji* 22404

Heji 22404 is a rejoined fragment of *Jiabian* 3625, 3633, and 3635 by Yan Yiping (1951: 3-4). But he does not present these inscriptions as evidence for the in-year intercalation. In his reconstruction, he has assigned *wuyue*, ‘the fifth month,’ to *guisi*. This is a mistake because there is no *guisi* near *wuyue* on that fragment. Rather, *wuyue* is located right next to *guiwei* (day 20), and *wuyue* must be part of the inscription of *guiwei* (day 20). By assigning

wuyue to *guiwei* (day 20), it is possible to reconstruct the calendar for the period from the twelfth month to the fifth month, as follows:

<i>Guisi</i> (day 30)	12 th month
<i>Guimao</i> (day 40)	1 st month
<i>Guichou</i> (day 50)	(1 st month)
<i>Guihai</i> (day 60)	2 nd month
<i>Guiyou</i> (day 10)	[2 nd month]
<i>Guiwei</i> (day 20)	[2 nd month]
<i>Guisi</i> (day 30)	3 rd month
<i>Guimao</i> (day 40)	[3 rd month]
<i>Guichou</i> (day 50)	[3 rd month]
<i>Guihai</i> (day 60)	4 th month
[<i>Guiyou</i> day 10]	4 th month]
[<i>Guiwei</i> day 20]	4 th month]
[<i>Guisi</i> day 30]	*4 th month or *5 th month]
[<i>Guimao</i> day 40]	*4 th month or *5 th month]
[<i>Guichou</i> day 50]	*4 th month or *5 th month]
[<i>Guihai</i> day 60]	5 th month]
[<i>Guiyou</i> day 10]	5 th month]
<i>Guiwei</i> (day 20)	5 th month

Since *guisi* (day 30) is in the twelfth month and *guihai* (day 60) is in the second month, there are only two *gui*-days in the first month, as shown above. If long and short Yin months occur alternately, as is often seen in lunar-solar calendars, it can be calculated that at least seventeen months following this first month would have three *gui*-days.

Based upon this construction, if the last *gui*-day of the fourth month is reconstructed as *guiwei* (day 20), then between *guiwei* (day 20) of the fourth month and *guiwei* (day 20) of the fifth month, there have to be 60 days. Apparently, there are six *gui*-days, the length of two Yin months, for the fifth month. An extra month is needed. This extra month is an in-year intercalary month. Therefore, *Heji* 22404 is a piece of good evidence for the in-year intercalation in the Yin calendar.

The third example is *Hebu* 4931, which is a rejoined piece of *Heji* 11545 and 16685. On this scapula, there are nine complete inscriptions.

[56] 癸亥卜，宾贞：旬亡(=无)祸。二月。

癸酉卜，贞：旬亡(=无)祸。三月。

癸未卜，贞：旬亡(=无)祸。

癸卯卜，宾贞：旬亡(=无)祸。五月。

癸丑卜，宾贞：旬亡(=无)祸。五月。

癸亥卜，宾贞：旬亡(=无)祸。五月。

癸酉卜，宾贞：旬亡(=无)祸。六月。

癸未卜，贞：旬亡(=无)祸。

癸巳卜，宾贞：旬亡(=无)祸。 《合补》 4931

Crack-making on *guihai* (day 60), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the second month.

Crack-making on *guiyou* (day 10), [X] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiyou* was in] the third month.

Crack-making on *guiwei* (day 20), [X] divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guimao* (day 40), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the fifth month.

Crack-making on *guichou* (day 50), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guichou* was in] the fifth month.

Crack-making on *guihai* (day 60), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the fifth month.

Crack-making on *guiyou* (day 10), Bin divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiyou* was in] the sixth month.

Crack-making on *guiwei* (day 20), [X] divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guisi* (day 30), Bin divined: “[In the next] 10-day week, there will be no disasters.”

Hebu 4931

It is Chen Mengjia (1956: 220-221) who first presented *Heji* 11545, part of this rejoined bone, as evidence for the in-year intercalation during the reign of Wuding. Based upon the dates and their month notations, he reconstructs the following calendar:

Guihai, 2nd month

Guiyou, 3rd month

Guimao [leap month]

Guiyou [4th month]

Guimao, 5th month

[*Guiwei*, 3rd month]

[*Guichou*, leap month]

Guiwei [4th month]

[*Guichou*, 5th month]

[*Guisi*, 3rd month]

[*guihai*, leap month]

[*guisi*, 4th month]

Guihai 5th month

Chen Mengjia's reconstruction is adopted by Chang Yuzhi (1998: 308-310). The present writer agrees with Chen Mengjia's arrangement of those dates, except that the leap-month does not necessarily have to be situated between the third and fourth months. It can as appropriately be inserted between the fourth and the fifth months as well.

Heji 11545 was first published as *Zhu* 199. In order to avoid interpreting this piece of oracle bone as evidence for the in-year intercalation, Jin Zutong (1939: 16-17) suggests that either the phrase *eryue*, 'the second month' in the post-face of the first inscription, or, alternatively, *sanyue*, 'the third month' in the post-face of the second inscription, is mistaken. Such a handling of these inscriptions is highly problematic. As Chang Yuzhi (1998: 309) asserts, without enough evidence, one should not rashly doubt the correctness of original material; rather, one should draw conclusions from those materials-- not change them to support one's own conclusion (在没有充分的证据证明之前,不应轻易地怀疑原始材料的正确性,我们只能根据材料得出结论,而不能修改材料使其符合自己心目中的结论). Therefore, Jin Zutong's speculations warrant no serious consideration. They represent no real challenge to Chen Mengjia's reconstruction.

Dong Zuobin (1945.2.V: 6) notices this piece of oracle bone as well. By assuming that the first two inscriptions and the remaining three belonged to two years, he inserts a year-end leap month between them. However, he fails to provide any evidence for his assumption. Therefore, his interpretation of this example lacks credibility.

In short, Chen Mengjia's interpretation of this example is very straight and simple. More importantly, his interpretation does fit the context of the inscriptions. This is the third strong case in Period I for the in-year intercalation in the Yin calendar.

3.5.3.3.2 Evidence in Period II

In Period II, there are three examples for the in-year intercalation as well. The first one is *Heji* 26569.

[57] 癸未卜，出贞：旬亡(=无)祸。

癸巳卜，出贞：旬亡(=无)祸。

癸卯卜，出贞：旬亡(=无)祸。

癸丑卜，出贞：旬亡(=无)祸。十月。

癸巳卜，出贞：旬亡(=无)祸。十月。

癸卯卜，出贞：旬亡(=无)祸。《合集》26569

Crack-making on *guiwei* (day 20), Chu divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guisi* (day 30), Chu divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guimao* (day 40), Chu divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guichou* (day 50), Chu divined: “[In the next] 10-day week, there will be no disasters.” [Day *guichou* was in] the tenth month.

Crack-making on *guisi* (day 30), Chu divined: “[In the next] 10-day week, there will be no disasters.” [Day *guisi* was in] the tenth month.

Crack-making on *guimao* (day 40), Chu divined: “[In the next] 10-day week, there will be no disasters.” *Heji* 26569

According to the fourth and fifth inscriptions, both *guichou* (day 50) and *guisi* (day 30) are in the tenth month. From *guichou* to *guisi*, there are 41 days, which is 11 days longer than a long lunar month. In order to accommodate these extra 11 days, it is necessary to propose an intercalary month. That is the reason it is being presented here as a piece of inscriptional evidence for the in-year intercalation.

David Keightley (personal communication dated May 20, 2002) says that “one could argue that the two charges are out of order on the bone, so that the 10th month ran from day

30 to day 50.” Such an argument does not fit the inscriptional context on this bone. On a scapula, the inscriptions are normally read from the bottom to the top. If one reads these inscriptions on *Heji* 26569 in the usual way, i.e., from the first inscription to the sixth inscription, their order is from earlier to later inscription. The placement of these inscriptions is very clearly sequentially ordered; this does not support the argument that the two charges of the tenth month are out of order. David Keightley has not made his case that *Heji* 26569 is not a piece of evidence for the in-year intercalation of the Yin calendar.

The second example is *Heji* 26643:

[58] 癸未卜，兄贞：旬亡(=无)祸。六月。

癸丑卜，大贞：旬亡(=无)祸。六月。

癸亥卜，大贞：旬亡(=无)祸。六月。

癸酉卜，大贞：旬亡(=无)祸。

癸巳卜，兄贞：旬亡(=无)祸。

癸卯卜，贞：旬亡(=无)祸。

癸丑卜，出贞：旬亡(=无)祸。七月。

癸巳卜，兄贞：旬亡(=无)祸。

《合集》26643

Crack-making on *guiwei* (day 20), Xiong divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiwei* was in] the sixth month.

Crack-making on *guichou* (day 50), Da divined: “[In the next] 10-day week, there will be no disasters.” [Day *guichou* was in] the sixth month.

Crack-making on *guihai* (day 60), Da divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the sixth month.

Crack-making on *guiyou* (day 10), Da divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guisi* (day 30), Xiong divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guimao* (day 40), [X] divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guichou* (day 50), Chu divined: “[In the next] 10-day week, there will be no disasters.” [Day *guichou* was in] the seventh month.

Crack-making on *guisi* (day 30), Xiong divined: “[In the next] 10-day week, there will be no disasters.”
Heji 26643

This inscription has been cited as an example of two intercalary months being inserted in the middle of one year, according to Liu Xueshun (1992: 4-6). Based upon the first seven inscriptions, the calendar for the sixth and seventh month has to be reconstructed as follows:

<i>Guiwei</i> (day 20)	6 th month
[<i>Guisi</i> day 30]	6 th month]
[<i>Guimao</i> day 40]	6 th month]
<i>Guichou</i> (day 50)	6 th month
<i>Guihai</i> (day 60)	6 th month
<i>Guiyou</i> (day 10)	[*6 th month]
[<i>Guiwei</i> day 20]	*6 th month]
<i>Guisi</i> (day 30)	[*6 th month]
<i>Guimao</i> (day 40)	[*6 th month]
<i>Guichou</i> (day 50)	7 th month

This writer’s reconstruction demonstrates that, from the *guiwei* of the sixth month to the *guichou* of the seventh month, there are 10 *gui*-days. The shortest time period for 10 *gui*-days is 91 days, which is longer than the length of three months. In order to account for such a long period, two months have to be inserted between the sixth and seventh months. This interpretation is also seen in Chang Yuzhi (1998: 312-315).

Dong Zuobin (1934: 346-347, 1945.2.V: 11b-12b) has cited this piece of bone as evidence for the in-year intercalation. In his transcriptions, he moves the first inscription to the place of the fourth inscription. This changes the interval between the *guichou* of the sixth month to the *guichou* of the seventh month. According to his transcriptions, from the *guichou* of the sixth month to the *guichou* of the seventh month, there are 61 days, which is one month shorter than the interval indicated by the present writer’s transcriptions. The result is that he proposes only one intercalary month in his reconstruction.

Dong Zuobin’s transcriptions are followed by Chen Mengjia (1956: 221), Edward Shaughnessy (1985-87: 58-59) and Zheng Huisheng (1983: 111). David N. Keightley

(personal communication dated May 20, 2002) is interested in them as well. However, Dong Zuobin provides no reason for his change, and there is no compelling reason for him to change the position of those two inscriptions. The change Dong Zuobin makes appears subjective, and it undermines the credibility of his reconstruction.

Comparatively speaking, the present writer's interpretation requires fewer assumptions than does Dong Zuobin's interpretation. In addition, those inscriptions can be adequately explained by the present writer's interpretation. According to the rule of Ockham's Razor (that assumptions must not be needlessly multiplied), the present writer's interpretation is preferable to that of Dong Zuobin's.

David N. Keightley (personal communication May 20, 202) finds that two consecutive in-year intercalary months are "highly unlikely. Why would the months be so far out of synch with the solar year, especially in mid-summer? This makes little sense." It may appear that two consecutive in-year intercalary months make little sense. But the fact is that people in early China actually failed to put intercalary months in their calendars. It is recorded that, in the *Zuozhuan*, until the 27th year of Duke Xiang 襄公, i.e., 545 BC, two intercalary months had been omitted (Legge 1872b: 531). It is understandable that those two missing intercalary months had to be restored. When they were put back, there would be two consecutive in-year intercalary months within a single year. If this happened in the Spring and Autumn Period, it certainly could have happened in the Yin Dynasty. The seeming improbability of two consecutive intercalary months in one year is not a serious challenge to the present writer's interpretation of *Heji* 26643. *Heji* 26643 is an example of two consecutive in-year intercalary months within a single year. Needless to say, this is strong evidence for the in-year intercalation in the Yin calendar.

The third example for in-year intercalation in Period II is *Hebu* 8197.

[59] 癸酉卜，兄贞：旬亡(=无)祸。九月。

癸巳卜，兄贞：旬亡(=无)祸。

癸丑卜，兄贞：旬亡(=无)祸。十月。

癸亥卜，兄贞：旬亡(=无)祸。十一月。

癸巳卜，兄贞：旬亡(=无)祸。

癸卯卜，兄贞：旬亡(=无)祸。

癸丑卜，兄贞：旬亡(=无)祸。

癸酉卜，兄贞：旬亡(=无)祸。十二月。

Crack-making on *guiyou* (day 10), Xiong divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiyou* was in] the ninth month.

Crack-making on *guisi* (day 30), Xiong divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guichou* (day 50), Xiong divined: “[In the next] 10-day week, there will be no disasters.” [Day *guichou* was in] the tenth month.

Crack-making on *guihai* (day 60), Xiong divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the eleventh month.

Crack-making on *guisi* (day 30), Xiong divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guimao* (day 40), Xiong divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guichou* (day 50), Xiong divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guiyou* (day 10), Xiong divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiyou* was in] the twelfth month. *Hebu* 8197

Hebu 8197 is a rejoined fragment of *Heji* 26628 and 26630. This writer's transcriptions above basically follow those provided by the *Jiaguwen heji bubian shiwen*, except the order of the inscriptions.¹³ Based upon the dates and month notations of those inscriptions, the calendar table for those months has been reconstructed by the present writer as follows:

<i>Guiyou</i> (day 10)	9 th month
[<i>Guiwei</i> day 20	9 th month]
<i>Guisi</i> (day 30)	[*9 th month or *10 th month]
[<i>Guimao</i> day 40	10 th month]




¹³ In the transcriptions provided by the *Hebu shiwen*, the inscription of the eleventh month is put before that of the twelfth month; that of the twelfth month appears before that of the ninth month; and that of the ninth month is put before that of the tenth month. It seems that the person who prepared these transcriptions did not follow the convention adopted by specialists in the field of OBI.

<i>Guichou</i> (day 50)	10 th month
<i>Guihai</i> (day 60)	11 th month
[<i>Guiyou</i> day 10	11 th month]
[<i>Guiwei</i> day 20	11 th month]
<i>Guisi</i> (day 30)	[11 th month]
<i>Guimao</i> (day 40)	[11 th month]
<i>Guichou</i> (day 50)	[11 th month]
[<i>Guihai</i> day 60	12 th month]
<i>Guiyou</i> (day 10)	12 th month

The third and fourth inscriptions show that *guichou* (day 50) is the last *gui*-day of the tenth month, and that *guihai* (day 60) is the first *gui*-day of the eleventh month. From the *guihai* (day 60) of the eleventh month to the *guiyou* (day 10) of the twelfth month, there are eight *gui*-days. The longest time period of eight *gui*-days is 89 days, which correspond to the length of three months. In order to accommodate these 89 days, one intercalary month has to be inserted between the eleventh and twelfth month. Therefore, this is a piece of evidence for in-year intercalation of the Yin calendar.

David N. Keightley (personal communication dated May 20, 2002) questions the present writer's interpretation. He points out that

looking at the rubbing, I find that '12th month' record [is] uncertain. If it were an '11th month,' then no in-year intercalation would be needed, I think. I do grant that the '2' of the putative '2' may be present on *HJ* 26628, but the bottom line of the '2' is particularly faint. It is unfortunate that the month number was split in two when the scapula fractured. The result is that any conclusions drawn from this particular set of inscriptions do not strike me as fully reliable.

It is certainly an unfortunate fact that the bottom line of the "2" is particularly faint. It is appropriate for David Keightley to be cautious about drawing a conclusion with regard to an in-year calendar from these inscriptions. But one can still tell which word the bone graph represents. Here are three graphs on that bone: , , and . The first and third

graphs are crack numbers. Although the bottom line of the first graph is not as clear as that of the third graph, it still is *er*, ‘the second.’ The second graph is what David Keightley refers to. Like the first graph, its bottom line is not as clear as that in the third graph. But it can be discerned that it is *er*. So the *guiyou* of the eighth inscription indeed belongs to the twelfth month, and thus an in-year intercalary month must be inserted in that year.

3.5.3.3.3 Evidence in Period V

In Period V, there are two such examples. The first one is *Heji* 35745:

[60] 癸亥卜，贞：王旬亡(=无)祸。在十月。甲子翌阳甲。

癸未卜，贞：王旬亡(=无)祸。甲申翌日祖甲。

癸卯卜，贞：王旬亡(=无)祸。

癸亥卜，贞：王旬亡(=无)祸。在一月。甲子祭大甲。

癸未卜，贞：王旬亡(=无)祸。在二月。

[癸卯]卜，贞：[王旬]亡(=无)祸。在三月。 《合集》 35745

Crack-making on *guihai* (day 60), [X] divined: “As for the king, [in the next] 10-day week, there will be no disasters.” [Day *guihai*] was in the tenth month.¹⁴ On *jiazi* (day 1), [the king will perform] the *yi*-sacrifice to Yangjia.

Crack-making on *guiwei* (day 20), [X] divined: “As for the king, [in the next] 10-day week, there will be no disasters.” On *jiashen* (day 21), [the king will] perform the *yi*-sacrifice to Zujia.

Crack-making on *guimao* (day 40), [X] divined: “As for the king, [in the next] 10-day week, there will be no disasters.”

Crack-making on *guihai* (day 60), [X] divined: “As for the king, [in the next] 10-day week, there will be no disasters.” [Day *guihai*] was in the first month. On *jiazi* (day 1), [the king will perform] the *ji*-sacrifice to Dajia.

¹⁴ Chang Yuzhi (1987: 12) suggests that the scope of the month notation in these inscriptions covers both the *gui*-days and the *jia*-days. But in the fifth and sixth inscriptions, there are month notations and *gui*-days only. The month notation is thus related to the *gui*-days of these inscriptions only, which has already been pointed out by Xu Jinxiong (1985: 178).

Crack-making on *guiwei* (day 20), [X] divined: “As for the king, [in the next] 10-day week, there will be no disasters.” [Day *guiwei*] was in the second month.

Crack-making on [*guimao*] (day 40), [X] divined: “As for the king, [in the next] 10-day week, there will be no disasters.” [Day *guimao*] was in the third month.



Heji 35745

Based on the transcriptions above, this writer reconstructs the calendar for these months as follows:

<i>Guihai</i> (day 60)	10 th month	<i>yi</i> Yangjia
[<i>Guiyou</i> day 10	11 th month]	
<i>Guiwei</i> (day 20)	[11 th month]	<i>yi</i> Zujia
[<i>Guisi</i> day 30	11 th month]	
<i>Guimao</i> (day 40)	[12 th month	<i>ji</i> Shangjia]
[<i>Guichou</i> day 50	12 th month]	
<i>Guihai</i> (day 60)	1 st month	<i>ji</i> Dajia
[<i>Guiyou</i> day 10	1 st month	<i>ji</i> Xiaojia]
[<i>Guiwei</i> day 20	1 st month]	
[<i>Guisi</i> day 30	*2 nd month	<i>ji</i> Jianjia]
[<i>Guimao</i> day 40	*2 nd month	<i>ji</i> Qiangjia]
[<i>Guichou</i> day 50	*2 nd month	<i>ji</i> Yangjia]
[<i>Guihai</i> day 60	2 nd month]	
[<i>Guiyou</i> day 10	2 nd month	<i>ji</i> Zujia]
<i>Guiwei</i> (day 20)	2 nd month	
[<i>Guisi</i> day 30	3 rd month]	
[<i>Guimao</i>] (day 40)	3 rd month	

Guihai (day 60) occurs in both the tenth and first months, and there are only 59 days left for the eleventh and twelfth months; i.e., one of them must have two *gui*-days only. Calculations show that the other month with two *gui*-days would be about 20 months away if long and short Yin months appear alternately, which is common in lunar-solar calendars. Therefore, the first, second, and third months should have three *gui*-days. If there is no

intercalary month, *guiwei* and *guimao* would not appear in the second and third month, respectively. By inserting an intercalary month, be it an intercalary first or second month,¹⁵ the reconstruction can accommodate all of those dates and month notations. This example serves as a demonstration of the in-year intercalation in the Yin calendar.

However, there is some uncertainty about this example. The month number in the fourth inscription is scribed as . It is clearly different from  in the fifth inscription. The latter graph is without doubt transcribed as *er*, 'two,' or 'the second.' The white impression in the upper portion in the former graph does not look like a stroke, however. Thus, this writer transcribes the graph as *yi*, 'one,' or 'the first.' On the other hand, Chen Mengjia (1956: 395) and Chang Yuzhi (1987: 175) transcribe it as *er*.

After transcribing the graph in question as *er*, Chen Mengjia and Chang Yuzhi propose different interpretations of these inscriptions. It is Chen Mengjia's idea (1956: 395) that the order of these inscriptions is from top to bottom. Such a reading makes the second month run from *guiwei* (day 20) to *guihai* (60). This second month would have at least five *gui*-days, the longest time period of which is 59 days. The period of 59 days corresponds to the length of two months. In order to account for such a long time period, one has to propose an intercalary month.

Chang Yuzhi (1987: 179) does not agree with Chen Mengjia's reading. The present writer also disagrees with Chen Mengjia's interpretation, even though it does make these inscriptions into an example of the in-year intercalation. The main reason for objecting to Chen Mengjia's interpretation is that the *ji* 祭-sacrifice is immediately after the *yi* 翌-sacrifice in the five-ritual cycle whose characteristics are analyzed fully by Chang Yuzhi (1987). The order from bottom to top is in agreement with the order of the *yi* and *ji* sacrifices,

¹⁵ David N. Keightley (personal communication dated May 20, 2002) expresses his reservations about the intercalary first month. "Why would the 'regulating month' (*zheng yue*) have had to be made intercalary? The Shang would presumably have added a 13th month at the end of the previous year, to 'slow' their calendar down. It seems unlikely that they would have wanted to duplicate their 'regulating month' – indeed, to do so would seem to be almost a contradiction in terms." The questions he raises appear very reasonable. However, it seems that such questions did not bother early Chinese people. I have looked through the calendar table for the period from 100 BC to 1 BC and found intercalary first month or *zhengyue* in the following four years: 88 BC, 69 BC, 31 BC and 12 BC. For more detail, see Zhang Peiyu (1990: 79-95). It seems that Keightley's doubt about an intercalary first month does not affect my proposal of an intercalary first month for this example.

as shown in the reconstruction above. On the other hand, Chen Mengjia's reading goes against such an order. Chen Mengjia has misinterpreted this example.

Chang Yuzhi (1987: 177) suggests that the month number in the first inscription is a mistake. She changes the month notation to the twelfth month so that the records of the five-ritual cycle do not violate their patterns. It appears, however, that such a change is not necessary if the month number in the fourth inscription is transcribed as *yi* 一, as the graph indicates, rather than as *er* 二, as she has done, which is clearly demonstrated by the present writer's own reconstruction above.

Similarly, David N. Keightley (personal communication dated May 20, 2002) does not think there is any reason to change the month number from 10 to 12. He points out that the month number in the fourth inscription on the rubbing is unclear, which is true. By his calculation, if the month in question is the second month, no intercalation is needed.

David N. Keightley has not given details about his calculations. In any event, if the month number 10 is not changed to 12, there are at least 13 *gui*-days from the *guihai* of the tenth month to the *guihai* of the second month. On the other hand, from the time of performing the *yi*-sacrifice to Zujia to the time of performing the *ji*-sacrifice to Dajia, only 7 *gui*-days are required. The numbers of *gui*-days clearly do not match. Keightley's calculations are thus open to question.

Admittedly, the month number in the fourth inscription is visually unclear, although it looks like *yi*, 'one,' or 'the first.' However, the month number in the first inscription is clearly *shi*, 'ten' or 'the tenth.' When there are two graphs, one clear and the other unclear, a researcher should decide how to transcribe the unclear one based upon the clear one, not change the clear one. If, in the present context, the unclear graph is transcribed in light of the clear one, as the present writer suggests is the appropriate procedure, his transcription for the month number in the fourth month will be confirmed. In addition, the present writer's transcription is seen to be in agreement with the pattern of the five-ritual cycle in Period V. By transcribing the month notation in the fourth inscription as the first month, the reconstruction for the period from the tenth month to the third month shows that an in-year intercalary month must be inserted. *Heji* 35745 is an example illustrating the in-year intercalation in the OBI.

The second example is *Hebu* 10962 that bears the following inscriptions.

[61] 癸酉卜，贞：王旬亡(=无)祸。在四月。甲戌协日祖甲。

癸丑卜，贞：王旬亡(=无)祸。在五月。甲寅乡日大甲。

癸酉卜，贞：王旬(亡)祸。在五(月)。《合补》10962

Crack-making on *guiyou* (day 10), [X] divined: "As for the king, [in the next] 10-day week, there will be no disasters." [Day *guiyou*] was in the fourth month. On *jiayu* (day 11), [the king will] perform the *xieri*-sacrifice to Zujia.

Crack-making on *guichou* (day 50), [X] divined: "As for the king, [in the next] 10-day week, there will be no disasters." [Day *guichou*] was in the fifth month. On *jiayin* (day 51), [the king will] perform the *rongri*-sacrifice to Dajia.

Crack-making on *guiyou* (day 10), [X] divined: "As for the king, [in the next] 10-day week, there will [be no] disasters." [Day *guiyou*] was in the fifth month.

Hebu 10962

It is clear that *guiyou* occur both in the fourth month and in the fifth month. Between these two dates, there are seven *gui*-days whose length is at least 61 days. It exceeds the length of two Yin months. This writer proposes an intercalary month to account for those extra days. If the intercalary month is a fifth month, this writer offers one possible reconstruction of the calendar table for these two months:

<i>Guiyou</i> (day 10)	4 th month	<i>xieri</i> Zujia
[<i>Guiwei</i> day 20	*4 th month]	
[<i>Guisi</i> day 30	*4 th month	<i>rong</i> Shangjia]
[<i>Guimao</i> day 40	*5 th month]	
<i>Guichou</i> (day 50)	5 th month	<i>rongri</i> Dajia
[<i>Guihai</i> day 60	5 th month]	
<i>Guiyou</i> (day 10)	5 th month	
[<i>Guiwei</i> day 20	5 th month]	
[<i>Guisi</i> day 30	5 th month]	

If the intercalary month is the fourth month, the reconstruction would be slightly different:

[<i>Guichou</i> day 50	4 th month]	
[<i>Guihai</i> day 60	4 th month]	
<i>Guiyou</i> (day 10)	4 th month	<i>xieri</i> Zujia
[<i>Guiwei</i> day 20	*4 th month]	
[<i>Guisi</i> day 30	*4 th month	<i>rong</i> Shangjia]
[<i>Guimao</i> day 40	*4 th month]	
<i>Guichou</i> (day 50)	5 th month	<i>rongri</i> Dajia
[<i>Guihai</i> day 60	5 th month]	
<i>Guiyou</i> (day 10)	5 th month	

As far as the present writer is concerned, it does not really matter whether the intercalary month is the fourth or fifth month. Whichever may have been the case, *Hebu* 10962 is a piece of evidence for the in-year intercalation in the Yin calendar, and this is what matters.

There is one possible example of the in-year intercalation in Period V. Those inscriptions are scribed on *Hebu* 10958:

[62] 癸酉王卜，贞：旬亡(=无)祸。……在三月。……隹王八祀。¹⁶

癸未王卜，贞：旬亡(=无)祸。……在三月。……

癸巳王卜，贞：旬亡(=无)祸。……在三月。……

癸卯王卜，贞：旬亡(=无)祸。……在三月。……

癸丑王卜，贞：旬亡(=无)祸。……在三月。……

癸亥王卜，贞：旬亡(=无)祸。……在三月。……

On *guiyou* (day 10), the king made this crack and divined: “[In the next] 10-day week, there will be no disasters.”... [Day *guiyou*] was in the third month.... [It] was the king’s eighth year.

On *guiwei* (day 20), the king made this crack and divined: “[In the next] 10-day week, there will be no disasters.”... [Day *guiwei*] was in the third month....

On *guisi* (day 30), the king made this crack and divined: “[In the next] 10-day week, there will be no disasters.”... [Day *guisi*] was in the third month....

38 The inscriptions in this example are lengthy. In order to save space, the present writer only transcribes relevant parts of the inscriptions on this oracle bone.

On *guimao* (day 40), the king made this crack and divined: “[In the next] 10-day week, there will be no disasters.”... [Day *guimao*] was in the third month....

On *guichou* (day 50), the king made this crack and divined: “[In the next] 10-day week, there will be no disasters.” ... [Day *guichou*] was in the third month....

On *guihai* (day 60), the king made this crack and divined: “[In the next] 10-day week, there will be no disasters.” ... [Day *guihai*] was in the third month.... *Hebu* 10958

The transcriptions above are provided by authors of the *Jiaguwen heji bubian shiwen*. It is clear that the third month has six *gui*-days, the length of two Yin months. There should be an intercalary third month in that year.

David N. Keightley (personal communication dated May 20, 2002) points out that the month number in the post-face of the first inscription is read as the second by Dong Zuobin (1945.2.II: 6b), Qu Wanli (1961: 86-88) and Yan Yiping (1975: 329) and Chang Yuzhi (1998: 280-281). Moreover, the month number in the fifth inscription is read as the fourth, rather than the third, month by Yan Yiping (1975: 329) and Chang Yuzhi (1998: 280-281).

If the transcription of the *Jiaguwen heji bubian shiwen* is correct, *Hebu* 10958 is an example of the in-year intercalation in Period V. If other readings are correct, there is no need for an intercalary third month. Since it is difficult to determine which transcription is accurate, one cannot be sure about whether there is an intercalary third month recorded on *Hebu* 10958. It is merely potential evidence, not proof, for the in-year intercalation.

Table 7:

Intercalary Months in the Yin OBI

Oracle Bone	Intercalary Month
<i>Heji</i> 10111	9 th month
<i>Heji</i> 22404	4 th or 5 th month
<i>Hebu</i> 4931	3 rd , 4 th or 5 th month
<i>Heji</i> 26569	10 th month
<i>Heji</i> 26643	6 th month
<i>Hebu</i> 8197	11 th month
<i>Heji</i> 35745	1 st or 2 nd month
<i>Hebu</i> 10962	5 th month
* <i>Hebu</i> 10958	*3 rd month

The results of these nine examples, eight certain and one possible, for the in-year intercalation in the Yin calendar, can be tabulated as Table 7 on the previous page.

3.5.3.3.4 False Evidence for the In-year Intercalation

Whether the Yin calendar adopts the in-year intercalation is an important issue. In the past, a number of scholars have made efforts to address this issue. They have discovered an increasing body of inscriptional evidence. However, it is also the case that not every example presented to date constitutes valid evidence. The following examples indicate some problems that arise when they are used as evidence for the in-year intercalation in the Yin calendar.

Example I:

[63] 二月。

癸亥卜，贞：旬。壬[申]骤风。

癸丑卜，贞：旬。甲寅雨。四月。

癸酉卜，贞：旬。庚辰雨。四月。

...the second month.

Crack-making on *guihai* (day 60), [X] divined: “[In the next] 10-day week, [there will be no disasters].” On *ren[shen]* (day 9), there was a storm and wind.

Crack-making on *guichou* (day 50), [X] divined: “[In the next] 10-day week, [there will be no disasters].” On *jiayin* (day 51), it rained. [Day *jiayin* was in] the fourth month.

Crack-making on *guiyou* (day 10), [X] divined: “[In the next] 10-day week, [there will be no disasters].” On *gengchen* (day 17), it rained. [Day *gengchen* was in] the fourth month.

Heji 13361

On this piece of oracle bone, the inscriptions are scribed in three rows. The phrase *eryue*, ‘the second month,’ appears in the top row; one *siyue*, ‘the fourth month,’ in the middle row; and the other *siyue* in the bottom row. Because the second month is earlier than the fourth month, those month notations suggest that these inscriptions should be read from top to bottom. Reading in this order, the fourth month runs from *guichou* (day 50) to *guiyou* (day 10). There are three *gui*-days in that month, and there is no need for an intercalary fourth month.

Chang Yuzhi (1998: 310-311) reads these inscriptions in an opposite order. By doing so, the fourth month runs from *guiyou* (day 10) to *guichou* (day 50). If so, there are at least five *gui*-days in that month, the longest time period of which is 59 days. In order to account for such a long time period, she proposes that there is an intercalary fourth month in that year.

As mentioned above, the placement of those month notations indicates that these three inscriptions should be read from top to bottom. Chang Yuzhi reads these inscriptions in the wrong direction. Because of this, her proposal of an intercalary fourth month is not credible. *Heji* 13361 is not good evidence for the in-year intercalation.

Example II:

[64] 癸巳卜，争贞：旬亡(=无)祸。七月。

癸亥卜，争贞：旬亡(=无)祸。九月。

Crack-making on *guisi* (day 30), [Zheng] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guisi* was in] the seventh month.

Crack-making on *guihai* (day 60), [X] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the ninth month. *Heji* 16706

Chang Yuzhi (1998: 311) has presented this example as evidence for the in-year intercalation and the present writer followed her in the draft of Liu Xueshun (2002). However, David N. Keightley (personal communication dated May 20, 2002) points out that, if one interprets *guisi* as the last day of the seventh month, and *guihai* as the first day of the ninth month, then the eighth month between them has 29 days, the length of a short month. There is no need for intercalation. David N. Keightley’s interpretation seems simple and direct. Thus, this is not a good example of the in-year intercalation in the Yin calendar.

Example III:

[65] 癸巳卜，贞：旬亡(=无)祸。乙未……七月。

癸巳卜，贞：旬亡(=无)祸。八月。

癸酉卜，贞：旬亡(=无)祸。九月。 《合集》34991

Crack-making on *guisi* (day 30), [X] divined: “[In the next] 10-day week, there will be no disasters.” On *yiwei* (day 32).... [Day *yiwei* was in] the seventh month.

Crack-making on *guisi* (day 30), [X] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guisi* was in] the eighth month.


Crack-making on *guiyou* (day 10), [X] divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiyou* was in] the ninth month. *Heji* 34991


Liu Xueshun (2002: 12) presented these three inscriptions on *Heji* 34991 as evidence for the in-year intercalation in the Yin calendar. At that time, the present writer did not notice that the phrase *qiyue*, ‘the seventh month,’ occurs after *yiwei*, which indicates it is the month notation of *yiwei* rather than of *guisi*. In addition, as David N. Keightley (personal communication dated May 20, 2002) points out, the link is not definite between the phrase *jiuyue*, ‘the ninth month,’ and *guiyou*. These changes make it unnecessary to reconstruct an intercalary month.

Example IV:

[69] 口口卜，贞：王旬亡(=无)祸。在正月。

(癸卯)卜，贞：(王)旬亡(=无)祸。甲辰祭上甲。


癸丑卜，贞：王旬亡(=无)祸。在正月。甲寅上甲。

癸酉卜，贞：王旬亡(=无)祸。在正月。甲戌大甲。


Crack-making on..., [X] divined: “As for the king, [in the next] 10-day week, there will be no disasters.” [XX was in] the first month.

Crack-making on [*guimao*] day 40), [X] divined: “[As for the king, in the next] 10-day week, there will be no disasters.” On *jiachen* (day 41), [the king will] perform the *ji*-sacrifice to Shangjia.


Crack-making on *guichou* (day 50), [X] divined: “As for the king, [in the next] 10-day week, there will be no disasters.” [Day *guichou* was in] the first month. On *jiayin* (day

51), [the king will] perform the -sacrifice to Shangjia.

Crack-making on *guiyou* (day 10), [X] divined: “As for the king, [in the next] 10-day week, there will be no disasters.” [Day *guiyou* was in] the first month. On *jiaxu* (day 11),



[the king will] perform the -sacrifice to Dajia. *Hebu* 10949

The above transcription is provided by authors of the *Jiaguwen heji bubian shiwen*. Based upon this transcription, it was possible to reconstruct an intercalary first month. However, the month number of the last inscription was not transcribed accurately. On the

rubbing, the month number appears as , which can be transcribed as *yue er*, ‘month two.’ This change makes it unnecessary to insert an intercalary first month.

David N. Keightley (personal communication dated May 20, 2002) points out that this month number was transcribed as *shier yue*, ‘the twelfth month,’ by Hu Houxuan’s drawing of *Xucun* 2.965 and Shima Kunio (1971: 520.2). He inclines to read it that way, too. But the present writer does not think that the month number can be transcribed as the twelfth month, because of the following considerations:

First, the bone graph *shi*, ‘ten,’ cannot be found in the last inscription.

Second, by transcribing the month number as the twelfth month, one has to put the last inscriptions before the other three inscriptions. However, according to the pattern of the five-ritual cycle, the *ji*-sacrifice to Shangjia is performed before the -sacrifice to Shangjia, which in turn is performed before the -sacrifice to Dajia. This pattern determines that the month notation of the fourth inscription is later than that of the other three inscriptions, i.e., the first month. The month following the first month is the second month rather than the twelfth month.

In light of these two reasons, the month notation in the post-face to the fourth inscription should be transcribed as the second month, not the twelfth month.

3.5.3.4 Conclusion with Regard to In-year Intercalation

Section 3.5.3.3 presented an evaluation of inscriptional evidence for the in-year intercalation in the Yin calendar. An analysis of various issues concerning dates and month notations of each piece of evidence led to the following conclusion: there are eight correct examples, one possible example, and four wrong examples of the in-year intercalation in the current corpus of the Yin OBI. If anyone treats those inscriptions objectively, i.e., interpreting them without changing dates and month notations recorded on the bones, one would reach the same conclusion. It is this writer’s firm view that those eight correct examples are decisive proof for the in-year intercalation in the Yin calendar.

Chang Yuzhi’s statistics (1998: 302) show the phrase *shisan yue*, ‘the thirteenth month,’ occurs 142 times in inscriptions of Periods I and II. This phrase never appears in inscriptions

of Periods III, IV and V. As analyzed in Section 3.5.3.2, the phrase *shisan yue* is the designation for an intercalary month in Periods I and II. If there are intercalary months in inscriptions of early periods, there certainly have to be intercalary months in inscriptions in late periods, too. The lack of the thirteenth month in late periods indicates that the intercalary month is not put at the end of the Yin year anymore in late periods.

Although the phrase *shisan yue*, 'the thirteenth month,' occurs frequently in early inscriptions, there are six certain examples of the in-year intercalation in inscriptions in Periods I and II. One should not deny these examples simply because of the existence of the thirteenth month in these two periods. It should not be difficult to understand that there could be a transitional period when the year-end intercalation and the in-year intercalation coexist. The coexistence of the thirteenth month and examples of the in-year intercalation in early inscriptions indicate that the transition from the year-end intercalation to the in-year intercalation took place in Periods I and II. The absence of the thirteenth month in late periods indicates that the year-end intercalation was completely replaced by the in-year intercalation by the time of the late Yin Dynasty.

CHAPTER FOUR

“THE YEAR” IN THE YIN CALENDAR

4.1 Introduction

The month notations in the Yin OBI show that Yin months are numbered. Numbering starts with 1 and ends with 12 or 13 before starting with number 1 again. This indicates that twelve or thirteen Yin months form a unit in the Yin calendar. It is generally accepted that such a unit in the Yin calendar is a Yin “civil year.” A Yin year of twelve months is a “normal year” and that of thirteen months is an “intercalary year.”

With regard to the Yin year, specialists have not reached a consensus on the designation for the year in the Yin language, nor have they agreed on the commencement of the Yin year. They are issues that will be addressed in this chapter.

4.2 The Designation for the Yin Year

The designation for the Yin year has been a rigorously debated issue in the study of the Yin calendar. To date, *si* 祀, *zai* 载, *nian* 年, and *sui* 岁 have been proposed as terms for the Yin year. In order to judge whether these words are valid designations for the Yin year, it is necessary to establish a set of clearly defined criteria. Below, this writer first makes clear his criteria for how to determine the appropriate designation for the Yin year. Then, the discussion proceeds to analyze which word is an appropriate designation or term for the Yin year in the Yin OBI.

4.2.1 Criteria

If a word is a designation for the year, it must refer to the period of a calendar year, which means one that lasts from the first to the last month of a given year. A word that refers to a time period of one year is not necessarily a designation for the year, a fact that can be shown by the usage of the words *zai* 载 and *sui* 岁.


In phrases such as *san nian wu zai* 三年五载, ‘three or five years,’ and *sui sui ping an* 岁岁平安, ‘be safe every year,’ words *sui* 岁, *nian* 年, and *zai* 载 all refer to a time period of one year. However, not all of them are terms for a calendar year. For instance, there are no expressions such as *2004 *sui* 岁 or *2004 *zai* 载, ‘year of 2004.’ On the other hand, 2004 *nian* 年, ‘year of 2004,’ is perfect Chinese, where the word *nian* refers to the time period from the first day of 2004 to the last day of 2004. This demonstrates that among these three words, *sui*, *zai*, *nian*, although all of them can refer to the time period of one year, only *nian* is the designation for the year in modern Chinese language.

It is to be suspected that such distinctions exist in the language of the Yin OBI as well. In other words, even though a word in the Yin OBI may be used to refer to the time period of one year, if it is not used to refer to the period of a calendar year, this word can still not be considered as a designation for the Yin year. The present writer now proposes two criteria for judging whether a word in the Yin OBI is a term for the Yin year.

First, there must be inscriptional evidence to show that a word is used to refer to the time period of one year. It is easy to understand that a word cannot possibly be a designation for the Yin year if it is not used to refer to the time period of one year in the inscriptions themselves. Second, there must be inscriptional evidence to show that a word is used to refer to the period of a calendar year, i.e., the time period from the first month of a year to the last month of that year. Without such evidence, it is not certain whether it is a designation for the Yin year in the Yin OBI.

Having stated criteria for determining a designation for the year in the OBI, this writer will now analyze which of the words, *si* 岁, *zai* 载, *nian* 年 and *sui* 岁, is a designation for the Yin year.

4.2.2 *Si*

It is a standard practice to transcribe the bone graph  as *si* 祀, ‘to sacrifice.’ The following inscription is an example of such usage of the word *si*:


[01] 庚子卜, 争贞: 其祀于河。 《合集》14851


Crack-making on *gengzi* (day 37), Zheng divined: “[The king] will perform a sacrifice to He.”
Heji 14851

This example is a piece of inscription from Period I. From Periods I to IV, the word *si* means “to sacrifice,” as shown by Example 1. By Period V, this word gains another usage: a designation for the Yin year.

The *Erya* 尔雅 is a dictionary compiled in the Han Dynasty. In this dictionary, there is a record that states that *Shang yue si* 商曰祀, ‘in the Shang Dynasty [the year] is called *si*.’ Based on this record, Luo Zhenyu (1914.7: 53b) proposes that the word *si* is a designation for the year in the OBI. His opinion is followed by Dong Zuobin (1931: 518-519) and Hu Houxuan (1944. 1: 3a-6a) in the early stage of the study of the Yin calendar.

On the basis of his research about the five-ritual cycle, Dong Zuobin (1945.1.III: 2) explains why the word *si* is used as a term for the Yin year:

即帝乙帝辛时之祀典，以𠂔、翌、祭、、协五种祭祀为主干，遍祭先祖妣一周之期，恰满三十六旬，近于一年之日数，故即称一年为一祀，时王在位之年，即以‘惟王几祀’纪之也。

In other words, among sacrifices during the reigns of Di Yi and Di Xin, *rong*, *yi*, *ji*, , and *xie* are five main ones. The period for performing these five sacrifices to all ancestors and ancestresses is exactly 36 *xuns*, ‘10-day week,’ which are close to the number of days in a year. Therefore, [the Yin] called a year a *si*, and the current year of the contemporary king is recorded as *wei wang ji si*, ‘it was X’t *si* of the king.’

Dong Zuobin’s explanation is followed by Chinese specialists in the field of the Yin calendar. However, his explanation is not accepted by non-Chinese scholars. For example, it is Shima Kunio’s interpretation (1958: 128, 502) that the word *si* in the phrase *wei wang ji si* still means “to sacrifice.” He interprets the phrase *wei wang ji si* as a notation of the number of sacrifices offered by the king, rather than a notation of the year of the Yin king’s reign. Shima Kunio’s view has been followed by Ito Michiharu (1996: 99) and David N. Keightley (2000: 50).

It appears that there are still disputes over whether the word *si* is a designation for the

Yin year. Liu Xueshun (2003) has cited some inscriptions showing that *si* is a term for the Yin year in Period V inscriptions. Now, we investigate this issue more thoroughly.

According to criteria stated in Section 4.2.1, the first step in deciding whether a word is a designation for the Yin year is to examine whether it refers to the time period of one year. Inscriptional examination proves that the word *si* does.

[02] 癸丑卜，贞：妇……有……。不嘉。在正月。遘小甲多刂¹，隹王九祀。

《合集》37855

Crack-making on *guichou* (day 50), [X] divined: “Lady ... has” It will not be blessed. [Day *guichou*] was in the first month and coincided with [the day when] sacrificial meat and what was amputated were offered to Xiaojia. It was the ninth *si* of the king.

Heji 37855

[03] 乙²亥王卜，贞：自今春至于翌，人方不大出。王占曰：吉。在二月。遘祖乙多。隹九祀。

《合集》37852

On *yihai* (day 12), the king made cracks and divined: “From this spring to next [spring], the Renfang will not take the field on a massive scale.” The king read cracks and declared, “Auspicious.” [Day *yihai*] was in the second month and coincided with [the day when] sacrificial meat was offered to Zuyi. It was the ninth *si*. *Heji* 37852

[04] [癸]亥王卜，贞：酉多日，自[上甲至]于多后衣，亡害³ [在祸。王占]曰：吉。在三月。隹王廿[祀]。⁴

《合集》37864

On [*gui*]*hai* (day 60), the king made cracks and divined: “[I will] perform the *you*-cutting sacrifice on the *rong*-sacrificial day, starting [from Shangjia] to many kings, there will be no [disasters.]” The king read cracks and] declared: “Auspicious.” [Day *guihai*] was in the third month. It was the twentieth *si* of the king. *Heji* 37864

[05] 癸未王卜，贞：酉多日，自上甲至于多后衣，亡害在祸。王占曰：吉。在四月。隹王二祀。

《合集》37865

On *guiwei* (day 20), the king made cracks and divined: “[I will] perform the *you*-cutting

¹ For the study on the expression *rongyue* 彤刂, readers are referred to Ken-ichi Takashima (2002).

² The supplement of character *yi* 乙 is based on the pattern of sacrifice inscriptions in Period V. In this period, a sacrifice to an ancestor is normally performed on the date whose *tiangan* 天干 is the same as that of the ancestor in question.

³ For the interpretation of the word *hai* 害, see Qiu Xigui (1992: 11-16).

⁴ Based on Example 5, the missing characters are identified because the content of both inscriptions is the same.

sacrifice on the *rong*-sacrificial day, starting from Shangjia to many kings, there will be no disasters.” The king read cracks and declared: “Auspicious.” [Day *guiwei*] was in the fourth month. It was the second *si* of the king. Heji 37865

[06] 癸未王卜，贞：[旬亡(=无)祸。]王占曰：吉。在五月……隹王七[祀]。

《合集》37846

On *guiwei* (day 20), the king made cracks and divined: “[In the next 10-day week, there will be no disasters.]” The king read cracks and declared: “Auspicious.” [Day *guiwei*] was in the fifth month... It was the seventh [*si*] of the king. Heji 37846

[07] 癸丑卜，泳贞：王旬亡(=无)祸。在六月。甲寅酉翌上甲。王廿祀。

《合集》37867

Crack-making on *guichou* (day 50), Yong divined: “As for the king, [in the next] 10-day week, there will be no disasters.” [Day *guichou*] was in the sixth month. On *jiayin* (day 51), the *you*-cutting sacrifice and the *yi* sacrifice were offered to Shangjia. [It was] the twentieth *si* of the king. Heji 37867

[08] [癸丑]王卜，贞：旬亡(=无)祸。[王占]曰：吉。在七月。甲寅乡阳甲。隹王三祀。

《合集》37839

[On *guichou*] (day 50), the king made cracks and divined: “[In the next] 10-day week, there will be no disasters.” [The king read cracks] and declared: “Auspicious.” [Day *guichou*] was in the seventh month. On *jiayin* (day 51), the sacrificial meat was offered to Yangjia. It was the third *si* of the king. Heji 37839

[09] 癸丑卜，贞：今岁受禾。弘吉。在八月。隹王八祀。《合集》37849

Crack-making on *guichou* (day 50), [X] divined: “This season [we will] reap a harvest.” It was greatly auspicious. [Day *guichou*] was in the eighth month. It was the eighth *si* of the king. Heji 37849

[10] 癸卯王卜，贞：酉翌日，自上甲至多后衣，亡害在祸。在九月。隹王五祀。

《合集》37844

On *guimao* (day 40), the king made cracks and divined: “[I will] perform the *you*-cutting sacrifice on the *yi*-sacrificial day, starting from Shangjia to many kings, there will be no disasters.” [Day *guimao*] was in the ninth month. It was the fifth *si* of the king.

Heji 37844

[11]口酉卜, [贞]: 王今[夕]亡(=无)祸。在十月。[隹]王四祀。 《合集》 37842

Crack-making on *x-you* (day ??), [X] divined: "As for the king, there will be no disasters tonight." [Day *x-you*] was in the tenth month. It was the fourth *si* of the king.

Heji 37842

[12]癸酉王卜, 贞: 旬亡(=无)祸。王占曰: 吉。在十月又一。隹王三祀。

《合集》 37840

On *guiyou* (day 10), the king made cracks and divined: "[In the next] 10-day week, there will be no disasters." The king read cracks and declared: "Auspicious." [Day *guiyou*] was in the eleventh month. It was the third *si* of the king. *Heji* 37840

[13]癸酉王卜, 贞: 旬亡(=无)祸。王占曰: 吉。在十月又二。隹王六祀。

《合集》 37845

On *guiyou* (day 10), the king made cracks and divined: "[In the next] 10-day week, there will be no disasters." The king read cracks and declared: "Auspicious." [Day *guiyou*] was in the twelfth month. It was the sixth *si* of the king. *Heji* 37845

It is clear from Example 2 to Example 13 that the word *si* can refer to any month, from the first to the twelfth, of a Yin year in Period V. In other words, *si* is used to refer to a time period of one year in the Yin OBI. The word *si* does meet the first criterion for a word being a designation for the Yin year.

Can the word *si* refer to the time period of a calendar year, i.e., from the first to the twelfth month of the same year? This can be decided by investigating whether the commencement of a *si* coincides with the first month of the Yin year. If that is the case, one can safely conclude that the word *si* is used to refer to a calendar year. If so, the word *si* will meet the second criterion for judging a word as a designation for the Yin year, and it can be determined as a term for the Yin year. If the start of *si* does not coincide with the first month of the Yin year, it means the word *si* does not refer to the time period of a calendar year; and in this case, the second criterion is not met. Then, one is driven to the conclusion that *si* cannot be regarded as a designation for the Yin year.

Whether or not the beginning of a *si* coincides with the first month of the Yin year, this matter can be decided upon the basis of inscriptional evidence. The following inscriptions show that the start of a *si* does coincide with the first month of the Yin year.

[14] 癸卯王卜贞：酉翌日，自上甲至多后衣，亡害自祸。在九月，隹王五[祀]。

《合集》37844

On *guiwei* (day 40), the king made cracks and divined: “[I will] perform the *you*-cutting sacrifice on the *yi*-sacrificial day, starting from Shangjia to many kings, there will be no disasters.” [Day *guimao*] was in the ninth month. It was the fifth *si* of the king.

Heji 37844

[15] 癸酉王卜贞：旬亡(=无)祸。王占曰：吉。在十月又二，隹王六[祀]。


[癸未]王卜[贞：旬]亡(=无)祸。[王占]曰：吉。[在十]月又二，[甲]申翌祖甲。⁵

《合集》37845

On *guiyou* (day 10), the king made cracks and divined: “[In the next] 10-day week, there will be no disasters.” The king read cracks and declared: “Auspicious.” [Day *guiyou*] was in the twelfth month. It was the sixth [*si*] of the king.

On [*guiwei*] (day 20), the king made cracks [and divined: “In the next 10-day week, there will be no disasters.” [The king read cracks and] declared: “Auspicious.” [Day *guiyou*] was in the twelfth month. On [*jia*]*shen* (day 21), the *yi*-sacrifice was offered to *Zujia*.


Heji 37845


[16] 癸未王卜贞：[旬亡(=无)祸]。王占曰：吉。在五[月，甲申]  祖甲，隹王七[祀]。

癸巳王卜贞：旬亡(=无)祸。王占曰：吉。在五月，甲午隹祖甲。

[癸卯王卜]贞：[旬亡=无]祸。[王占曰：吉。在五]月，[甲辰工]典[其酉]多。⁶

《合集》37846

On *guiwei* (day 20), the king made cracks and divined: “[In the next 10-day week, there will be no disasters.”] The king read cracks and declared: “Auspicious.” [Day *guiwei*] was in the fifth [month. On *jiashen* (day 21), the king] performed the  sacrifice to

⁵ Chang Yuzhi (1987: 240) cites these two inscriptions in order to reconstruct the five-ritual cycle. It is her opinion that the divination and sacrifice dates in the second inscription are missing. However, the damaged graph  (scale is 125%) of the sacrifice date indicates the date is *jiashen* (day 21), as she infers from the pattern of the five-ritual cycle.

⁶ The divination date *guimao*, sacrifice date *jiachen*, and the month notation five, are supplied by Chang Yuzhi (1987: 241) on the basis of the pattern of the five-ritual cycle.

Zujia. It was the seventh *si* of the king.

On *guisi* (day 30), the king made cracks and divined: “[In the next] 10-day week, there will be no disasters.” The king read cracks and declared: “Auspicious.” [Day *guisi*] was in the fifth month. On *jiawu* (day 31), [the king] performed the *wei*-sacrifice to Zujia.

[On *guimao*, day 40, the king made cracks and] divined: “[In the next 10-day week, there will be no] disasters.” [The king read cracks and declared: “Auspicious.” Day *guimao* was in the fifth] month. [On *jiachen*, day 41, the king] presented tablets, [performed the *you*-cutting and] the *Rong* sacrifices. *Heji* 37846

Based upon the inscriptions above, the present writer reconstructs the following calendar and five-ritual cycles.

Table 8:

Reconstruction of the Calendar and Five-Ritual Cycle for Three *Sis*

Month	<i>Si</i>	Date	Ritual	Inscription
9	5	<i>Guimao</i>	<i>Yiri Shangjia</i>	14
[9]	[5]	[<i>Guichou</i>]		
[9]	[5]	[<i>Guihai</i>]	[<i>Yiri Dajia</i>]	
[10]	[5]	[<i>Guiyou</i>]	[<i>Yiri Xiaojia</i>]	
[10]	[5]	[<i>Guiwei</i>]		
[10]	[5]	[<i>Guisi</i>]	[<i>Yiri Jianjia</i>]	
[11]	[5]	[<i>Guimao</i>]	[<i>Yiri Qiangjia</i>]	
[11]	[5]	[<i>Guichou</i>]	[<i>Yiri Yangjia</i>]	
[11]	[5]	[<i>Guihai</i>]		
[12]	[5]	[<i>Guiyou</i>]	[<i>Yiri Zujia</i>]	
[12]	[*5]	[<i>Guiwei</i>]	[<i>Ji gongdian</i>]	
[12]	[*5]	[<i>Guisi</i>]	[<i>Ji Shangjia</i>]	
[1]	[6]	[<i>Guimao</i>]		
[1]	[6]	[<i>Guichou</i>]	[<i>Ji Dajia</i>]	
[2]	[6]	[<i>Guihai</i>]	[<i>Ji Xiaojia</i>]	
[2]	[6]	[<i>Guiyou</i>]		

Table 8:
Reconstruction of the Calendar and Five-Ritual Cycle for Three *Si*

[2]	[6]	[<i>Guiwei</i>]	[<i>Ji Jianjia</i>]	
[3]	[6]	[<i>Guisi</i>]	[<i>Ji Qiangjia</i>]	
[3]	[6]	[<i>Guimao</i>]	[<i>Ji Yangjia</i>]	
[3]	[6]	[<i>Guichou</i>]		
[4]	[6]	[<i>Guihai</i>]	[<i>Ji Zujia</i>]	
[4]	[6]	[<i>Guiyou</i>]		
[4]	[6]	[<i>Guiwei</i>]		
[5]	[6]	[<i>Guisi</i>]	[<i>Rong gongdian</i>]	
[5]	[6]	[<i>Guimao</i>]		
[5]	[6]	[<i>Guichou</i>]	[<i>Rong Shangjia</i>]	
[6]	[6]	[<i>Guihai</i>]		
[6]	[6]	[<i>Guiyou</i>]	[<i>Rong Dajia</i>]	
[6]	[6]	[<i>Guiwei</i>]	[<i>Rong Xiaojia</i>]	
[7]	[6]	[<i>Guisi</i>]		
[7]	[6]	[<i>Guimao</i>]	[<i>Rong Jianjia</i>]	
[7]	[6]	[<i>Guichou</i>]	[<i>Rong Qiangjia</i>]	
[8]	[6]	[<i>Guihai</i>]	[<i>Rong Yangjia</i>]	
[8]	[6]	[<i>Guiyou</i>]		
[8]	[6]	[<i>Guiwei</i>]	[<i>Rong Zujia</i>]	
[9]	[6]	[<i>Guisi</i>]		
[9]	[6]	[<i>Guimao</i>]	[<i>Yiri gongdian</i>]	
[9]	[6]	[<i>Guichou</i>]	[<i>Yiri Shangjia</i>]	
[10]	[6]	[<i>Guihai</i>]		
[10]	[6]	[<i>Guiyou</i>]	[<i>Yiri Dajia</i>]	
[10]	[6]	[<i>Guiwei</i>]	[<i>Yiri Xiaojia</i>]	
[11]	[6]	[<i>Guisi</i>]		
[11]	[6]	[<i>Guimao</i>]	[<i>Yiri Jianjia</i>]	
[11]	[6]	[<i>Guichou</i>]	[<i>Yiri Qiangjia</i>]	

Table 8:
Reconstruction of the Calendar and Five-Ritual Cycle for Three *Si*

[12]	[6]	[<i>Guihai</i>]	[<i>Yiri Yangjia</i>]	
12	6	<i>Guiyou</i>		15
12	6	<i>Guiwei</i>	<i>Yiri Zujia</i>	15
[1]	[7]	[<i>Guisi</i>]	[<i>Ji gongdian</i>]	
[1]	[7]	[<i>Guimao</i>]	[<i>Ji Shangjia</i>]	
[1]	[7]	[<i>Guichou</i>]		
[2]	[7]	[<i>Guihai</i>]	[<i>Ji Dajia</i>]	
[2]	[7]	[<i>Guiyou</i>]	[<i>Ji Xiaojia</i>]	
[2]	[7]	[<i>Guiwei</i>]		
[3]	[7]	[<i>Guisi</i>]	[<i>Ji Jianjia</i>]	
[3]	[7]	[<i>Guimao</i>]	[<i>Ji Qiangjia</i>]	
[3]	[7]	[<i>Guichou</i>]	[<i>Ji Yangjia</i>]	
[4]	[7]	[<i>Guihai</i>]		
[4]	[7]	[<i>Guiyou</i>]	[<i>Ji Zujia</i>]	
5	7	<i>Guiwei</i>	Zai Zujia	16
5	[7]	<i>Guisi</i>	Wei Zujia	16
5	[7]	<i>Guimao</i>	<i>Rong gongdian</i>	16

According to Example 14, there is *guimao* in the ninth month of the fifth *si*. Example 15 records that *guiyou* and *guiwei* are in the twelfth month of the sixth *si*. Based upon the pattern of the five-ritual cycle, *guimao* must be taken as the first *gui*-day of the ninth month of the fifth *si*, and *guiwei* the last *gui*-day of the twelfth month of the sixth *si*, so that all dates and month notations in these two examples can be accommodated. In addition, in Example 16, *guiwei* occurs in the fifth month of the seventh *si*. According to the pattern of the five-ritual cycle, it has to be interpreted as the first *gui*-day of that month. Such a reconstruction fits the pattern of the five-ritual cycle and accommodates all those dates and month notations in all three examples. It is thus a credible reconstruction.

In the reconstruction above, the sixth *si* ends with the twelfth month and the seventh *si* begins with the first month. It appears that *si* refers to a time period from the first month to


the twelfth month, i.e., a calendar year.

That *si* refers to a calendar year is supported by the materials in the bronze inscriptions as well. Chen Mengjia (1956: 237) and Chang Yuzhi (1998: 365) cite a number of examples of the phrase *wei wang ji si* in the Western Zhou bronze inscriptions. The Zhou people did not have the five rituals. There is no basis to take the word *si* in the phrase *wei wang ji si*, in the Western Zhou bronze inscriptions, to mean “sacrifice.” Therefore, Chen Mengjia and Chang Yuzhi interpret this phrase as a designation for the year of the Zhou king. Since the Western Zhou Dynasty was founded immediately after the Yin Dynasty, it is reasonable to assume that the phrase *wei wang ji si* was used in the same way in the Yin OBI and Western Zhou bronze inscriptions.

The forgoing analysis shows that the word *si* can refer to both the time period of one year and the time period of a calendar year in the Yin OBI. These two requirements for a word to be a designation for the Yin year have been fulfilled. Therefore, *si* is a designation for the Yin year.

Following Dong Zuobin’s explanation (1945.1.III: 2) on why *si* is a designation for the Yin year, Chen Mengjia (1956: 236-237), Xu Jinxiong (1968: 77) and Chang Yuzhi (1998: 354) all propose that as a designation for the year, *si* should refer to a solar year and not a lunar year. In this writer’s opinion, their proposal is mistaken. Like other Chinese calendars, a Yin civil year consists of twelve lunar months in a normal year and thirteen lunar months in an intercalary year, as discussed in Chapter Two. A normal Yin civil year is 354 days long and an intercalary Yin civil year 383 days long. Whether it is a normal year or an intercalary year, a Yin civil year is not 365 days long. Because a Yin year cannot be as long as a solar year, it is impossible for the word *si* to refer to a solar year.

4.2.3 *Sui*

The word *sui* 岁 is inscribed as  in the OBI. From Period I to V, *sui* has two usages. First, it can be used as a verb, meaning “to cut.” In this case, it should be read as *gui* 刳. Second, it can also be used as a time word, which is the usage related to this study. The following inscription is one example of its usage as a time word.

[17] 癸丑卜，贞：今岁受禾。弘吉。在八月。佳王八祀。 《合集》 37849

Crack-making on *guichou* (day 50), [X] divined: "This season [we will] reap a harvest."
It was greatly auspicious. [Day *guichou*] was in the eighth month. It was the eighth *si* of the king. *Heji* 37849

In this inscription, the phrase *jinsui* 今岁 specifies the time scope of the charge. There are no disputes over the word *sui* being a time word in such a context. However, there are different opinions about the length of the time period to which *sui* actually refers. David N. Keightley (2000) offers two translations for *sui*. On page 52, he translates *sui* as "season," without specifying the length of a season. On page 61, he translates it as "year." In the strict sense of the word, a "season" is not a "year."

Hu Houxuan (1944: 2b-3a) proposes that *sui* is used as a designation for a year. This opinion is shared by Dong Zuobin (1945.1.III: 2b) and Chang Yuzhi (1998: 344-351). On the other hand, Chen Mengjia (1956: 225-226) suggests that the Yin year has two *suis*. If so, *sui* cannot be a designation for a Yin year. This view is repeated by Wen Shaofeng and Yuan Tingdong (1983: 95-96).

Given these two viewpoints on the time word *sui*, which is correct? The answer has to be decided by inscriptional evidence. The following inscriptions are relevant to the time period referred to by the word *sui*.

[18] 癸卯卜，大贞：今岁商受年。一月。 《合集》 24427

Crack-making on *guimao* (day 40), Da divined: "In this *sui*, the Shang will reap a harvest." [Day *guimao* was in] the first month. *Heji* 24427

[19] 辛丑卜，大贞：今岁受年。二月。 《合集》 24429

Crack-making on *xinchou* (day 38), Da divined: "In this *sui*, [the Shang] will reap a harvest." [Day *xinchou* was in] the second month. *Heji* 24427

[20] □□卜，贞：今岁受[年。王]占曰：吉。在五月。 《合集》 36977

Crack-making on XX, [diviner Y] divined: "In this *sui*, [the Shang] will reap [a harvest." The king] read cracks and declared: "Auspicious." [Day XX was] in the fifth month. *Heji* 36977

[17] 癸丑卜，贞：今岁受禾。弘吉。在八月。佳王八祀。 《合集》 37849

Crack-making on *guichou* (day 50), [X] divined: "This season [we will] reap a harvest."

It was greatly auspicious. [Day *guichou*] was in the eighth month. It was the eighth *si* of the king.

Heji 37849

[21] 癸卯卜，大贞：今岁受黍年。十月。 《合集》24431

Crack-making on *guimao* (day 40), Da divined: "In this *sui*, [the Shang] will reap a harvest of broomcorn millet." [Day *guimao* was in] the tenth month. *Heji* 24431

[22] 乙丑卜，王贞：今岁受年。十二月。 《合集》9650

Crack-making on *yichou* (day 2), the king divined: "In this *sui*, [the Shang] will reap a harvest." [Day *yichou* was in] the twelfth month. *Heji* 9650

These six examples show that the time period of *sui* includes the first, second, fifth, eighth, tenth and twelfth months, which indicates that *sui* refers to a period that is longer than a month. Currently, there are no inscriptions to show that the third, fourth, sixth, seventh, ninth and eleventh months are included in *sui*. On the other hand, as far as the present writer knows, there are no time words that refer to several separate months. It seems reasonable to draw the conclusion that, as a time word, *sui* can refer to any month of the Yin year. In other words, *sui* may refer to a time period of one year, which is the present writer's first criterion for a word being a designation for the Yin year. Does the word *sui* meet the second criterion? Can it refer to the time period of a calendar year, i.e., from the first to the twelfth month of the same Yin year? There are some inscriptions that may shed light on this question.

Example 22 is already cited above. It divines whether the Shang would reap a harvest in this *sui* and its divination date is in the twelfth month, the last month of the Yin year. If *sui* ends with the twelfth month, it makes more sense for the Shang to divine whether they would reap a harvest in the next *sui*, rather than in this *sui*. Example 22 therefore suggests that the time period of *sui* may not end with the twelfth month.

The Yin people did divine if they would reap a harvest in the next *sui*. Below are several such examples.

[23] 戊寅贞：来岁大邑受禾。在六月卜。 《合集》33241

On *wuyin* (day 15), [X] divined: "In the coming *sui*, [the people of] big settlements will reap a harvest." In the sixth month, [X] divined. *Heji* 33241

[24] 甲子卜：来岁受年。八月。 《合集》9659

Crack-making on *jiazi* (day 1), [X] divined: "In the coming *sui*, [the Shang] will reap a harvest." [Day *jiazi* was in] the eighth month. *Heji* 9659


[25] 辛卯卜，王贞：来岁邑受年。九月。 《苏德》 4.134.27

Crack-making on *xinmao* (day 28), the king divined: “In the coming *sui*, [the people of] Yi will reap a harvest.” [Day *xinmao* was in] the ninth month. *Sude* 4.134.27

For the phrase *laisui* 来岁, ‘the coming *sui*,’ in these three examples, it is Chang Yuzhi’s conclusion (1998: 250-255) that the word *lai* means ‘next.’ Also, it makes sense to understand “the coming *sui*” as “the next *sui*.” If so, the topic of these three divinations is whether those people will reap a harvest in the next *sui*. According to the post-faces of Examples 23, 24, and 25, these three divinations are conducted in the sixth, eighth and ninth months, respectively, which indicates that the next *sui* may start in the period between the seventh and tenth months.

Since Examples 23 – 25 suggest that the time period of *sui* possibly starts between the seventh and tenth months and Example 22 indicates that it may not end in the twelfth month, it appears that the word *sui* cannot refer to the time period of a calendar year. The second requirement for judging a word as a term for the Yin year is not fulfilled. Therefore, *sui* cannot be accepted as a designation for the Yin year.

4.2.4 *Nian*

The bone graph for word *nian* in the Yin OBI is scribed as . It consists of two components: *he* 禾, ‘millet,’ and *ren* 人, ‘man.’ Its meaning is “harvest,” as is shown by Examples 18, 19, 21, 22, 24 and 25 in Section 4.2.3. This is the meaning of the word *nian* most frequently found throughout five periods of the Yin OBI.

In Period I, however, there are several inscriptions in which a numeral occurs before the word *nian*. Without analyzing these inscriptions in detail, Hu Houxuan (1944: 2b) takes them as examples of *nian* being used as a designation for the Yin year. His opinion is repeated by Wen Shaofeng and Yuan Tingdong (1983: 94) and Chang Yuzhi (1998: 341-344). Dong Zuobin (1945.1.III: 1) is more cautious. He points out that it is difficult to prove from these examples that *nian* is a term for the Yin year.

Chen Mengjia’s understanding (1956: 224) of the word *nian* in these examples is different from Hu Houxuan. He suggests that *nian* means “harvest season.” Zheng Huisheng

(1984: 14) agrees with Chen Mengjia's rendering.


It is apparent that there is no consensus yet as to whether the word *nian* is a designation for the Yin year. Below, the present writer will analyze whether *nian* is a term for the Yin year according to criteria stated in Section 4.2.1.

It is very difficult to determine whether *nian* is a term for the Yin year, mainly because there is no inscription that indicates what the relationship is between this word and the month of the Yin year. Wen Shaofeng and Yuan Tingdong (1983: 94) have made effort to show a relationship; however, it appears that their interpretation of the following relevant inscriptions is problematic.

[26] 口寅[卜]: 雀口[受]年。十二月。

邑不受年。

《合集》7049

On *x-yin*, [diviner Y] divined: "Que, [Z], and  [will reap a] harvest." [Day *x-yin* was in] the twelfth month.

"Yi will not reap a harvest."

Heji 7049

In their transcriptions, Wen Shaofeng and Yuan Tingdong do not put a period between the word *nian* and the phrase *shier yue* 十二月. But the second inscription clearly shows that the topic of that divination is whether those persons would reap a harvest. The word *nian* in the first inscription of this example thus means "harvest." It is not a time word and should be separated from *shier yue*.

[27]年。一月。

《合集》9908

"... harvest." [Day xx was in] the first month. *Heji* 9908

[28]年。七月。

《合集》9910

"... harvest." [Day xx was in] the seventh month. *Heji* 9910


[29]年。四月。


《合集》11571

"... *nian*." [Day xx was in] the fourth month. *Heji* 11571

The authors of the *Jiaguwen heji shiwen* put a period between *nian* and these three month notations, which implies that they should be separated. If so, these examples cannot be taken as evidence for the word *nian* as a time word. A comparison between these three examples and Example 26 suggests that it is reasonable to separate the word *nian* and other month notations, a practice that Wen Shaofeng and Yuan Tingdong do not follow. Moreover,

even if Wen Shaofeng and Yuan Tingdong's punctuation is correct, it is not in agreement with the method of recording dates in Period V inscriptions. In Period V, a date occurs before a month notation, which in turn appears before a year notation, as is clearly shown in Examples 2 to 17 in this chapter. But in Examples 26 to 29, a month notation occurs after the alleged year notation. Such a disagreement certainly casts doubt on interpreting *nian* as a year notation in the three examples just considered.

[30] 癸未卜，贞：燎十小牢卯十牛，[禱]年。十月。用。 《合集》14770

Crack-making on *guiwei* (day 20), [X] divined: “[The king will] offer from the holocaust ten small specially reared sheep and cut open ten oxen for  in praying for *nian*.” [Day *guiwei* was in] the tenth month. [This divination was] adopted. *Heji* 14770

This example is different from Examples 26 in that it is unlikely to be correct to supply the word *shou* 受, ‘to receive,’ before *nian* because its context is different. In Example 26, there is no mention of any sacrifice. In this example, there are sacrificial victims. It seems a good choice to supply the word *dao* 禱, ‘to pray for,’ before *nian* because of the similar context in the following inscription.

[31] 甲子卜，争贞：禱年于夔，燎六牛。 《合集》10067

Crack-making on *jiazi* (day 1), Zheng divined: “[When the king] prays for harvest from Kui, [he will] offer six oxen from the holocaust.” *Heji* 10067

In this example, the king offers from the holocaust six oxen when he prays for harvest. Its context is similar to that found in Example 30. It appears that supplying *dao* before *nian* in Example 30 is justified. In the phrase *daonian*, *nian* means “harvest” rather “year.” If so, Example 30 has nothing to do with the relationship between *nian* and the month of the Yin year.

The analysis of Examples 26 through 30 shows that these inscriptions do not reveal any relationship between the word *nian* and the month of the Yin year. Therefore, Wen Shaofeng and Yuan Tingdong have failed to show that the time word *nian* is related to any month of the Yin year.

Chang Yuzhi (1998: 341-344) cites three inscriptions in which a figure occurs

immediately before the word *nian*. Since the transcription of *Heji* 519 is problematic,⁷ there are only two examples of the expression numeral + *nian*, which are cited below.

[32] 口戌卜，出贞：自今十年又五王丰⁸。 《合集》24610

Crack-making on x-xu, Chu divined: “Starting from the present, in fifteen *nians*, the king will *feng* [a verb?].” *Heji* 24610

[33] 仔⁹十年。 《侯》19



Zi ten nians. *Hou* 19


Two differing understandings surround these two inscriptions. Hu Houxuan (1944: 2b) cites them as examples of *nian* being used as a designation for the Yin year, but without offering any explanation for his conclusion. Dong Zuobin (1945.1.III: 1), Wen Shaofeng and Yuan Tingdong (1983: 94) and Chang Yuzhi (1998: 342) interpret these inscriptions in a somewhat different way. For example, while Dong Zuobin interprets fifteen *nian* as a period of 15 years, Chang Yuzhi interprets it as the fifteenth year of a Yin king. But all of these researchers agree that *nian* is a designation for the Yin year. However, like Hu Houxuan, none of them has provided analysis of these two inscriptions.


⁷ The inscription in question is inscribed on *Heji* 519. Both Dong Zuobin (1945.1.III: 1) and Chang Yuzhi (1998: 342) transcribe it as follows:


……得四年在乘。十二月。

The graph they transcribe as *nian* 年, however, is transcribed as Qiang 羌 by the authors of the *Jiaguwen heji shiwen*. On

the rubbing, the graph is scribed as , which is extremely similar to . In addition, the expression *de* Qiang, ‘to capture Qiang people,’ often occurs in the OBI. The expression *de* siqiang, ‘to capture four people of Qiang,’ does make sense.

Therefore, it is incorrect to transcribe the graph  as *nian*. If this is true, this inscription has nothing to do with the issue of whether or not the word *nian* is a designation for the Yin year.

Another inscription that has been transcribed incorrectly is *Heji* 35249. On this piece of oracle bone, the graph  has been transcribed as *nian*, ‘year,’ by Hu Houxuan (1944: 2b), Chen Mengjia (1956: 224), Wen Shaofeng and Yuan

Tingdong (1983: 94), Chang Yuzhi (1998: 342) and the *Jiaguwen heji shiwen*. However, the graph  clearly is *he* 禾, ‘crop,’ rather than *nian* 年. Because of this, there is no expression of numeral + *nian* in *Heji* 35249, and it is not related to the issue of *nian* being a year notation.

⁸ The meaning of the word *feng* remains unclear.








⁹ *Zi* is a direct transcription of the bone graph. What word it represents in the OBI is not clear. For various suggestions about the meaning of this bone graph, readers are referred to Matsumaru and Takashima (1994: 240-241).

Yet another understanding of these inscriptions is found in Chen Mengjia (1956: 224). He claims that *nian* means “harvest season.” But, again, he does not provide any reasoning or evidence to support his interpretation.

It is very difficult to decide which of the two interpretations about the expression numeral + *nian* is correct, because these specialists have not stated their reasons, whatever they may be. Whose interpretation of numeral + *nian* may be correct is of little interest to the present discussion. What is important and relevant is whether these inscriptions themselves reveal any relationship between *nian* and Yin month(s). Unfortunately, they do not, because there is no month notation in these inscriptions.

All specialists assume that one usage of the word *nian* is as a time word in the Yin OBI. Up to now, however, there is no inscription showing to what period of the Yin year the word *nian* refers. According to criteria for judging a designation for the Yin year in Section 4.2.1, the present writer cannot accept *nian* as a term for the Yin year.

4.2.5 Zai

In Period I, there is a bone graph written as . Yang Shuda (1954.1: 14) transcribes it as *zai* 载, ‘year.’ He takes  as the phonetic element of the graph. In some cases,  is simplified as , which is the phonetic of . This phonetic element is also written as , which is read as *zai*. Such a phonological connection is the rationale for Yang Shuda to transcribe  as *zai*. Then, based upon the usage of *zai* 载 in Classical Chinese, he interprets the word as a designation for the Yin year in the Yin OBI.

Specialists agree that this bone graph represents a time word. But, is the word really a designation for the Yin year? The present writer will now investigate that question by subjecting this word to the two criteria for the designation for the Yin year: that the word must refer to the time period of one year and that it must also refer to the period of a calendar

year.

In the following inscriptions, both the word *zai* and a month notation occur. From them, the time period referred to by the word *zai* can be inferred.

[34] 丙戌卜，争贞：今载王从望乘伐下危受有佑。

丙戌卜，争贞：今三月雨。 《合集》6496

Crack-making on *bingxu* (day 23), Zheng divined: "In this *zai*, the king should follow Wang Cheng to attack Xia Wei, [because he will] receive assistance."

Crack-making on *bingxu*, Zheng divined: "In this third month, it will rain."

Heji 6496

[35] 丁巳卜：今载方其大出。四月。 《合集》6689

On *dingsi* (day 54), [X] Divined: "In this *zai*, Fang might take the field on a massive scale." [Day *dingsi* was in] the fourth month. *Heji* 6689

[36] 丙戌卜：今载方其大出。五月。 《合集》6692

On *bingxu* (day 23), [X] Divined: "In this *zai*, Fang might take the field on a massive scale." [Day *bingxu* was in] the fifth month. *Heji* 6689

[37] 己亥卜：母专来今载。七月。 《怀特》1630

[X] Divined on *jihai* (day 36): "Mother Zhuan will come in this *zai*." [Day *jihai* was in] the seventh month. *White* 1630

[38] 辛巳卜，宾贞：今载王从望乘伐下危受有佑。十一月。 《合集》6413

Crack-making on *xinsi* (day 18), Bin divined: "In this *zai*, the king should follow Wang Cheng to attack Xia Wei, [because he will] receive assistance." [Day *xinsi* was in] the eleventh month. *Heji* 6413

[39] 口口卜，𠄎贞：今]载王[伐]土方受有佑。十二月。 《合集》6430

Crack-making on [xx], Nan [divined: "In this] *zai*, the king should follow Wang Cheng [to attack] Tu Fang, [because he will] receive assistance." [Day xx was in] the twelfth month. *Heji* 6430

[40] 壬寅卜，争贞：今载王伐井。十三月。 《合集》6543

Crack-making on *renyin* (day 39), Zheng divined: "In this *zai*, the king will attack Jing." [Day *renyin* was in] the thirteenth month. *Heji* 6543

It is clear from the above seven examples that, as a time word, *zai* may refer to the third,

fourth, fifth, seventh, eleventh, twelfth and thirteenth months of the Yin year. Currently, there are no inscriptions to justify asserting that *zai* refers to the first, second, sixth, eighth, ninth, and tenth month of the Yin year. As far as the present writer knows, there is no time word that refers to a period that is longer than one month and that at the same time consists of months that are not consecutive. It seems reasonable, therefore, to say that *zai* may refer collectively to all the months of the Yin year, i.e., to a period of one Yin year. If it does, then the first criterion for determining the designation for the Yin year is met.

Up to the present time, however, there is no inscriptional basis to show that *zai* can refer to the time period of a calendar year. Therefore, it is necessary to conclude that, as of this writing, the term *zai* fails to satisfy the second criterion. Were new evidence to come to light to the contrary, this writer has no objection to considering it; but for now, this provisional conclusion stands. In addition, as shown in Section 4.2.2, the year notation in Period V is *wei wang ji si* 隗王几祀, 'it is Xth year of the king.' The word *zai* has never occurred in a context that can be considered as a year notation. Given these two facts, the present writer is confident in the conclusion that the word *zai* cannot be accepted yet as a designation for the Yin year.

The present section has undertaken to evaluate the four possible designations for the Yin year in light of inscriptional evidence. The four possible designations examined are: *si* 祀, *sui* 岁, *nian* 年 and *zai* 载. Inscriptional evidence shows that only the word *si* refers to both a period of one year and to a Yin calendar year. According to criteria for the designation for the Yin year, only *si* fulfills the two requirements in order for a word to qualify as a designation for the Yin year in the OBI. Therefore, in the language of the Yin OBI, the Yin year has only one designation: the word *si*.

4.3 The Commencement of the Yin Year

It is a commonly held opinion that agriculture played an important role in the economy of the Yin Dynasty.¹⁰ Since agricultural work is highly sensitive to seasons, the Yin calendar must have guided agricultural activities by defining seasons. One way to achieve that would

¹⁰ This is a consensus in the field of Yin economy. See Hu Houxuan (1945), Cheng Mengjia (1956: 523) and Wang Yuxin and Yang Shengnan (1999: 522).

have been establishing the beginning of the year. It is therefore understandable that so much importance has been attached to determining the commencement of the Yin year.

The start of the Yin year is one of the most rigorously debated issues in the field of the Yin calendar. However, studies on this issue have been notably inconclusive. To date, seven divergent opinions have been advanced. Ten of the twelve months of a year have been proposed as the beginning of the Yin year, a situation that is very unsatisfactory, to say the least. After evaluating previous theories pertaining to the beginning of the Yin year, the present writer will reconstruct the start of several Yin years, basing his reconstruction upon lunar eclipse records from Period I.

4.3.1 Evaluation of Previous Studies

In early Chinese texts, there are references to the commencement of the Yin year. In the *Shiji*, for instance, it is recorded that the start of the Yin year is the month of *chou* 丑, i.e., the month immediately after the one that contains the winter solstice. In the field of the Yin calendar, scholars continue to use traditional terms such as the month of *zi* 子, *chou* 丑, *yin* 寅, and so on to define the start of the Yin year that they have reconstructed. These terms, however, are not necessarily well known to readers who are not familiar with Chinese calendars. In order to make previous studies of the start of the Yin year easy to understand, they will be presented here in reference to months of the modern Gregorian calendar.

It is not only necessary to introduce these studies in terms of the Gregorian calendar, but also practical to do so. In Chinese calendars, on the one hand, the month of *zi* 子 always refers to the month that contains the winter solstice; in the Gregorian calendar, on the other hand, the winter solstice always occurs in December. It appears that there is a stable corresponding relationship between Chinese and Gregorian months. Such a relationship serves as foundation for describing the start of the Yin year by making reference to the Gregorian calendar.

The table below lists seven previous opinions as to the start of the Yin civil year.

Table 9:
Opinions about the Start of the Yin Year

Scholars	Commencement of Yin civil year	
Dong (1945)	January	Month of <i>chou</i> 丑
Chen (1956)	March or April	Month of <i>mao</i> 卯 or <i>chen</i> 辰
Wen and Yuan (1983)	April	Month of <i>chen</i> 辰
Chang (1981)	May	Month of <i>si</i> 巳
Wang (1994) and Chang (1998)	June	Month of <i>wu</i> 午
Zheng (1984)	July	Month of <i>wei</i> 未
Zhang and Meng (1987)	August, September or October.	Month of <i>shen</i> 申, <i>you</i> 酉, or <i>xu</i> 戌
Feng (1990)	October or November.	Month of <i>xu</i> 戌 or <i>hai</i> 亥

As this table shows, ten months have been proposed as candidates for the beginning of the Yin year. In principle, however, only one specific month and no other was the first month in the cycle of the Yin year, just as the modern Gregorian year started consistently with January. Therefore, just one of the months above can be accurate, i.e., be the month that started the Yin year. It is also possible that none of the months listed above is the one that actually started the Yin year.

After reading publications about the beginning of the Yin year, the present writer has found that those scholars cite almost identical inscriptional material. It is their differing interpretations of the very same records that have led to their divergent conclusions. Before conducting any more research on the commencement of the Yin year, it is absolutely necessary to examine whether all those inscriptions cited in previous publications are indeed valid evidence for the start of the Yin year; and to make a thorough evaluation of previous interpretations of those materials. Also, there is often more than one inscription expressing the same content. Accordingly, all inscriptions having the same meaning will be analyzed as a group.

4.3.1.1 Evaluation of Inscriptions about Huo

Inscriptions containing the graph *huo* 火 are often cited in publications about the start of the Yin year. Below is one of such inscriptions.

[41] 己巳卜，争[贞]：火今一月其雨。 《合集》 12488

Crack-making on *jisi* (day 6), Zheng [divined]: “As for *huo*, in this first month, it will perhaps rain.”
Heji 12488

The original meaning of *huo* is “fire.” But no specialist interprets *huo* in this inscription literally. Rather, specialists take *huo* in this example as the star Dahuo 大火, i.e., the star Antares, based upon such usage of *huo* in classical Chinese. For example, it is recorded in *Zuozhuan* (Legge 1872b: 439) that

是故口朱为鹑火，心为大火，陶唐氏之火正阏伯，居商丘，祀大火，而火纪时焉。相土因之，故商主大火。

Hence the beak is the star Chunhuo, and the heart is Dahuo. Now the director of fire under Taotang (Yao) was E’bo, who dwelt in Shangqiu, and sacrificed to Dahuo, by fire regulating the seasons. Xiangtu came after him, and hence Shang paid special regard to the star Dahuo.¹¹

This passage not only shows the usage of *huo* as the star, but also links that star to the Yin people. Based upon this record, Wen Shaofeng and Yuan Tingdong (1983: 117-119), Zheng Huisheng (1984: 15), Feng Shi (1990: 39), and Chang Yuzhi (1998: 401-403) all take *huo* in this example as the star Antares. However, from Example 41, these researchers draw considerably different conclusions. Divergent conclusions suggest that there must be problems with their interpretations of the word *huo* in this inscription. It is the present writer’s opinion that their interpretations suffer from two major problems.

The first problem is that their interpretations are not based upon inscriptional evidence. In the Yin OBI, the word *huo* is used as a personal name or a place name, which can be proven by the following inscriptions.

¹¹ The present writer has changed James Legge’s Romanization to *pinyin*.

[42] ……害。在火。

《合集》19622

... disasters. [The king was] at Huo.

Heji 19622

It is common knowledge that in Chinese the word occurring after the preposition *zai* 在, 'at,' is either a time word or a place name. Since there is no evidence to show that the word *huo* 火 has ever been used as a time word in Chinese, it is better to take it as a place name in Example 42. In addition, it makes perfect sense to interpret *huo* as a place name in this inscription. This is a piece of firm evidence for *huo* being a place name in the OBI.

[43] 乙¹²酉卜：火氏。一[告]¹³。

《合集》9104

On *xinyou* (day 58), [X] Divined: "Huo will bring [something]." [It was] the first [report].

Heji 9104

In the OBI, the word *di* 氏 means "to bring," as shown clearly by Example 44.

[44] 戊辰卜：雀氏象。


《合集》8984


On *wuchen* (day 5), [X] divined: "Que will bring elephants." Heji 8984

The inscription in Example 44 divines whether Que will bring elephants to the Yin. It is clear that the word *di* is a verb meaning "to bring." This usage of *di* 氏 fits the context of Example 43 as well. In the charge of Example 43, the only possible word pertaining to bringing something is *huo*. In that case, *huo* has to be taken as the subject and be a personal name.

Examples 42 and 43 show that Huo 火 can be either a personal name or a place name. This is not surprising. Zhang Bingquan (1967) has reached the conclusion that it is a common phenomenon in the Yin OBI that a personal name and a place name often use the same character. Indeed, such a usage of Huo fits the context of Example 41.

¹² This is the transcription provided by the authors of the *Jiaguwen heji shiwen*. The bone graph does not look like *xin* 辛, as transcribed by Feng Shi (1990: 39).

¹³ The graph is severely damaged. The authors of the *Jiaguwen heji shiwen* do not provide transcription for this graph. Feng Shi (1990: 39) transcribes it as *yue* 月, 'month.' The incomplete graph is scribed as  (scale is 200%). Under character *yi*, 'first,' is the top part of another graph, which should be transcribed as *gao* 告, 'report,' for two reasons. First, the top part of

the second graph is similar to that of the graph *gao*. For the graph of *gao*, see the second graph in . The similarity between the top part of the graph *gao* and the top portion of the damaged graph is very clear. Second, *yigao* is one of the most often seen crack notations in the OBI. It makes sense to transcribe them as *yigao* in Example 43.

In the Yin OBI, there are divinations about whether it will rain at a place, as shown by inscriptions below:

[45] 乙未卜：龙亡其雨。 《合集》 13002

On *yiwei* (day 32), [X] divined: "In Long, there might not be rain." *Heji* 13002

[46] 辛巳卜，贞：卜其雨。

贞：卜不雨。 《合集》 13003

Crack-making on *xinsi* (day 18), [X] divined: "In Bu, perhaps it will rain."

[X] Divined: "In Bu, it will not rain." *Heji* 13003

[47] 口申卜：鬲雨。 《合集》 13005

On *x-shen*, [X] divined: "In Zhou, it will rain." *Heji* 13005

[48] 口申卜：异不其雨。 《合集》 13006

On *x-shen*, [X] divined: "In Yi, it might not rain." *Heji* 13006

[49] 贞：大今三月雨。 《合集》 12528

[X] Divined: "In Da, in this third month, it will rain." *Heji* 12528

In these five examples, Long 龙, Bu 卜, Zhou 鬲, Yi 异 and Da 大 are all place names. The grammatical structure of these inscriptions, especially that of Example 49, is the same as that of Example 41. It does make sense to take Huo in Example 41 as a place name and to interpret Example 41 as a record of divining whether it will rain in the first month in a place called Huo. If so, the word Huo in Example 41 has nothing to do with the star Antares. Therefore, it follows that Wen Shaofeng and Yuan Tingdong (1983), Zheng Huisheng (1984), Feng Shi (1990) and Chang Yuzhi (1998) all interpret this inscription incorrectly. They should have based their interpretations on synchronic inscriptional evidence.

The second problem with their interpretations is that they have interpreted the inscription in Example 41 too freely. For instance, it is Wen Shaofeng and Yuan Tingdong's opinion (1983: 117-119) that *huo* means that the star Antares appears in the sky at dusk. But there are no words such as *xian* 见, 'to appear,' and *hun* 昏, 'dusk,' in Inscription 41. Zheng Huisheng's view (1984: 15) is that the word *huo* means that the star Antares appears in the middle of the south sky at dusk. The problem is that there are no words like *zhong* 中, 'middle,' *nan* 南, 'South,' *xian* 见, 'to appear,' and *hun* 昏, 'dusk,' in this inscription. According to Feng Shi (1990: 39), the word *huo* in Example 41 means the star Antares rises

at the same time as the sun. It is a fact that in that inscription the word *ri* 日, 'the sun,' and *chu* 出, 'rise,' do not occur.

It has been made clear that Wen Shaofeng, Yuan Tingdong, Zheng Huisheng and Feng Shi add words of their own to Inscription 41 when they interpret it. Such additions are baseless. By adding their own words to the inscription, they distort the original meaning of this inscription. It follows that all conclusions that they have drawn from Inscription 41 are completely unsupported by this inscription. This is the second problem with their interpretations of Example 41.

Besides Example 41, Feng Shi (1990) has cited other inscriptions containing the word *huo* to discuss the relationship between the star Antares and the commencement of the Yin year. The following transcription is cited by Feng Shi (1990: 38), and its translation is based on his understanding of this inscription:

[50] 丁未卜：今者火来母？ 《綴合》 27

On *dingwei* (day 44), [X] divined: "At present, the star Antares will return and give [...]" *Zhuihe* 27

Feng Shi interprets *Huo* as the star Antares and takes *mu* 母 as a loan word for *hui* 悔, 'to give.' His interpretation of Example 50 does not make sense: although the star Antares may return to the sky, how can this star give something to people?

As analyzed before, *Huo* is a personal name in the OBI. Moreover, judging by other inscriptions, the word *lai* 来 in Inscription 50 means "to bring," as shown by the following inscription on *Heji* 9525.

[51] 贞：画来牛。 《合集》 9525

[X] divined: "Hua will bring oxen." *Heji* 9525

In Period I, *Hua* is a personal name. Example 51 divines if *Hua* would bring oxen to the Yin. This is an example where the word *lai* 来 means "to bring." If one interprets inscriptions based upon contemporary evidence, one would consider Inscription 50 to be a record of divining whether *Huo* will bring Mother to the Yin at that time.¹⁴ This inscription has nothing to do with the star Antares and the start of the Yin year.

¹⁴ This is a literal understanding of example 50. It may sound strange. But there is no other inscriptional evidence to clarify the real meaning of this inscription.

Feng Shi (1990: 39) cites three more inscriptions containing *Huo* as part of his discussion of the beginning of the Yin year. Again, translations below are based upon his understanding of these inscriptions:

[52] ……火。一月。 《合集》 19624

... the star Antares. [It was in] the first month. *Heji* 19624

In this inscription, there is only the word *huo* left in the charge. In such an incomplete context, it is difficult to determine the meaning of the word *huo*. Even if it does actually refer to the star Antares, this inscription provides little clue about the relationship between that star and the beginning of the Yin year. It is not good evidence for the commencement of the Yin year.

[53] 贞： 隹火。 五月。 《合集》 6822

[X] Divined: "It is the star Antares." [It was in] the fifth month. *Heji* 6822

Like Example 52, there is little information in the charge for determining the meaning of the word *huo*. Even if we assume *huo* refers to the star Antares, there is not much in the inscription to enable discussion of the start of the Yin year.

[54] 王于口御火。 一月。 《合集》 11550

The king will go to X and perform the exorcism to the star Antares. [It was in] the first month. *Heji* 11550

In this inscription, what Feng Shi transcribes as *huo* is transcribed as *Guang* 光, a personal name, by the authors of the *Jiaguwen heji shiwen*. An examination of the rubbing of *Heji* 11550 confirms the accuracy of the transcription in the *Jiaguwen heji shiwen*. This example has nothing to do with the star Antares.

The foregoing analysis of those inscriptions containing the character *huo* leads to the following conclusion: from the point of view of the synchronic evidential approach, *Huo* is a personal name or a place name in those Yin OBI. They are not inscriptional contexts in which *Huo* actually refers to the star Antares. As a personal name or a place name, *Huo* has nothing to do with the commencement of the Yin year. It is wrong for Wen Shaofeng and Yuan Tingdong (1983), Zheng Huisheng (1984), Feng Shi (1990) and Chang Yuzhi (1998) to construe those inscriptions about *Huo* as evidence having to do with the start of the Yin year, because, demonstrably, these inscriptions have nothing to do with this.

4.3.1.2 Inscriptions about Lunar Eclipses

In Period I, there are five lunar eclipse records, which are published as *Heji* 11482, 11483, 11484, 11485 and *Yingcang* 886. The first systematic research about these inscriptional lunar eclipse records is Dong Zuobin (1945). Dong Zuobin strives to determine absolute dates for these lunar eclipses. The main purpose of his research, however, is to use these absolute dates to establish a time frame for his reconstruction of the Yin calendar. After Dong Zuobin (1945), a number of studies on these lunar eclipse records have been conducted. The vast majority of these researches focus on the absolute dates of these five lunar eclipses.¹⁵ As far as the present writer can determine, only Feng Shi (1990) has used the absolute dates for these eclipses as a method of reconstructing the beginning of the Yin year.

It is the present writer's belief that it is an appropriate and practical approach to reconstruct the beginning of the Yin year based upon *ganzhi* 干支 dates, month notations and absolute dates of lunar eclipses. This approach is appropriate because such reconstruction is based upon purely objective data such as *ganzhi* dates and month notations that are recorded clearly in the OBI and absolute dates that are computed with knowledge of modern astronomy. As long as inscriptional information and modern astronomical calculations are accurate, the conclusions drawn from them will have high credibility. This approach is also practical because much progress has been made, both in the study of inscriptions describing lunar eclipses, and in modern calculations of early eclipses. More accurate inscriptional information and more precise calculations of early eclipses will surely yield even better results. More accurate reconstruction of the start of the Yin year certainly can be done.

Dong Zuobin (1945) and Feng Shi (1990) have developed what the present writer considers to be the appropriate approach; but their conclusions are not generally accepted by specialists in the field, because they have not interpreted the inscriptional information accurately. It is thus vital to make clear *ganzhi* dates and month notations for lunar eclipses before determining their absolute dates.

Among those five records of lunar eclipse in Period I, only two have controversial *ganzhi* dates and month notations. The first one is scribed on *Yingcang* 886 and 885, which

¹⁵ To name just a few, Homer H. Dubs (1951), Chen Mengjia (1956), Chou Fa-kao (1964-65), David N. Keightley (1978), Fan Yuzhou (1986), Feng Shi (1990), Liu Xueshun (1998) and Zhang Peiyu (1999).

bear the following inscriptions:

[55] 癸丑卜，贞：旬亡(=无)祸。七日己未斲庚申，月有食。

癸亥卜，贞：旬亡(=无)祸。王占曰：有祟。

癸酉卜，贞：旬亡(=无)祸。

癸未卜，争贞：旬亡(=无)祸。王占曰：有祟。三日乙酉夕斲丙戌，允有来，入齿。十三月。
《英藏》886

Crack-making on *guichou* (day 50), [X] divined: “[In the next] 10-day week, there will be no disasters.” On the seventh day *jiwei* (day 56), [when the night] cut¹⁶ the *gengshen* day (day 57), the moon was eclipsed.

Crack-making on *guihai* (day 60), [X] divined: “[In the next] 10-day week, there will be no disasters.” The king read the crack and declared: “There would be a curse.”

Crack-making on *guiyou* (day 10), [X] divined: “[In the next] 10-day week, there will be no disasters.”

Crack-making on *guiwei* (day 20), Zheng divined: “[In the next] 10-day week, there will be no disasters.” The king read the crack and declared, “There would be a curse.” On the third day *yiyou* (day 22), [when] the night cut the *bingxu* day (day 23), there indeed came [a curse. There was] incoming trouble¹⁷. [Day *bingxu* was in the] thirteenth month.

Yingcang 886

[56] 七日己未夕斲庚申，月有食。

癸亥。

癸未。十三月。

¹⁶ For the translation of the word *zhuo* as “cut,” readers are referred to Ken-ichi Takashima (1996a.2: 70). The time period referred to by date + *zhuo* + date should be sometime from the night of the first date to the day of the second date. For more information about the graph 斲, see Section 2.3.2.1 of this dissertation.

¹⁷ The string *yun you lai ru chi* 允有来入齿 was originally translated as ‘those teeth sent in [by some one] indeed arrived.’ In his comments about the translation of this inscription, David Pankenier writes: “The king has just predicted a curse (haunting?) and this is the verification. Someone sending in teeth in the middle of night makes no sense and hardly qualifies as a curse. I think the verification is confirming that the king’s teeth were afflicted with some ailment during the night.” His comments make sense in relating this verification with the prognostication. On the other hand, there is no basis to link the word *chi* 齿 to the ailment of the king’s teeth. In his forthcoming translation of the *Bingbian*, Ken-ichi Takashima points out that “‘trouble’ or ‘evil’ is a functional rendition which works in the bone context.” Based upon their comments, the translation of the string *yun you lai ru chi* has been changed to “there indeed came [a curse. there was] incoming trouble.”

癸巳卜，贞：旬亡(=无)祸。

癸卯卜，贞：旬亡(=无)祸。 《英藏》 885

On the seventh day *jiwei* (day 56), [when] the night cut the *gengshen* (day 57), the moon was eclipsed.

Guihai (day 60).

Guiwei (day 20). [Day *guiwei* was in] the thirteenth month.

Crack-making on *guisi* (day 30), [X] divined: “[In the next] 10-day week, there will be no disaster.”

Crack-making on *guimao* (day 40), [X] divined: “[In the next] 10-day week, there will be no disaster.”

Yingcang 885

Specialists agree that both Examples 55 and 56 are records of the same lunar eclipse. In both records there occurs the word *zhuo* 𠂔. Because of the differing interpretations of this word, there are various opinions as to on which *ganzhi* date the eclipse happened. It is Dong Zuobin's idea (1945.2.III: 27b-28a) that *zhuo* should be separated from the string *gengshen yue you shi* 庚申月有食, 'on *gengshen* the moon was eclipsed.' His opinion is that this eclipse took place on the night of *gengshen* (day 57). On the other hand, Homer H. Dubs (1951: 331) suggests that *jiwei* + 𠂔 + *gengshen* should be the time when the eclipse happened. If so, this eclipse occurred during the period from the night of *jiwei* to the day of *gengshen*. Nowadays, it is a standard understanding in the field of OBI that the string *ganzhi* + 𠂔 + *ganzhi* expresses a time period from some time in the first *ganzhi* date to some time in the second *ganzhi* date. This eclipse should thus occur within the period between sometime in the night of *jiwei* (day 56) and sometime during the early morning of *gengshen* (day 57). It is unfortunate that Feng Shi (1990: 20) still follows Dong Zuobin's opinion about the *ganzhi* date of this lunar eclipse record.

Not only the *ganzhi* date of this lunar eclipse, but the month notation as well, is clouded with controversy: Dong Zuobin (1945.2.III: 28b) assigns this eclipse to the twelfth month. On the other hand, Chen Mengjia (1956: 238-239) suggests that it occurred in the first month of the next year. In which month did this eclipse take place?

There are two factors that are of great help in deciding between these two opinions. First, it is common knowledge in the field of the OBI, as has been explained before in this

dissertation, that inscriptions on a scapula should be read from bottom to top. On a scapula, those inscriptions in a lower position are considered to be earlier than those in a higher position. On the rubbing of Example 55, the inscription of *guiwei* (day 20) with the notation of the thirteenth month is inscribed in the uppermost portion of that scapula, while the inscription of *guichou* (day 50) with the record of this lunar eclipse is below the inscription of that *guiwei*. Judging by their relative positions, the inscription of *guichou* cannot be later than the thirteenth month.

Second, *guichou* (day 50) is 30 days earlier than *guiwei* (day 20). It can be inferred that the month notation of *guichou* should be one month earlier than that of *guiwei*. Because the month notation of *guiwei* is the thirteenth month, the month notation of *guichou* should be $(13-1=)$ the twelfth month.

If one takes these two considerations into account, one will agree with Dong Zuobin's view about the month notation of this eclipse. Chen Mengjia is aware of Dong Zuobin's position. It is strange that Chen Mengjia, a highly respected scholar in the field of the OBI, puts forward an opinion that ignores the most frequently occurring pattern of the placement of inscriptions on a scapula.

Without providing any inscriptional evidence, Feng Shi (1990: 21) unaccountably chooses to follow Chen Mengjia's opinion that that eclipse happened in the first month. His reconstruction of those *gui*-days in Example 55 is as follows:

Gui[*mao*]
Guichou [the 12th month]
Guihai
 [*Guiyou*]
Guiwei the 13th month
 [*Guisi*]
 [*Guimao*]
 [*Guichou*] Lunar eclipse on *gengshen* [1st month]
 [*Guihai*]
Guiyou

Such an arrangement of *gui*-days is unlikely to be correct. There are four reasons for suspicion. First, as pointed out in the previous paragraph, the inscription of *guiwei* with the

notation the thirteenth month is located at the topmost portion of the scapula. There is no way to inscribe more inscriptions. According to the pattern of the placement of inscriptions on a scapula, the inscription of *guiwei* of the thirteenth month is the latest of those inscriptions. Feng Shi's reconstruction does not fit this pattern.

Second, there is an inscription whose divination date is *guichou*. Based on the pattern of *zhengfan xian jie* 正反相接, i.e., an inscription on the front of an oracle bone can continue on the back, it is strange for Feng Shi not to connect that verification of this lunar eclipse with the inscription of *guichou* on the front of the bone.

Third, Feng Shi puts the inscription of *guiyou* after that of *guiwei*. Because the inscription of *guiwei* is in a position above that of *guiyou*, his reading again violates the pattern of the placement of inscriptions on a scapula.

Fourth, Feng Shi's sequence of *gui*-days looks remarkably irregular. The first three *gui*-days are successive, one *gui*-day is omitted between the third *gui*-day and the fourth one, and four *gui*-days are omitted between the fourth and fifth. This seems rather arbitrary. On the other hand, in Dong Zuobin's reconstruction, *guichou* (day 50), *guihai* (day 60), *guiyou* (day 10) and *guiwei* (day 20) are successive. No omissions need be assumed in his reconstruction. Based upon the rule of Ockham's Razor (as stated before, the principle of economy or that assumptions should not be needlessly multiplied), Dong's reconstruction is much superior to that of Feng Shi.

Because of these four reasons, one is driven to conclude that Feng Shi's interpretation of Example 55 raises many problems.

The following is Feng Shi's arrangement of *gui*-days in Example 56.

Guihai

[*Guiyou*]

Guiwei 13th month

Guisi

Guimao

[*Guichou*] Eclipse on *gengshen* [1st month]

The fragment of Example 56 is much smaller than that of Example 55. There is no evidence showing the order of the lunar record and other inscriptions in this example. However, since these two examples are the records of the same lunar eclipse, and since the


analysis above demonstrates that his reconstruction of Example 55 is inaccurate, his arrangement in Example 56 must be incorrect as well.


Another lunar eclipse record that needs to be clarified is the one on *Heji* 11484. Below is the relevant inscription.

[57] [己]丑卜，宾贞：翌乙[未]黍登于祖乙。[王]占曰：有祟，不其雨。六日[甲]午夕月有食。乙未酉多示率条遣¹⁸。 《合集》11484

Crack-making on [ji]chou (day 26), Bin divined: "On the next yi[wei] (day 32), [the king will] perform the *you*-cutting sacrifice and offer broomcorn millet to Zuyi." [The king] read the crack and declared: "There will be a curse. It may not rain." On the night of the sixth day jiawu (day 31), the moon was eclipsed. On yiwei [the king] performed the *you*-cutting sacrifice to many ancestors... *Heji* 11484

In this inscription, there is no month notation. Without this information, it is impossible to reconstruct a calendar table for this lunar eclipse to show the beginning of the Yin year. In order to achieve this, Feng Shi (1990: 21-22) attempts to deduce the month notation of this eclipse.

This inscription divines if the king should offer broomcorn millet to ancestor Zuyi. The graph that is often transcribed as *deng*, 'to offer,' is inscribed as . However, Feng Shi (1990: 21) transcribes it as *zheng* 𣎵, a sacrifice performed to offer various things to ancestors in winter, according to some records in received Chinese texts. After citing *Heji* 4321 and 21221 as examples of *zheng* being done in the twelfth month and first month, Feng Shi deduces that there is a stronger possibility that *zheng* in Inscription 57 was done in the first month. This conclusion is highly dubious. There are two major reasons for that.

First, from the point of view of paleography, it is highly problematic for him to transcribe the graph as *zheng*. The character *zheng* 𣎵 has two components: *huo* 火, 'fire,' as its semantic element, and *cheng* 𠂔 as its phonetic element. In the graph , there is neither component *huo* nor component *cheng*. Without explaining how the graph can evolve to *zheng*, it is not acceptable for Feng Shi to transcribe it as *zheng*.

Second, his argument is illogical. Let's suppose that he is justified in transcribing the

¹⁸ The meaning of the last two words remains uncertain.

graph as *zheng*. He cites *Heji* 4321 and 21221 as examples of the alleged *zheng*-sacrifice being either in the twelfth month or the first month. But *Heji* 4321 has nothing to do with this sacrifice.¹⁹ He actually has only one example of *zheng*, which consists of the following two inscriptions.

[58] 辛丑卜，衍：稷辛亥。十二月。

辛丑卜：于一月辛酉稷酹登。十二月卜²⁰。 《合集》21221

Crack-making on *xinchou* (day 38), Yan [divined]: “On *xinhai* (day 48), [the king will offer] millet.” [This was divined in the] twelfth month.

On *xinchou*, [Yan] divined: “Upon *xinyou* (day 58) of the first month, [the king will] perform the *you*-cutting sacrifice and offer millet.” [This was] divined [in the] twelfth month.

Heji 21221


It is apparent that these two inscriptions divine that the king should offer millet on *xinhai* (day 48) of the twelfth month or on *xinyou* (day 58) of the first month. They are examples of *zheng* being offered in either the twelfth month or the first month. Since Feng Shi mistakes *Heji* 4321 for another example of conducting this sacrifice in the first month (see Note 19), it appears to him that there are two examples of this sacrifice being performed in the first month. On the other hand, there is one example of *zheng* in the twelfth month. Based upon this, Feng Shi suggests that the *zheng*-sacrifice in Inscription 57 is more likely in the first month than in the twelfth month.

Feng Shi's stance is based in quicksand. First, as the present writer has already pointed out in Note 19, *Heji* 4321 has nothing to do with the *deng*. He actually has only two examples of *deng*, one in the twelfth month and the other in the first month. Given this situation, the possibility of another *deng* in the twelfth month is the same as for one in the first month. This makes it impossible to deduce the month notation of *deng* in Example 57.

Second, there are two more inscriptions that contain month notations of *deng*:

[59] ……来乙未登。四月。 《合集》25981

“...on the coming *yiwei* (day 32), [the king will] make an offer.” [Day *xx* was in the]

¹⁹ The graph he transcribes as *zheng* is actually written as , which should be transcribed as *chu* 出, ‘come out.’ It is thus clear that *Heji* 4321 has nothing to do with the discussion about the alleged *zheng* sacrifice.

²⁰ In Feng Shi's transcription, the character *bu* 卜, ‘to divine,’ is omitted.

fourth month.

Heji 25981

[60] ……登，亡尤。五月。

《合集》25766

“...offer, there will be no mishaps.” [Day xx was in the] fifth month. *Heji* 25766

It is clear from Examples 59 and 60 that the *deng*-offering can be performed in the fourth and fifth months. Now, there are four month notations for the *deng*-offering: the first, fourth, fifth, and twelfth month; and each month notation has one example. The probability for the *deng*-offering in Inscription 57 to be in the first month is only one chance in four. With the odds stacked against him, Feng Shi has a high probability of being mistaken when he asserts that the month notation in this inscription is the first month.

The Period I inscriptions mentioning lunar eclipses can be used as evidence in the study of the start of the Yin year. But there are disputes over the *ganzhi* date and month notations of two of those five lunar eclipse records. The analysis in this section leads to the following conclusion: the date and month notation of the eclipse on *Yingcang* 885 and 886 are *jiwei* and the twelfth month, respectively; the month notation of the eclipse on *Heji* 11484 remains uncertain.

4.3.1.3 Inscriptions about Weather

Weather is the condition of the atmosphere at a certain place and time, with reference to the presence of rain, lightening, sunshine, wind, etc. Accordingly, there are different kinds of weather inscriptions. Below, this writer examines weather inscriptions that have been cited in previous studies about the beginning of the Yin year.

4.3.1.3.1 Inscriptions about Rain

Hu Houxuan (1945a) is the first scholar to make a thorough examination of the weather changes taking place around the Yin capital (known today as Anyang) during the Yin Dynasty. He reveals that divination about potential rain occurs in every month of the Yin year. Indeed, there are records of rainfall in the first, second, third, fifth, sixth, ninth, and eleventh month. There also are records showing that it rains most frequently in the first three months of the Yin year. From these records he draws the conclusion that it can rain in every

month, and that it rains frequently in the first, second, and third month of the Yin year.

Hu Houxuan's discoveries are accepted, directly or indirectly, by Chang Zhengguang (1981: 118), Wen Shaofeng and Yuan Tingdong (1983: 117) and Zheng Huisheng (1984: 15-16). Wang Hui (1994: 53-54) and Chang Yuzhi (1998: 385-392) do not mention Hu Houxuan's article. Chang Yuzhi's tabulations (1998: 386, 388) confirm Hu Houxuan's 1945 findings.

Based on his research, Hu Houxuan concludes that the weather in the Yin Dynasty was warmer than it is today. Although he does not use his findings to discuss the commencement of the Yin year, other scholars do make use of his discoveries as secondary evidence to advance their opinions on the subject.

Chang Zhengguang (1981: 118) proposes the month of June in the modern Gregorian calendar as the start of the Yin year. He believes that his proposal explains why it often rains heavily in the first, second, and third months of the Yin year. According to his theory, the first three Yin months correspond to the summer, during which season he thinks it rains often and heavily. This is why Chang Zhengguang cites Hu Houxuan's findings as evidence in support his opinion about the start of the Yin year.

Wen Shaofeng and Yuan Tingdong (1983: 117-119) suggest the month of May in the Gregorian calendar as the commencement of the Yin year. They are aware of Chang Zhengguang's explanation for the phenomenon of frequent heavy rain in the first three months of the Yin year, because they mention Chang Zhengguang's article on page 117. Even though the opinion of Wen Shaofeng and Yuan Tingdong is different from that of Chang Zhengguang, they do not think Hu Houxuan's discoveries in any way contradict their theory.

Zheng Huisheng's opinion (1984: 15-16) is that the Yin year starts with the month of July in the Gregorian calendar. He accepts Hu Houxuan's findings and believes that they support his view on the beginning of the Yin year. It is Zheng Huisheng's idea that the first three months of the Yin year correspond to a period from late summer to mid-autumn, which he regards as rainy season. Therefore, Zheng Huisheng cites Hu Houxuan's findings as evidence in support of his view about the start of the Yin year.

Wang Hui (1994) identifies the month of June in the Gregorian calendar as the beginning of the Yin year. According to his theory, the first three months of the Yin year

correspond to June, July, and August. It is his understanding that precipitation occurs mainly in those three months in modern North China (1994: 53-54). Wang Hui believes that his view agrees with inscriptional records about rainfall.

Chang Yuzhi (1998: 385-388) tabulates inscriptions related to rainfall. Her results are almost the same as Hu Houxuan's 1945 findings. Her statistics show again that the first several months of the Yin year are a season of frequent heavy rainfall (殷历岁初的几个月处在多雨、多大雨的季节). In Chang Yuzhi's opinion, such a phenomenon could not occur in winter or spring in the region of Anyang. She comes to this conclusion because she accepts as true the proposition that the average temperature in that region during the Yin Dynasty was about 2 degrees Centigrade higher than it is in the same region at the present time, and that it seldom rained in winter. Therefore, she concludes that the first several Yin months correspond to the summer. Further, like Wang Hui (1994), she proposes the month of July of the modern Gregorian calendar as the start of the Yin year.

The aforesaid specialists all agree that it rained frequently and heavily in the first several months of the Yin year. Also, they assume that it could not have rained frequently and heavily in the Anyang region in winter or early spring during the Yin Dynasty. Moreover, they all reach the conclusion that the first several months of the Yin year correspond to summer or part of the summer and part of the autumn. Thus, they believe that Hu Houxuan's finding, that it often rained heavily in the first three months of the Yin year, supports their opinion that the Yin year starts in the summer, even though they cannot agree on which month of the summer is the beginning of the Yin year.

Their assumption that it could not rain frequently and heavily in Anyang in the winter or early spring is unsupported by the evidence. Even if one accepts their opinion that the Yin year starts during the summer, then one still has to acknowledge that it rained frequently around Anyang in the winter or spring during the Yin Dynasty. This is clearly shown the following inscriptions.

[61] 辛未卜，争贞：生八月帝令多雨。

贞：生八月帝不其令多雨。丁酉雨，至于甲寅，旬有八日。九月。

《合集》10976

Crack-making on *xinwei* (day 8), Zheng divined: "In the next eighth month, the Lord-on-

High²¹ will order much rain.”

[Zheng] Divined: “In the next eighth month, the Lord-on-High may not happen to [be able to] order much rain.” On *dingyou* (day 34), it rained. Till *jiayin* (day 51), [it rained] for 18 days. [Day *jiayin* was] in the ninth month. *Heji* 10976

It is clearly recorded in this inscription that it could rain continuously for 18 days in the eighth and ninth months of the Yin year. Further, this inscription states that Zheng divined whether the Lord-on-High would order much rain in the eighth month. The presence of this particular divination indicates that it must have frequently rained in that month. According to those theories that the Yin year starts in summer, the eighth and ninth month would be some time in winter or early spring, as is shown by the following table.

Table 10:
Winter of the Yin Year

Start of Yin year	Yin months	Modern months	Season
Chang Zhengguang (1981)	8 th and 9 th	Dec. and Jan.	Winter
Wen Shaofeng and Yuan Tingdong (1983)	8 th and 9 th	Nov. and Dec.	Winter
Zheng Huisheng (1984)	8 th and 9 th	Feb. and Mar.	Spring
Wang Hui (1994), Chang Yuzhi (1998)	8 th and 9 th	Jan. and Feb.	Late winter and early spring

It appears that, if one accepts these specialists’ opinions that the Yin year starts in summer, Example 61 would be evidence showing that it rained heavily in the winter of the Yin year, which contradicts those specialists’ assumption that heavy rain could not happen in the winter. If one does not accept their opinions, according to Hu Houxuan’s (1945a) findings, it still rained often and heavily in the winter or spring at Anyang in the Yin Dynasty. In any event, their assumption runs against inscriptional records and is thus incorrect. That it

²¹ In his comments about this inscription, David Pankenier suggests that Di should be translated as “Lord-on-High.”

rained often and heavily in the first three months of the Yin year is not evidence for the view that the Yin year starts in summer.

Hu Houxuan (1945a) is cited in a number of publications. He has discovered weather patterns prevalent at the time of the Yin Dynasty. One of his findings is that it rains often and heavily in the first three months of the Yin year. One cannot assume that it did not rain often and heavily in winter or spring during the Yin Dynasty; and it is not relevant to cite Hu Houxuan's finding to support the view that the Yin year started in summer. Hu Houxuan's of discussion of rain patterns in the OBI is not good evidence supporting opinions concerning the beginning of the Yin year.

4.3.1.3.2 Inscriptions about Rainbows

Chang Zhengguang (1981), Zheng Huisheng (1984), Wang Hui (1994) and Chang Yuzhi (1998) have all cited early Chinese texts to show that rainbows should not appear between early winter and late spring. Below is one of those textual records, cited by Chang Yuzhi (1998: 396).

季春之月……虹始见.

孟冬之月……虹藏不见. 《礼记·月令》

In the month of late spring ... rainbows begin to appear.

In the month of early winter ... rainbows go into hiding and cannot be seen.

Chapter "Yueling," *Liji*

From these records, those researchers assume that the "appearing" and "hiding" of rainbows are true for the Yin weather as well. Then they make use of inscriptions about rainbows to advance their views about the beginning of the Yin year. The following is an inscription that contains both reference to rainbows and reference to a month notation.

[62] ……有出虹自北[饮]于河。十二月。 《合集》13442

... There appeared a rainbow in the north that [drank water] from the Yellow river. [Day xx was in] the twelfth month. *Heji* 13442

This inscription records that a rainbow appears in the twelfth month of the Yin year. Because those researchers assume that rainbows cannot appear between early winter and late spring, they have to put the twelfth month of the Yin year in summer or autumn. For example,

Zheng Huisheng (1984: 104) identifies the twelfth month of the Yin calendar with the second month of the summer; Wang Hui (1994: 55) and Chang Yuzhi (1998: 396) equate that month with the first month of the summer. They all consider Inscription 62 as evidence for their opinion that the Yin year starts with a month of the summer.


Attempting to support their theories about the beginning of the Yin year by referring to inscriptions about rainbows does not work. These specialists simply have not investigated all inscriptional evidence to get the picture of the Yin weather. Based upon some records about weather in early Chinese texts, records that are about a thousand years later than the Yin Dynasty, these researchers have made an assumption. Because these records in early Chinese texts are not contemporary with the Yin, their assumption is not necessarily true about the Yin weather. Essentially, these researchers have violated the principle of the synchronic evidential approach.


Hu Houxuan (1945a) has found that it rained in every month of the Yin year. In addition, it is common knowledge that rainbows are caused by reflection and refraction of rays of the sun shining on raindrops in the air. Theoretically speaking, rainbows surely can appear not only in summer and autumn, but also in spring and winter, as long as there are rays of the sun and raindrops in the air. The weather in Vancouver may shed some light on this.

From late November to early May is the rainy season in Vancouver. It often rains during that period, and rainbows sometimes appear. For example, on the afternoon of March 8, 1999, two rainbows appeared in the sky. The month of March in the Gregorian calendar is the month of spring. What this implies is that rainbows may appear in winter or spring as long as it rains during that period. Since it rained in every month of the year in Anyang, which is supported by inscriptional evidence, rainbows certainly could have appeared in every month of the Yin year. Because rainbows may appear in each and every month of the Yin year, their appearance cannot be used to deduce the start of the Yin year, nor can their appearance be offered as evidence to support any theory aimed at establishing the start of the Yin year. It is incorrect for those specialists to assume that rainbows do not appear in the period from early winter to late spring in Anyang during the Yin Dynasty.

4.3.1.3.3 Inscriptions about Thunder

Chang Zhengguang (1981: 118), Zheng Huisheng (1984: 13), Wang Hui (1994: 55) and

Chang Yuzhi (1998: 393-395) all identify the bone graph  as *lei* 雷, 'thunder.' Thunder is a very impressive weather phenomenon. The following inscriptions show it occurs during the period from the tenth to third months:

[63] 癸巳卜，贞：雨。雷。十月。 《合集》13406

Crack-making on *guisi* (day 30), Dun divined: "[It will] rain." There was thunder. [Day *guisi* was in] the tenth month. *Heji* 13406

[64] 贞：帝其及今十三月令雷。

帝其于生一月令雷。 《合集》14127

[X] Divined: "The Lord-on-High may happen to [be able to] order thunder in this thirteenth month."

"Upon the coming of the first month, the Lord-on-High may happen to [be able to] order thunder."

Heji 14127

[65] 壬申卜，贞：帝令雨。

贞：及今二月雷。 《合集》14129

Crack-making on *renshen* (day 9), Dun divined: "The Lord-on-High will order rain."

[Dun] divined: "In this second month, [The Lord-on-High will order] thunder."

Heji 14129

[66] ……大采各云自北，西单雷……。三月。 《合集》11501

... at the time of *dacai*, clouds came from the north. At the place of Xidan, there was thunder... [Day *xx* was in] the third month. *Heji* 11501

This period of thunder is very clearly defined in the OBI. There are some references to the period of thunder in early Chinese texts as well. For instance, according to the following textual record, thunder occurs in the period from the second month of spring to the second month of autumn.

仲春之月……雷乃发声。

仲秋之月……雷始收声。 《礼记·月令》

In the month of mid-spring... then thunder [begins] crashing.

In the month of mid-autumn... then thunder stops crashing. Chapter "Yueling", *Liji*


Chang Zhengguang (1981: 118), Zheng Huisheng (1984: 13), Wang Hui (1994: 55) and Chang Yuzhi (1998: 393-395) all assume that the period of thunder mentioned in the OBI is the same period in early Chinese texts. If so, then the first month would correspond to a month of the summer. Such a simple comparison leads these researchers to cite inscriptions to do with thunder as evidence in support of their opinion that the Yin year started in summer.

As mentioned in the previous two sections, the Yin weather recorded in the OBI is very different from that described in transmitted early Chinese texts. It is likely that the period of thunder in the OBI is not the same period as that in received Chinese texts. There is a risk for those specialists to assume that they are the same. They cannot consider inscriptions to do with thunder as evidence for their view that the Yin year started in summer.

4.3.1.4 Inscriptions about Agriculture

Agricultural work is very sensitive to seasons. If it is not done in proper seasons, harvest would be affected in a disastrous way. When possible, it is worth deducing the start of the Yin year from inscriptions to do with agricultural activities. In previous publications about the beginning of the Yin year, inscriptions about two kinds of agricultural activities have been often cited. These two activities are planting broomcorn millet and eating wheat.

4.3.1.4.1 Inscriptions about Alleged Broomcorn Millet-Planting

It is a standard practice to transcribe the bone graph  as *shu* 黍, 'broomcorn millet.' In the Yin OBI, the word *shu* has two usages, as a noun meaning "broomcorn millet," and as a verb. When it is a verb, *shu* is often interpreted as "planting broomcorn millet." The question is, does this really fit relevant contexts? The answer to this question is found in the following inscriptions.

[67] 庚申卜：黍，受年。

庚申卜：勿黍。

庚申卜：我弗其受黍年。十二月。 《合集》10020

On *gengshen* (day 57), [X] divined: "[We will] *shu* [because we will] reap a harvest."

On *gengshen*, [X] divined: “[We] should not *shu*.”

On *gengshen*, [X] divined: “We perhaps will not reap a harvest of the crop *shu*.” [Day *gengshen* was in] the twelfth month. *Heji* 10020

[68] 贞：隹小臣令众黍。一月。 《合集》12

[X] divined: “It should be the Young Servitors who will order the royal labour²² to *shu*.”

[Day xx was in] the first month. *Heji* 12

[69] 乙未卜，贞：黍在龙圉²³，受有年。二月。 《合集》9552


Crack-making on *yiwei* (day 32), [X] divined: “[We will] *shu* at Lai, Long’s farm, [because we will] reap a harvest.” [Day *yiwei* was in] the second month.

Heji 9552

Chen Mengjia (1956: 534), Zheng Huisheng (1984: 18), Wang Hui (1994: 50), Chang Yuzhi (1998: 405-408) and David N. Keightley (2000: 11) all agree that the word *shu* in Examples 67 to 69 is used as a verb meaning “to plant broomcorn millet.” However, there are problems with their interpretation. First, the verb *shu* appears by itself. There is no inscriptional evidence to limit its meaning to “planting broomcorn millet.” The possibility that *shu* may refer to activities such as weeding, irrigating, hoeing, applying fertilizer, etc. cannot be excluded. Apart from those researchers’ own assertions, there is no good inscriptional evidence to show that the verb *shu* must mean “planting broomcorn millet.”

Second, the time for planting broomcorn millet was brief. For instance, it is recorded in the *Xia xiao zheng* 夏小正 that broomcorn millet was planted around the time of the summer solstice. Although the specific time for planting broomcorn millet in the Yin Dynasty may be different from the time recorded in the *Xia xiao zheng*, the time period for planting broomcorn millet in the Yin Dynasty would have been brief as well. As a matter of fact, it is common knowledge to people living in the countryside that they have to finish planting broomcorn millet quickly when it is the time to do so. On the other hand, inscriptions in Examples 67-69 show that the activity of *shu* is done in a period of three months, i.e., from

²² There are lots of discussions about the status of the *zhong* 众. For the most comprehensive study in English, readers are referred to David N. Keightley (1969: 66-74).

²³ The bone graph  has been identified with the word *you* 圉, ‘vegetable farm,’ by Chinese scholars. For detailed philological studies on this graph, readers are referred to Yu Xingwu (1996: 2121-2122). It is clear from this inscription that the Yin conducted agricultural activities in *you*. So the present writer translates the word *you* as “farm.”

the twelfth to the second month. It seems that the verb *shu* does not really mean “planting broomcorn millet,” an activity that lasts only several days.

Given these two reasons, it is not certain whether the verb *shu* only refers to “planting broomcorn millet.” If the meaning of *shu* is unclear, there is no basis to deduce the commencement of the Yin year from inscriptions containing the verb *shu*.

Chen Mengjia (1956: 534), Zheng Huisheng (1984: 18), Wang Hui (1994: 50) and Chang Yuzhi (1998: 403-405) also interpret the phrase *lishu* 莅²⁴黍, ‘to preside over *shu*,’ as “planting broomcorn millet.” *Heji* 9525 is one example in which this phrase occurs.

[70] 庚戌卜，般贞：王莅黍，受年。

贞：王勿莅黍，弗其受年。 《合集》9525

Crack-making on *gengxu* (day 47), Nan divined: “The king should preside over the activity *shu*, [because he will] reap a harvest.”


[Nan] divined: “The king should not preside over the activity *shu*, [because he] might not reap a harvest.”

Heji 9525

In this example, the phrase *lishu* means “to preside over the activity *shu*.” Again, those specialists do not produce any inscriptional evidence to show that the agricultural activity called *shu* meant “planting broomcorn millet.” The analysis of the verb *shu* is equally applicable to the activity *shu*. It is thus problematic to interpret *shu* as “planting broomcorn millet.” If so, it is questionable to draw a conclusion about the start of the Yin year from inscriptions about *lishu*.

Because none of those inscriptions on alleged broomcorn millet-planting can be proven to be true records of such agricultural activity, and because their meaning remains unclear, it is not possible to draw any credible conclusion from them about the beginning of the Yin year. Inscriptions about alleged broomcorn millet-planting activity are, unfortunately, not reliable evidence pointing to a definitive start of the Yin year.



²⁴ The bone graph  is often transcribed as *li* 立, ‘to stand.’ Since there was no such thing as trying to make broomcorn millet “stand” in the agricultural practice of farmers at the time of the Yin dynasty, the literal rendering of the phrase as “stand broomcorn millet” makes no sense in the real world. Therefore, the word represented by this graph in this context is not *li* 立, rather, it should be *li* 莅, ‘to preside.’

4.3.1.4.2 Inscription about *Shimai*

There is a unique inscription on *Heji* 24440, which reads as follows:

[71] 月一正曰食麦。甲子、乙丑、丙寅、丁卯、戊辰、己巳、庚午、辛未、壬申、癸酉、甲戌、乙亥、丙子、丁丑、戊寅、己卯、庚辰、辛巳、壬午、癸、甲申、乙酉、丙戌、丁亥、戊子、己丑、庚寅、辛卯、壬辰、癸巳。二月父禾玄。甲午、乙未、丙申、丁酉、戊戌、己亥、庚子、辛丑、壬寅、癸卯、甲辰、乙巳、丙午、丁未、戊申、己酉、庚戌、辛亥、壬子、癸丑、甲寅、乙卯、丙辰、丁巳、戊午、己未、庚申、辛酉、壬戌、癸 《合集》24440

Month/ one/ right/ call/ eat/ wheat/. *Jiazi, yichou, bingyin, dingmao, wuchen, jisi, gengwu, xinwei, renshen, guiyou, jiaxu, yihai, bingzi, dingchou, wuyin, jimao, gengchen, xinsi, renwu, gui, jiashen, yiyong, bingxu, dinghai, wuzi, jichou, gengyin, xinmao, renchen, guisi*. The second month [called] father *xuan*. *Jiawu, yiwei, bingshen, dingyou, wuxu, jihai, gengzi, xinchou, renyin, guimao, jiachen, yisi, bingwu, dingwei, wushen, jiyong, gengxu, xinhai, renzi, guichou, jiyin, yimao, bingchen, dingsi, wuwu, jiwei, gengshen, xinyou, renxu, gui*.
Heji 24440

It is not easy to explain the grammar of the string *yue yi zheng yue shi mai* 月一正曰食麦, ‘month/ one/ right/ call/ eat/ wheat.’ However, it seems that this grammatical problem has been ignored by every specialist in the field of the Yin calendar. In all publications in which this string is cited, it is repeatedly interpreted as meaning “the first month is also called *zheng yue*, ‘right month,’ and *shi mai* 食麦, ‘eating wheat,’ is an event in the first month of the Yin year when new wheat is available for eating.” The following are three examples of these grammatical oversights.

月一正就是正月。这句话告诉我们，商代的正月，就在吃到麦子之后……那就是新麦收获之后。

The expression *yue yi zheng* is exactly the same as *zheng yue*, ‘right month.’ This sentence tells us that the first month of the Shang Dynasty is some time after wheat is available to eat, i.e., the time after new wheat is harvested (Zheng Huisheng 1984: 15).

“月一正”即正月，“食麦”谓食新麦。

The expression *yue yi zheng* is the same as *zheng yue*; the expression *shi mai* means ‘eating new wheat.’ (Wang Hui 1994: 49)

“月一正曰食麦”是说一月麦子已熟，是吃到新麦之月。

The string *yue yi zheng yue shi mai* means that ‘the first month’ is the month when wheat is ripe and new wheat is available for eating. (Chang Yuzhi 1998: 406)

It is apparent that none of these researchers offers any analysis of the grammar of the string *yue yi zheng yue shi mai*. Without such analysis, their interpretations are subjective, which certainly undermines the credibility of their arguments.

What is more relevant to the issue of the start of the Yin year is their interpretation of the phrase *shimai* 食麦. As cited above, this phrase has been interpreted as meaning *shi xin mai* 食新麦, ‘eating new wheat.’ However, the fact is that in the inscription, the word *xin* 新, ‘new,’ is nowhere to be found. Further, there is no evidence to indicate that the word *xin* should be supplied. In addition, the phrase *shimai* occurs in transmitted early Chinese texts, as pointed out by Guo Moruo (1933)²⁵. It is recorded in the *Liji* 礼记, a text edited in the Han Dynasty, that *shimai* is an event of the spring season. The *Liji* also records that wheat is ripe in the month of early summer, which is later than the spring. It is clear that *shimai* cannot be an event of eating new wheat at the time when wheat is ripe in the Han Dynasty. This also suggests that it is inappropriate to interpret the phrase *shimai* as *shi xin mai*, ‘eating new wheat.’ If so, the first month of the Yin year cannot be related to the time of harvesting wheat. It becomes impossible to deduce the beginning of the Yin year from *shimai* in this inscription.

The forgoing analysis shows that there is no inscriptional evidence that would lead to understanding of the phrase *shimai* as *shi xin mai*. Records in the *Liji* indicate that *shimai* is not an event of eating new wheat when it is just harvested. Thus, it appears inappropriate for specialists to interpret *shimai* as an event taking place at the time when wheat is harvested. If the present writer’s line of reasoning is correct, there is no basis to connect the first Yin month with the harvest of wheat; and it is impossible to deduce the commencement of the

²⁵ Guo Moruo’s *Buci tongzuan* 卜辞通纂 was first published by Bunkyo-do in 1933. It was republished in 1982, which is the edition used by the present researcher. For his comments on the event of eating wheat, see Guo Moruo (1982: 217).

Yin year from inscription about the *shimai*. It follows that *Heji* 24440 is not evidence for the start of the Yin year.

4.3.2 Reconstruction of the Start of the Yin Year

In Section 4.3.1.2, it was explained that an appropriate and practical approach is to base reconstructing the start of the Yin year upon absolute dates for lunar eclipses recorded in Period I. Such a reconstruction requires two kinds of activities: determining absolute dates for those lunar eclipses and reconstructing calendar tables.

4.3.2.1 Absolute Dates for Lunar Eclipses in the OBI

It has been pointed out in Section 4.3.1.2 that Feng Shi (1990) adopts this approach in order to address the issue of the beginning of the Yin year. But his conclusion is not accepted by specialists in the field of the Yin calendar. The major reason for this unfortunate lack of acceptance is that Feng Shi has not been able to gather accurate dates and month notations for the lunar eclipses. When these data are inaccurate, it is impossible for anybody to produce absolutely precise dates for the lunar eclipses. In order to avoid another inconclusive study like Feng Shi (1990), it is vital to make the data accurate before determining absolute dates for the eclipses.

4.3.2.1.1 Dates and Month Notations of Five Lunar Eclipses

Eclipse I:

[72]癸丑贞：旬亡(=无)祸。

癸亥贞：旬亡(=无)祸。旬壬申夕月有食。

癸酉贞：旬亡(=无)祸。

癸卯贞：旬亡(=无)祸。

《合集》11482 正、反

On *guichou* (day 50), [X] divined: “[In the next] 10-day week, there will be no disasters.”

On *guihai* (day 60), [X] divined: “[In the next] 10-day week, there will be no disasters.”

On the night of the tenth day *renshen* (day 9), the moon was eclipsed.

On *guiyou* (day 10), [X] divined: “[In the next] 10-day week, there will be no disasters.”

On *guimao* (day 40), [X] divined: “[In the next] 10-day week, there will be no disasters.”

Heji 11482 f & b

It is clear that the *ganzhi* date of this lunar eclipse is *renshen* (day 9). Its month notation is unknown.

Eclipse II:

[73] 癸²⁶未卜，争贞：翌甲申易日。之夕月有食。甲雾，不雨。 《合集》 11483

Crack-making on *guiwei* (day 20), Zheng divined: “On the next day *jiashen* (day 21), it will become sunny.” On that night [of the divination day *guiwei*], the moon was eclipsed.

On *jia[shen]*, it was foggy; but it did not rain.

Heji 11483

The *ganzhi* 干支 date for this lunar eclipse is the *guiwei* (day 20). Its month notation is unknown.

Eclipse III:

[57] [己]丑卜，宾贞：翌乙[未]黍登于祖乙。[王]占曰：有祟，不其雨。六日[甲]午夕月有食。乙未酉多示率条遣。 《合集》 11484

Crack-making on [*ji*]*chou* (day 26), Bin divined: “On the next *yi[wei]* (day 32), [the king will] perform the *you*-cutting sacrifice and offer broomcorn millet to Zuyi.” [The king] read the crack and declared: “There will be a curse. It may not rain.” On the night of the sixth day *jiawu* (day 31), the moon was eclipsed. On *yiwei* [the king] performed the *you*-cutting sacrifice to many ancestors.... *Heji* 11484

This record has been discussed in Section 4.3.1.2. The date for this lunar eclipse is *jiawu*, and its month notation remains uncertain.

Eclipse IV:

[78] 癸亥卜，争贞：旬亡(=无)祸。一月。

癸未卜，争贞：旬亡(=无)祸。二月。

[癸]卯[卜，争]贞：[旬]亡[祸]。五月。

癸未卜，争贞：旬亡(=无)祸。三日乙酉夕月有食，昏。八月

²⁶ The graph prior in sequence to graph *wei* 未 is missing. However, because the word *yi* 翌 often refers to ‘the next day’ in the OBI, and *shen* 申 is the earth-branch that comes immediately after *wei* 未, it is generally agreed by specialists that the missing graph is *gui* 癸. For more details, readers are referred to Zhang Bingquan (1956).

癸卯卜：旬亡(=无)祸。二月。

[癸]卯卜：旬[亡]祸。

《合集》11485

Crack-making on *guihai* (day 60), Zheng divined: “[In the next] 10-day week, there will be no disasters.” [Day *guihai* was in] the first month.

Crack-making on *guiwei* (day 20), Zheng divined: “[In the next] 10-day week, there will be no disasters.” [Day *guiwei* was in] the second month.

[Crack-making on *gui*] *mao* (day 40), [Zheng] divined: “[In the next 10-day week], there will be no [disasters.]” [Day *guimao* was in] the fifth month.

Crack-making on *guiwei* (day 20), Zheng divined: “[In the next] 10-day week, there will be no disasters.” On the night of the third day *yiyong* (day 22), the moon was eclipsed and it became dark. [Day *yiyong* was in] the eighth month.

On *guimao* (day 40), divined: “[In the next] 10-day week, there will be no disasters.” [Day *guimao* was in] the second month.

On [gui] *mao* (day 40), divined: “[In the next] 10-day week, there will be [no] disasters.”

Heji 11485

It is clearly recorded that the date of this eclipse is *yiyong* and its month notation is the eighth month.

Eclipse V:

[55] 癸丑卜，贞：旬亡(=无)祸。七日己未斲庚申，月有食。 《英藏》886

Crack-making on *guichou* (day 50), [X] divined: “[In the next] 10-day week, there will be no disasters.” On the seventh day *jiwei* (day 56), [when the night] cut the *gengshen* day (day 57), the moon was eclipsed. *Yingcang* 886

[56] 七日己未夕斲庚申，月有食。 《英藏》885

On the seventh day *jiwei* (day 56), [when] the night cut the *gengshen* day (day 57), the moon was eclipsed. *Yingcang* 885

As analyzed in Section 4.3.1.2, these two inscriptions are records of the same lunar eclipse. It happened during the time period from the night of *jiwei* to sometime in *gengshen*. Its month notation is the twelfth month.

4.3.2.1.2 Absolute Dates for Five Lunar Eclipses

In Section 2.3.2, there was established a time range for absolute dates for lunar eclipses recorded in Period-I inscriptions. In that section, this writer also determined absolute dates for four of the five lunar eclipses. The results are shown here below. The times indicated in the row headed "Liu" are copied from Liu Baolin (1978). Times in the row headed "Skymap" are calculated by the Skymap software and given in local time for the region.

Absolute dates for the lunar eclipse on *renshen*: there were two possible dates for the lunar eclipse, the first having been on October 25, 1189 BC. Times for the various phases of this eclipse are shown below:

	BT	GT	ET	GM ²⁷
Liu	19:27	20:40	21:53	0.507
Skymap	19:19:44	20:33:32	21:47:14	0.519

According to Skymap, on October 25, 1189 BC, the moon rose at 17:40. Thus, this partial lunar eclipse was entirely visible from Anyang.

The other possible date for eclipse on *renshen* was January 28, 1183 BC. The following are the times of the various phases:

	BT	GT	ET	GM
Liu	04:04	05:13	06:23	0.413
Skymap	03:55:35	05:04:41	06:13:56	0.407

According to Skymap, this partial eclipse was entirely visible from Anyang.

Absolute dates for the lunar eclipse on *guiwei*: there were four possible dates, the first having been August 23-24, 1232 BC. The development of the eclipse on that date is as follows:

	BT	GT	ET	GM
Liu	22:53	00:14	01:35	0.612
Skymap	22:43:54	00:05:09	01:28:10	0.632

The second date is July 11-12, 1201 BC. Times of the phases are:

	BT	GT	ET	GM
Liu	22:24	23:39	00:54	0.508
Skymap	22:19:12	23:33:37	00:47:54	0.490

²⁷ BT is the time when the umbral phase of the eclipse began; GT means when the magnitude of the eclipse was greatest; ET is the time when the umbral phase ended; and GM means the time of the greatest magnitude of the eclipse at GT.

The third date is February 18-19, 1185 BC. Times of the phases are:

	BT	GT	ET	GM
Liu	22:31	23:53	01:15	0.692
Skymap	22:22:39	23:45:12	01:07:42	0.701

According to Skymap, these three partial eclipses above were entirely visible from the Yin capital Anyang.

The fourth date is May 22, 1180 BC and its phases occurred thus:

	BT	GT	ET	GM
Liu	17:22	19:08	20:54	1.172
Skymap	17:16:28	19:01:59	20:47:33	1.165

According to Skymap, the moon rose at 19:09 on 22 May 1180 BC. This total eclipse was visible from Anyang for only 98 minutes, i.e., from 19:09 to 20:47. It was only partially visible from Anyang.

Absolute dates for the lunar eclipse on *yiyou*: there are two possible dates, the first being May 31, 1227 BC. The specific times for this eclipse are as follows:

	BT	GT	ET	GM
Liu	22:29	00:10	01:52	1.339
Skymap	22:20:52	01:02:12	01:43:31	1.324

This was a total eclipse and it was entirely visible from Anyang.

The second possible date is November 25, 1181 BC. The specific times for this eclipse are:

	BT	GT	ET	GM
Liu	18:02	19:54	21:45	1.728
Skymap	17:53:50	19:45:54	21:37:56	1.727

According to Skymap, this total eclipse was only partially visible from Anyang.

Absolute dates for the lunar eclipse on *jiawu*: there are two possible dates for this lunar eclipse, the first one being December 16-17, 1229 BC. The specific times for this eclipse are as follows:

	BT	GT	ET	GM
Liu	00:00	01:30	03:00	0.755
Skymap	23:47:51	01:18:17	02:48:49	0.773

The second date is November 4, 1198 BC. Specific times for this eclipse are as shown below:

	BT	GT	ET	GM
Liu	20:31	21:56	23:21	0.724
Skymap	20:24:22	21:48:57	23:13:26	0.709

According to Skymap, these two partial eclipses were entirely visible from Anyang.

Absolute date for the lunar eclipse on *jiwei*: there is only one possible date for this eclipse, August 14, 1166 BC. The following are specific times for this eclipse:

	BT	GT	ET	GM
Liu	03:18	05:11	07:05	1.62
Skymap	03:14:02	05:07:42	07:01:21	1.628

This total eclipse was only partially visible from Anyang. According to Skymap, the moon set at 05:31. So the eclipse was visible from 3:14 to 5:31, about 2 hours 15 minutes, including its maximum phase.

The possible absolute dates for the five lunar eclipses can be narrowed down more accurately. As explained in Liu Xueshun (1998: 23), there are two considerations that guide one in making a selection among possible dates above. The first consideration is that all dates should fall within a range of 66 years. The other factor to consider is that the correspondence between the month notation of a lunar eclipse in the Yin calendar and the month in the Gregorian calendar should be stable. By way of explanation, there should be an exact correlation between a given month in the Yin calendar and a given month in the Gregorian calendar, except when intercalation adds one month to the length of the Yin calendar. Apart from intercalation, the correlation between Yin months and Gregorian months should remain precise and stable. Taking into account these two considerations, i.e., the range of 66 years and the stable correspondence between months of both calendars except during intercalation, absolute dates for the eclipses can be determined as follows:

Eclipse on *jiwei*: because there is only one possible date, the actual date is necessarily August 14, 1166 BC.

Eclipse on *yiyou*: between the two possible dates, May 31, 1227 BC and November 25, 1227 BC, the first appears to be the actual one because the correspondence between the month notation in the Yin calendar and that of the month in the

Gregorian calendar is compatible with that of the eclipse on *jiwei*. From the absolute date for the eclipse on *jiwei*, it can be inferred that the Yin month (i.e., 12th month) is about four months later than the corresponding month in the Gregorian calendar (i.e., August). If the first is selected, the Yin month is about three months later than the corresponding month in the Gregorian calendar; or, if the second is selected, the Yin month would be three months *before* the corresponding month in the Gregorian calendar. Therefore, May 31, 1227 BC is necessarily the date for the eclipse.

Eclipse on *jiawu*: there are two possible dates, December 17, 1229 BC and November 4, 1198 BC. There is no evidence that indicates one is more likely to be correct than the other. No selection can be made.

Eclipse on *renshen*: no selection can be made between those two possible dates, December 25, 1189 BC and January 28, 1183 BC.

Eclipse on *guiwei*: no selection can be made among those four possible dates, August 23-24, 1232 BC, July 11-12, 1201 BC, February 18-19, 1185 BC and May 22, 1180 BC.

These absolute dates for the five lunar eclipses are different from those reported in the Xia-Shang-Zhou Duandai Gongcheng. The reason behind why the present writer maintains his view has been explained briefly in Section 1.3 of this dissertation. The merit of the present writer's view is to be acknowledged by Zhang Peiyu, a renowned specialist on the team of that project, in a forthcoming paper. Also, the dates determined here differ slightly from those in Liu Xueshun (1998). The reason is that more accurate calculations have been obtained from Skymap than were available to this writer in 1998. As an example, in 1998, based on available information, January 23, 1183 BC seemed to be an impossible date for an eclipse. Now, Skymap enables calculations that show that this date is possible. The dates presented in this dissertation should, for accuracy, replace those in Liu Xueshun (1998).

4.3.2.2 Reconstruction of Calendars for Two Lunar Eclipses

Among the five lunar eclipses listed above, only two have both *ganzhi* dates and month notations. These two are the eclipses on *yiyou* and *jiwei*. The former is in the eighth and the

latter in the twelfth month. In addition, among these five lunar eclipses, only those absolute dates for these two eclipses are certain, as shown in Section 4.3.2.1.2. The eclipse on *jiwei* has an absolute date of August 14, 1166 BC. For the eclipse on *yiyou*, it is May 31, 1127 BC. These data are a basis for reconstructing calendars for these two lunar eclipses.

4.3.2.2.1 Reconstruction of Calendars for the Eclipse on *Yiyou*

On *Heji* 11485, which bears the record of the lunar eclipse on *yiyou*, there are the following dates and month notations:

<i>Guihai</i> (day 60)	1 st month
<i>Guiwei</i> (day 20)	2 nd month
<i>Guimao</i> (day 40)	2 nd month
<i>Guimao</i> (day 40)	5 th month
<i>Guiwei</i> (day 20)	8 th month
<i>Yiyou</i> (day 22)	8 th month

As mentioned in Section 3.3.5 of this dissertation, Dong Zuobin (1952: 87-88) finds the only reconstruction that can accommodate all these *ganzhi* dates and month notations. He reconstructs the calendar as follows:

Month	First day	Last day
1 st month	<i>yisi</i> (day 42)	<i>guiyou</i> (day 10)
2 nd month	<i>jiayu</i> (day 11)	<i>guimao</i> (day 40)
3 rd month	<i>jiachen</i> (day 41)	<i>renshen</i> (day 9)
4 th month	<i>guiyou</i> (day 10)	<i>renyin</i> (day 39)
5 th month	<i>guimao</i> (day 40)	<i>xinwei</i> (day 8)
6 th month	<i>renshen</i> (day 9)	<i>xinchou</i> (day 38)
7 th month	<i>renyin</i> (day 38)	<i>gengwu</i> (day 7)
8 th month	<i>xinwei</i> (day 8)	

Since the eclipse on *yiyou* occurred on May 31, 1227 BC, the above reconstruction can be shown in terms of the modern Gregorian calendar as well.

Table 11:
Reconstruction of Calendar for 1228 BC – 1227 BC

15 th of 8 th month	<i>yiyou</i> (day 22)	May 31, 1227 BC	
1 st of 8 th month	<i>xinwei</i> (day 8)	May 17, 1227 BC	
1 st of 7 th month	<i>renyin</i> (day 39)	Apr. 18, 1227 BC	
1 st of 6 th month	<i>renshen</i> (day 9)	Mar. 19, 1227 BC	
1 st of 5 th month	<i>guimao</i> (day 40)	Feb. 18, 1227 BC	
1 st of 4 th month	<i>guiyou</i> (day 10)	Jan. 19, 1227 BC	
1 st of 3 rd month	<i>jiachen</i> (day 41)	Dec. 21, 1228 BC	Winter solstice
1 st of 2 nd month	<i>jiayu</i> (day 11)	Nov. 21, 1228 BC	
1 st of 1 st month	<i>yisi</i> (day 42)	Oct. 23, 1228 BC	

It is clear from this table that the first month of that Yin year starts with the month of October 1228 BC, the second month before the month that contains the winter solstice.

Based upon the data on *Heji* 11482, the start of the next Yin year may also be reconstructed as follows:

Month	First day	Last day
8 th month	<i>xinwei</i> (day 8)	<i>gengzi</i> (day 37)
9 th month	<i>xinchou</i> (day 38)	<i>jisi</i> (day 6)
10 th month	<i>gengwu</i> (day 41)	<i>jihai</i> (day 36)
11 th month	<i>gengzi</i> (day 37)	<i>wuchen</i> (day 5)
12 th month	<i>jisi</i> (day 6)	<i>wuxu</i> (day 35)
1 st month	<i>jihai</i> (day 36)	<i>dingmao</i> (day 4)
2 nd month	<i>wuchen</i> (day 5)	<i>dingyou</i> (day 34)
3 rd month	<i>wuxu</i> (day 35)	<i>bingyin</i> (day 3)

Again, since this eclipse took place on May 31, 1227 BC, this reconstruction can be expressed in terms of the modern Gregorian calendar, thus making the start of the following year easier for modern readers to determine.

Table 12:
Reconstruction of Calendar for 1227 BC

1 st of 8 th month	<i>xinwei</i> (day 8)	May 17, 1227 BC	
1 st of 9 th month	<i>xinchou</i> (day 38)	June 16, 1227 BC	
1 st of 10 th month	<i>gengwu</i> (day 7)	July 15, 1227 BC	
1 st of 11 th month	<i>gengzi</i> (day 37)	August 14, 1227 BC	
1 st of 12 th month	<i>jisi</i> (day 6)	Sept. 12, 1227 BC	
1 st of 1 st month	<i>jihai</i> (day 36)	Oct. 12, 1227 BC	
1 st of 2 nd month	<i>wuchen</i> (day 5)	Nov. 10, 1227 BC	
1 st of 3 rd month	<i>wuxu</i> (day 35)	Dec. 9, 1227 BC	Winter solstice

It appears that the start of the following year's eclipse on *yiyou* is the month of October 1227 BC, which is the second month before the month of the winter solstice.

4.3.2.2.2 Reconstruction of Calendars for the Eclipse on *Jiwei*

In records of the lunar eclipse on *jiwei*, there are the following dates and month notations:

<i>Guichou</i> (day 50)	[12 th month]
<i>Jiwei</i> (day 56)	12 th month
<i>Gengshen</i> (day 57)	12 th month
<i>Guihai</i> (day 60)	[12 th month]
<i>Guiyou</i> (day 10)	
<i>Guiwei</i> (day 20)	13 th month
<i>Yiyou</i> (day 22)	13 th month
<i>Bingxu</i> (day 23)	13 th month

As determined in Section 4.3.2.1.2, the absolute date for this eclipse on *jiwei* is August 14, 1166 BC. Based upon those *ganzhi* dates, month notations and that absolute date, the calendar for this Yin year can be reconstructed. In this case, there are two possible reconstructions. If the twelfth month is short, and months from the first to the eleventh are short and long alternately, the calendar for this Yin year would appear as shown in the following table:

Table 13a:
Reconstruction of Calendar for 1167 BC – 1166 BC

15 th of 12 th month	<i>jiwei</i> (day 56)	Aug. 13, 1166 BC	
1 st of 12 th month	<i>yisi</i> (day 42)	July 30, 1166 BC	
1 st of 11 th month	<i>yihai</i> (day 12)	June 30, 1166 BC	
1 st of 10 th month	<i>bingwu</i> (day 43)	June 1, 1166 BC	
1 st of 9 th month	<i>bingzi</i> (day 13)	May 2, 1166 BC	
1 st of 8 th month	<i>dingwei</i> (day 44)	Apr. 3, 1166 BC	
1 st of 7 th month	<i>dingchou</i> (day 14)	Mar. 4, 1166 BC	
1 st of 6 th month	<i>dingwei</i> (day 44)	Feb. 2, 1166 BC	
1 st of 5 th month	<i>wuyin</i> (day 15)	Jan. 4, 1166 BC	
1 st of 4 th month	<i>wushen</i> (day 45)	Dec. 5, 1167 BC	Winter solstice
1 st of 3 rd month	<i>wuyin</i> (day 15)	Nov. 5, 1167 BC	
1 st of 2 nd month	<i>jiyou</i> (day 46)	Oct. 7, 1167 BC	
1 st of 1 st month	<i>gengchen</i> (day 17)	Sep. 8, 1167 BC	

According to this reconstruction, the Yin year of the eclipse on *jiwei* starts with the month of September 1167 BC, the third month before the month of the winter solstice.

If the twelfth month is long, and other months of that year are short and long alternately, the specific date for each month will be different by one day, as shown by Table 13b on next page. Again, the Yin year of the eclipse on *jiwei* begins with the month of September 1167 BC, the third month before the month of the winter solstice.

Based upon those *ganzhi* dates, month notations and the absolute date for the eclipse on *jiwei*, the beginning of the next year can be reconstructed as well. If the twelfth is short, and other months are short and long alternately, the calendar for the period from the twelfth month to the third month of next year is reconstructed in the following way, as shown in Table 14a on next page.

Table 13b:

Reconstruction of Calendar for 1167 BC – 1166 BC

15 th of 12 th month	<i>jiwei</i> (day 56)	Aug. 13, 1166 BC	
1 st of 12 th month	<i>yisi</i> (day 42)	July 30, 1166 BC	
1 st of 11 th month	<i>bingzi</i> (day 13)	July 1, 1166 BC	
1 st of 10 th month	<i>dingwei</i> (day 44)	June 2, 1166 BC	
1 st of 9 th month	<i>dingchou</i> (day 14)	May 3, 1166 BC	
1 st of 8 th month	<i>wushen</i> (day 45)	Apr. 4, 1166 BC	
1 st of 7 th month	<i>wuyin</i> (day 15)	Mar. 5, 1166 BC	
1 st of 6 th month	<i>wushen</i> (day 45)	Feb. 3, 1166 BC	
1 st of 5 th month	<i>jimao</i> (day 16)	Jan. 5, 1166 BC	
1 st of 4 th month	<i>jiyou</i> (day 46)	Dec. 6, 1167 BC	Winter solstice
1 st of 3 rd month	<i>jimao</i> (day 16)	Nov. 6, 1167 BC	
1 st of 2 nd month	<i>gengxu</i> (day 47)	Oct. 8, 1167 BC	
1 st of 1 st month	<i>xinsi</i> (day 18)	Sep. 9, 1167 BC	

Table 14a:

Reconstruction of Calendar for 1166 BC

15 th of 12 th month	<i>jiwei</i> (day 56)	Aug. 13, 1166 BC	
1 st of 13 th month	<i>jiayu</i> (day 11)	Aug. 28, 1166 BC	
1 st of 1 st month	<i>jiachen</i> (day 41)	Sep. 27, 1166 BC	
1 st of 2 nd month	<i>guiyou</i> (day 10)	Oct. 26, 1166 BC	
1 st of 3 rd month	<i>renyin</i> (day 39)	Nov. 24, 1166 BC	Winter solstice

This reconstruction shows that the Yin year immediately following the eclipse on *jiwei* starts with the month of September 1166 BC, which is the second month before the month of the winter solstice.

If the twelfth month is long, and other months are short and long alternately, the next Yin year after the eclipse on *jiwei* still starts with the second month before the month of winter solstice, as shown below.

Table 14b:

Reconstruction of Calendar for 1166 BC

15 th of 12 th month	<i>jiwei</i> (day 56)	Aug. 13, 1166 BC	
1 st of 13 th month	<i>yihai</i> (day 12)	Aug. 29, 1166 BC	
1 st of 1 st month	<i>yisi</i> (day 42)	Sep. 28, 1166 BC	
1 st of 2 nd month	<i>jiayu</i> (day 11)	Oct. 27, 1166 BC	
1 st of 3 rd month	<i>guimao</i> (day 40)	Nov. 25, 1166 BC	Winter solstice

4.3.3.3 Conclusion

In Section 4.3.2.2, this writer has reconstructed the beginning of the following four Yin years: the year when the lunar eclipse on *yiyou* took place and the following year; the year when the lunar eclipse on *jiwei* occurred and the following year. Among these four Yin years, three start with the second month before the month of the winter solstice; only the year in which the lunar eclipse on *jiwei* took place starts with the third month before the month of the winter solstice. In principle, can the Yin year starts with different months? The answer is no.

The Yin year of the lunar eclipse on *jiwei* starts one month earlier than the other three years, those being the year of the eclipse on *yiyou*, the following year, and the year following that, which was the year of the eclipse on *jiwei*. Such a difference can easily be explained. The inscriptions on *Yingcang* 886 clearly show that there was an intercalary month in the year of the eclipse on *jiwei*, which indicates that the Yin people already knew the start of that year was one month earlier than the start in other years. In order to make Yin months correspond to seasons, an intercalary month was added to the end of that year in order to delay by that amount the start of the Yin year. In other words, even the Yin people regarded the start of that year of the eclipse on *jiwei* as “unusual.” Its implication is that the Yin year normally started one month later than the start of the year of the eclipse on *jiwei*.

Among those four examples of the start of Yin years, three years start with the second month before the month of the winter solstice, one indicates that a normal Yin year starts

with the second month before the month of the winter solstice. From these four examples, one can draw the following conclusion: it is a principle of the Yin calendar that the commencement of the Yin year is the second month before the month of the winter solstice.

The above conclusion is based upon lunar eclipse records in Period-I inscriptions. Ken-ichi Takashima points out that in Period V there are many inscriptions in which the word *si*, the designation for the Yin year, occurs. It is worthwhile making best use of these inscriptions in discussion about the start of the Yin year. His suggestion is insightful. Such a work will be done in near future.

CHAPTER FIVE

CONCLUDING REMARKS

Before the twentieth century, few scholars had any interest in the study of the Yin calendar, for two major reasons. First, there were not many informative records about the Yin calendar available to scholars. Second, as one of a number of early Chinese calendars, the Yin calendar did not occupy a special position in the history of Chinese calendars. This state of affairs has completely changed with the discovery of the Yin OBI by Wang Yirong in 1899.

The Yin OBI are contemporary Chinese written records made by the Yin people 3,000 years ago. These inscriptions have become available through excavations. To date, they are the earliest written Chinese sources. Accordingly, the calendar seen in them is the first known Chinese calendar that can be studied from contemporary records. This find has aroused intense interest among scholars. In the corpus of the Yin OBI, there are an enormous number of inscriptions that are related, directly or indirectly, to the Yin calendar. These inscriptions provide a rich and solid base for research on the Yin calendar, sparking a thriving study of this field.

Song Zhenhao (1999: 439-463) lists 398 publications on the subject of the Yin calendar. At the present time, the number of such publications certainly exceeds 400. In general, these previous studies have made great contributions to a better understanding of the Yin calendar that was actually followed by the Yin people. Even so, there is room for much progress in the study of the Yin calendar. The present study has been intended as an initial, modest step towards generating more productive research in the field of the Yin calendar.

In this dissertation, the present writer has not only endeavored to settle unaddressed and unanswered issues by making reference to inscriptional evidence, but has also analyzed in detail the system by which the Yin people divided time into different periods such as time divisions, month and year. For instance, the possible existence of a prescriptive calendar in the Yin Dynasty is an issue that has never been thoroughly addressed. While scholars such as Shinjō Shinzō (1936) and David N. Keightley (2000) assert that the Yin did not have a prescriptive calendar, those who believe otherwise have not produced evidence supporting their view. In Chapter One, this writer has presented inscriptional evidence indicating a

prescriptive calendar in the Yin OBI.

In Chapter Two, after developing effective criteria for determining time divisions in the language of the Yin OBI, this writer has established twelve time divisions in the Yin day and reached the conclusion that the Yin day started with the time division *su* 夙, which refers to a short time period corresponding to nautical twilight in the morning.

In Chapter Three, the present author has drawn the following conclusions from inscriptional evidence: the Yin lunar months were either 29 or 30 days in length, both the year-end and the in-year intercalation were in use in early periods, and the in-year intercalation replaced the year-end intercalation by late periods.

In Chapter Four, the word *si* 祀 was established as the designation for the Yin year consisting of 12 or 13 Yin lunar months; and calendars reconstructed for four Yin years show that the commencement of the Yin year was the second month before the one containing the winter solstice.

The present study will call other specialists' attention to a new approach that may affect research on the Yin calendar in a positive way. The approach taken here differs significantly from previous studies in the field of the Yin Calendar. The most popular approach for the past eight decades has been the so-called *erchong zheng ju fa* 二重证据法, 'two-layered evidential method.' Popular though it has been, its application is fraught with shortcomings, which have been analyzed in Section 1.4. In response to that situation, the approach adopted in the present study is the *synchronic evidential approach* advocated by Ken-ichi Takashima for nearly two decades. Because most Ken-ichi Takashima's publications are in English, this approach has not attracted much scholarly attention in China. Generally, few scholars have applied this approach in their studies of the Yin calendar.

Judging from this writer's experience, the synchronic evidential approach will change not only the way research on the Yin calendar is conducted, but it will also require a new attitude toward the results yielded by this rather new approach. In light of this expectation, this dissertation will now conclude by elucidating the possible impact this fresh approach may have upon future studies of the Yin calendar.

Recently, Ken-ichi Takashima (2005: 3) defines the synchronic evidential approach as follows: "That is, we should try to interpret the data or issues at hand on the basis of as much intrinsic evidence as possible without drawing conclusions from the later transmitted texts

and their commentaries.” It appears that his definition includes two principles. First, when one cites an early record, one must interpret this record on the basis of contemporary evidence so far as possible. Second, when one addresses issues of an early civilization, one must draw conclusions from primary materials as much as possible. By following these two principles, theoretically speaking, one may avoid the contamination of one’s research by secondary materials, a problem often found in publications that adopt the two-layered evidential approach.

In this dissertation, every effort has been made to follow as strictly as possible the two cardinal principles of the synchronic evidential approach. For instance, in light of the first principle, which is to draw upon intrinsic or contemporary evidence, there are several inscriptions in which both the character *Huo* 火 and a month notation occur. Wen Shaofeng and Yuan Tingdong (1983: 117-118), Zheng Huisheng (1984: 15), Feng Shi (1990: 35-40), and Chang Yuzhi (1998: 401-403) all interpret *Huo* as referring to the star Antares on the basis of the usage of *huo* found in early Chinese texts. But, as analyzed in Section 4.3.1.1, their interpretation of *Huo* totally ignores this word’s contemporary inscriptional contexts. It is apparent that their method of interpreting these inscriptions violates the first principle of the synchronic evidential approach. Moreover, Section 4.3.1.1 showed that *Huo* was used as a personal name or a place name in the language of the Yin OBI. In the inscriptions cited by specialists that supposedly provide evidence as to when the Yin year started, it makes good sense to take *Huo* as a place name or personal name. If these researchers had taken the synchronic evidence into consideration, no doubt they would not have interpreted *Huo* as the star Antares and cited those inscriptions as evidence in their discussion about the beginning of the Yin year. One can avoid that misinterpretation of *Huo* in the Yin OBI by following the first principle of the synchronic evidential approach.

The second principle of the synchronic evidential approach is to draw conclusions very directly from primary materials as often as possible. As was demonstrated in this dissertation, this principle is frequently violated by researchers in the field of the Yin calendar. Yabuuchi Kiyoshi (1956: 72-74), Zhang Peiyu, Lu Yang and Xu Zhentao (1984: 68-70), Chang Yuzhi (1998: 322-340) and David N. Keightley (2000: 44) all hold the view that the Yin month started with actual observation of the new crescent moon. They base their view upon their

assumptions about Yin astronomy, on irrelevant records in Chinese texts,¹ and early calendars belonging to other civilizations, none of which is synchronic evidence. Their seemingly popular opinion was rejected in Chapter Three of this dissertation because of their disregard of inscriptional evidence. It is true that there are no inscriptions that explicitly specify the start of the Yin month. But there certainly are ways to deduce the beginning of the Yin month from inscriptional evidence. One way is to demonstrate the start of Yin months by reconstructing the Yin calendar for a given period of time, based upon *ganzhi* dates, month notations and absolute dates for lunar eclipses recorded in Period-I inscriptions. In Section 3.4, the starts of eight successive Yin months were reconstructed in this way. Two Yin months were seen to start exactly with the day of the new moon, and six Yin months started with the day following the new moon. The phrase “new moon” comes from modern astronomy and means “the Moon's unilluminated side is facing the Earth. The Moon is not visible.”² Two days after new moon, the first crescent moon is visible. It was shown that none of the eight Yin months began with the actual observation of the first appearance of the crescent moon. This strongly suggests that the Yin people were somehow already able to reckon the day of the new moon and set that day as the start of their months, although their calculations for the new moon were not very accurate by modern standards.

¹ For example, Zhang Peiyu, Lu Yang and Xu Zhentao (1984: 69-70) and Chang Yuzhi (1998: 340) mention the occurrence of the word *fei* 月出, ‘the appearance of the new crescent moon,’ in their discussion about the beginning of the Yin month. However, *fei* is never mentioned as the beginning of the month in Chinese calendars in transmitted texts. David Pankenier writes in his comments on April 5, 2005:

That there existed a word *fei* which late glosses identify as the 2nd or 3rd day of the lunar month proves nothing about actual observational practice in Shang and W. Zhou. Anyone interested in producing an accurate calendar would have taken note of the first appearance of the lunar crescent, especially if this event did not occur at the expected time. This does not mean that the calendar was exclusively observational, merely that observation was used to confirm or disconfirm the accuracy of the day-count. In any case, the lexical definition given for *fei* is clearly not the result of observation. Anyone looking for the first appearance of the crescent moon would quickly discover that it can often be observed 24 hours after the predicted first day of the lunar month. This, and the suspiciously late shape of the character *fei* (= *yue* + *chu*), persuades me that *fei* is a very late invention which tells us nothing about early observational practice.

It is thus clear that the references to the word *fei* in early Chinese texts are irrelevant to the issue of the start of the Yin month.

² This definition is posted on http://aa.usno.navy.mil/faq/docs/moon_phases.html, a website maintained by the Astronomical Application Department, US Naval Observatory. This is a website the present writer often visits. The latest access date is May 15, 2005.

From the above two examples of following the synchronic evidential approach, it is apparent that it may indeed “uncover much that seems clouded by the application of the two-layered evidential approach” (Takashima 2005: 3). The synchronic evidential approach is very productive, and the results are based upon contemporary evidence. To serious scholars, these results should be much superior to those based upon non-contemporary materials. In this writer’s opinion, the synchronic evidential approach should replace the two-layered evidential method in the research of the Yin calendar.

The synchronic evidential approach requires that specialists who apply the two-layered evidential method must change the way they relate to research materials. When one is a follower of the two-layered evidential method, one tends not to distinguish primary inscriptional materials from secondary materials. Such an investigator regards those two kinds of materials as representing equal weight or validity. He not only regards the information contained in primary and secondary sources as equally credible, he often compounds the information from both sources in order to create what he believes is a complete and accurate picture. Without looking deeply for intrinsic materials to interpret contemporary evidence, the follower of the two-layered evidential method usually relies on secondary materials to interpret contemporary evidence, even though those secondary materials are not necessarily accurate. The result of this latter practice is that conclusions are often inconclusive, even inaccurate. As mentioned above, Wen Shaofeng and Yuan Tingdong (1983: 117-118), Zheng Huisheng (1984: 15), Feng Shi (1990: 35-40), and Chang Yuzhi (1998: 401-403) all cite the same inscription in which the character *huo* 火 appears as evidence in their studies about the commencement of the Yin year. They all cite the very same inscription yet arrive at competing conclusions. Even though these researchers are analyzing the same inscription, their interpretations differ from one another because they base them upon different records in early Chinese texts. Their different interpretations lead inevitably to their competing conclusions. It is not the primary evidence that does this, it is their reliance upon different early Chinese records and applying them to the primary evidence, that leads them astray. Because there is only one start of the Yin year, it is certainly impossible for all of their conclusions to be correct. Their researches make the determination of the start of the Yin year much more obscure than it was before. On the other hand, if they had adopted the synchronic evidential approach, on the basis of inscriptional evidence, they

would have discovered that Huo is a place name in that inscription and that the inscription is not related to the start of the Yin year. They would not have drawn competing conclusions from that inscription, and the matter would be clear. As stated, the synchronic evidential approach changes the way research materials are typically utilized but the results are more dependable.

The synchronic evidential approach directs scholars to differentiate research materials according to their nature, that is, as primary and secondary sources. In the studies of the Yin calendar, contemporary inscriptional materials have to be considered primary and other materials secondary. When a researcher makes reference to primary evidence, he or she must interpret it solely on the basis of contemporary materials whenever possible; and any conclusions should be drawn exclusively, whenever possible, from primary evidence. This is how research materials are utilized by specialists who follow the synchronic evidential approach.

This approach not only requires that specialists differentiate clearly their sources of evidence, changing their way of utilizing their research materials, but the approach also demands that scholars change their attitude toward results of those who adopt the synchronic evidential approach. No scholar should reject such results simply because they do not fit a favourite view about the history of the early Chinese calendar. To make this point clear, it is instructive to consider the matter of the in-year intercalation.

There are scholars, such as Yabuuchi Kiyoshi (1956: 68-74), who do not accept the existence of the in-year intercalation in the Yin calendar. Because of the occurrence of the phrase *shisanyue* 十三月, 'the thirteenth month,' which is evidence for the year-end intercalation in the Western Zhou bronze inscriptions, he reaches the conclusion that the year-end intercalation was employed in the Western Zhou Dynasty. If such was the case, he believes, then it is impossible for there to have been in-year intercalation before the time of the Western Zhou Dynasty. Thus, Yabuuchi Kiyoshi concludes that the in-year intercalation did not exist in the Yin Dynasty.

Zhang Peiyu, Lu Yang and Xu Zhentao (1984: 71) also deny the in-year intercalation in the Yin calendar. One of their reasons is similar to that of Yabuuchi Kiyoshi, which is cited below.

在中国历史上，很可能直到春秋时期，鲁国实际行用的还是采用固定的年终置闰的历法。

In Chinese history, it is very likely that, until the Spring and Autumn Period, the State Lu still used the calendar with the year-end intercalation.

It appears that these researchers' reason for denying the in-year intercalation in the Yin calendar is based upon the bias that the year-end intercalation was still in use in some late Chinese calendars. Apparently, they do not suppose that it is possible for the in-year intercalation to occur in any Chinese calendar prior to the disappearance of the year-end intercalation. Such reasoning reflects a bias about the development of the Chinese calendar, namely that the history of early Chinese calendars is linear. In other words, so this assumption goes, when a feature of the early Chinese calendar appears, it cannot have appeared at any time previously, and once this feature appears, it can never be abandoned in any late Chinese calendars. In short, a feature is established only once in the history of early Chinese calendar development.

The view that the development of early Chinese calendars is linear does not match historical facts. For instance, it is recorded in early Chinese texts that the transition from the year-end intercalation to the in-year intercalation occurred twice during the period from the Western Zhou Dynasty to the Western Han Dynasty. Therefore, the development from the year-end intercalation to the year-end intercalation is not linear.

The first transition took place in late Spring and Autumn Period. Before that time, the year-end intercalation was in use in the Zhou calendar. For example, in the Western Zhou bronze inscriptions, there are seven examples of the phrase *shisan yue* 十三月.³ Since the thirteenth month is the designation for a year-end intercalary month, those seven examples of the phrase *shisan yue* are proof that the year-end intercalation was present in the calendar of the Western Zhou Dynasty.

In early Spring and Autumn Period, the year-end intercalation was still in use. However, the method of intercalation changed in late Spring and Autumn Period. For example, it is

³ For those inscriptions in which the phrase *shisan yue* 十三月 occurs, readers are referred to pp. 260-261 of the *Jinwen yinde* 金文引得, edited by Huadong shifan daxue Zhongguo wenzi yanjiu yu yingyong zhongxin 华东师范大学中国文字研究与应用中心 in 2001.

recorded in the chapter “Li shu” of the *Shiji* that there was an intercalary third month in the twenty-sixth year of King Xiang of Zhou, i.e., the year 626 BC, and that such intercalation was criticized by the *Chunqiu* (周襄王二十六年闰三月而《春秋》非之). More in-year intercalations in late Spring and Autumn Period can be found in James Legge’s reconstruction (1872b: 93-97).

Table 15:

In-Year Intercalation in Late Spring and Autumn Period

Year	Month	Intercalary Month	Month
659 BC	5	✓	6
626 BC	9	✓	10
614 BC	4	✓	5
600 BC	5	✓	6
574 BC	7	✓	8
565 BC	10	✓	11
551 BC	8	✓	9
543 BC	9	✓	10
540 BC	10	✓	11
537 BC	5	✓	6
535 BC	8	✓	9
526 BC	8	✓	9
521 BC	8	✓	9
519 BC	11	✓	12
513 BC	5	✓	6
511 BC	5	✓	6
507 BC	5	✓	6
505 BC	11	✓	12
499 BC	7	✓	8
484 BC	7	✓	8

The distribution of the above 20 in-year intercalary months shows that it became increasingly frequent in late Spring and Autumn Period. However, this transition did not make the year-end disappear forever from early Chinese calendars. The year-end intercalation was still in use in the Qin calendar before the Qin united China. After the unification of China, the year-end intercalation continued in the calendars issued by the Qin and early Western Han Dynasties.

That the Qin employed the year-end intercalation can be confirmed by synchronic evidence. In 1975, a number of bamboo strips were unearthed in a Qin tomb at Yunmeng County 云梦县, Hubei Province 湖北省. Among them were 49 strips that record the history of the Qin year by year from 306 BC to 217 BC. On the third slip, the following record appears.

五十六年后九月，昭死。

In the second ninth month of the fifty-sixth year, (King) Zhao died.⁴

In the chapter “Li shu” of the *Shiji*, the most authoritative historical sources for the Qin and early Western Han Dynasties, it is recorded that the Qin year begins with the tenth month and that the year-end intercalation is employed. In an intercalary year, the intercalary month is put after the ninth month, the last month of a year, and is called *hou jiuyue* 后九月, ‘the second ninth month.’ All these in the *Shiji* are clearly in agreement with the record on the bamboo strip.

The fifty-sixth year of King Zhao of the State Qin is the year 251 BC, the thirtieth year before the unification of China. This record on the bamboo strip is thus a piece of contemporary evidence for the year-end intercalation of the Qin calendar before the First Emperor of Qin united China in 221 BC.

After unification, the First Emperor issued the official calendar in this new country. The new standard calendar still used the year-end intercalation, a fact that has also been confirmed by synchronic evidence.

In 1993, Qin bamboo strips were excavated at Zhoujiatai 周家台, Jingzhou 荆州, Hubei 湖北. Among them were 64 strips that contained *ganzhi* dates and month notations of the

⁴ For the photo of this bamboo strip, readers are referred to Fig. 50 of the *Yunmeng shuihudi Qin mu* 云梦睡虎地秦墓.

year 213 BC.⁵ On strip 59, it is recorded that the second ninth month is a long month (后九月大). As mentioned above, the second ninth month is the designation for the year-end intercalary month in the Qin calendar. This is contemporary evidence for the year-end intercalation in the Qin Dynasty calendar.

In addition, in the chapter “Qin Chu zhiji yuebiao 秦楚之际月表” of the *Shiji*, there is a second ninth month in the second year of the second emperor of the Qin Dynasty, i.e., the year of 208 BC. This record is another piece of good evidence for the year-end intercalation of the Qin calendar.

The Qin Dynasty was overthrown by the Western Han Dynasty. In the early Western Han Dynasty, intercalation is the same as during the Qin Dynasty, which can be proven by the following evidence.

In the chapter “Qin Chu zhiji yuebiao 秦楚之际月表” of the *Shiji*, for example, there is a second ninth month in the first year of the Gaozu 高祖 of the Han. According to the Han bamboo strips unearthed at Zhang Jiashan 张家山 in 1983-84, there is a second ninth month in the first year of the Emperor Hui 惠 (194 BC) and the second year of Gaohou 高后 of the Han (186 BC). Also, according to the Han bamboo strips found at Fenghuangshan 凤凰山, there is a second ninth month in the sixteenth year of the Emperor Wen 文 (164 BC) and the fourth year of the Emperor Jing 景 (153 BC). In the chapter “Xiaoqing benji 孝景本纪” of the *Shiji*, it is recorded that the second ninth month occurs in the fourth and sixth years (153 BC and 151 BC) of the Emperor Jing. These six examples of the second ninth month are solid evidence for the year-end intercalation of the calendar in the early Western Han Dynasty.

In 104 BC, Emperor Wu of Han issued a new calendar. In this calendar, the in-year intercalation replaced the year-end intercalation permanently. It is this transition that eventually established the in-year intercalation as a principle of later Chinese calendars.⁶

⁵ For the identification of this year, readers are referred to Huang Yi-Long (2001: 59-60).

⁶ Chen Meidong (2003: 125) has pointed out that the intercalation method of the Taichu calendar has been followed by calendars of later dynasties and that this achievement cannot be denied (该方法为后世历法沿用不弃, 太初历首取该法之功不可没).

Why was the in-year intercalation not established by the transition from the year-end intercalation to the in-year intercalation in the Spring and Autumn Period? The present writer proposes that the answer is that there were different calendars followed by states during that period, and that those calendars developed independently. The existence of different calendars at that time has already been discerned by James Legge (1872b: 97):

The chronology of the Chun Qiu period, as it appears in the *Zuozhuan*, is the same as that which appears in the text; but the dates of many events mentioned in both differ by one or two months; and where those dates are at the end or beginning of a year, the years to which they are assigned will also differ. This circumstance has wonderfully exercised the ingenuity of the Chinese critics; but a sufficient solution of the want of correspondence is found, in much the greater number of cases, in the fact that the feudal States were by no means agreed in using the commencement of the year prescribed by the Dynasty of Zhou.

As recently as in 2003, Chen Meidong (2003: 58-59) has reached a similar conclusion. In any event, the fact is that there were different calendars before the Qin united China.

In the Spring and Autumn Period, those States were independent. Their calendars did not necessarily develop at the same rate. For instance, the calendar of the State Lu experienced the transition from the year-end intercalation to the in-year intercalation in late Spring and Autumn Period, as discussed above. It appears that this transition did not happen to the calendar of the State Qin, as evidenced by the Qin bamboo strips. It is thus understandable that, when the First Emperor unified China and made the calendar of Qin official, the year-end intercalation became the standard again. Apparently, Chinese politics was an important factor in the development and adoption of early Chinese calendars. This reality points to the fact that the history of early Chinese calendars is not linear.

The political situation in the Yin Dynasty appears similar to that in the Spring and Autumn Period. David N. Keightley's thorough study (1983) presents the Yin as an incipient state. Its control over other states seems no more than that of the Zhou royal house over those feudal states in the Spring and Autumn Period. Based upon the situation in the Spring and

Autumn Period, it is reasonable to assume that not all those states always followed the calendar issued by the Yin court.

It is not a new idea that there was more than one calendar in the Yin Dynasty. For instance, David N. Keightley (2000: 43-44) states that:

I suspect, in fact, that 'the start of the year' could have involved more than one kind of year. The Shang diviners might have pegged the first moon of their luni-solar calendar to the first lunation after the winter solstice, while the peasants might have tied their agricultural calendar to the observation of stars and constellations. It would have been the first, liturgical system, not the second, agricultural system, that gave rise to the numbered moons recorded in the divination inscriptions.

If the Yin people themselves used different calendars, it is doubtful whether other states necessarily followed the calendar of the Yin royal house.

At the present time, there is not much contemporary material about the calendar of the Zhou before they conquered the Yin. However, the calendar records in the Western Zhou bronze inscriptions strongly suggest that the Zhou calendar is different from the Yin calendar. For instance, the Zhou calendar uses phrases such as *chuji* 初吉, 'first auspiciousness,' *ji shengba* 既生霸, 'after the growing brightness,' *ji wang* 既望, 'after the full moon,' and *ji siba* 既死霸, 'after the dying brightness,' to describe moon phases. None of these phrases ever appears in any of the multiple-thousands of Yin inscriptions with month notations. Since these terms were already in use at the very beginning of the Western Zhou Dynasty, and since a sophisticated calendar could not have been invented in such a short time, it is a reasonable assumption that the Zhou calendar must have existed before the fall of the Yin.

Because the Yin royal court's control over the Zhou was very loose and the Zhou used a different calendar, it is likely that the Yin and Zhou calendars did not undergo changes simultaneously. Although there is evidence in the OBI to show the transition from the year-end intercalation to the in-year intercalation, it can be inferred from the Western Zhou bronze inscriptions that such a transition did not happen to the Zhou calendar before the fall of the Yin Dynasty. Just as happened at the beginning of the Qin Dynasty, when the Zhou

overthrew the Yin, the Zhou issued their calendar to the new country. As a result, the year-end intercalation became the standard method of intercalation again.

From the foregoing analysis, it is clear that the history of early Chinese calendars is not linear. Before the year-end intercalation was abandoned forever in 104 BC, there was a transition from the year-end intercalation to the in-year intercalation in late Spring and Autumn Period. Inscriptional evidence shows that such a transition took place in the Yin Dynasty as well. Therefore, even though the year-end intercalation was still in use in the calendar of the Western Zhou Dynasty, it is not a legitimate reason to deny the existence of the in-year intercalation in the Yin calendar.

David N. Keightley (1978: 2) writes, "The Shang kings read the mantic cracks to divine the wishes of their ancestors. We read the mantic inscriptions to divine the wishes of the Shang kings. May the oracle bones, once used to read the future, now be used to read the past!" If there are any implications about his approach in this citation, they are in agreement with the synchronic evidential approach advocated by Ken-ichi Takashima. It is the wish of the present writer that the synchronic evidential approach be adopted by all scholars in the field as soon as possible, and that the results of this approach be evaluated solely by synchronic evidence.

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