



**Daniel P
Morgan**

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What can you do with a Calendar?
Extracting Facts, Stories, and Information otherwise pertinent to your own Field from a Table of Dates

Workshop on Zhangjiashan tomb 247
Université Paris Diderot, November 25, 2015

Overview

Outline

- Introduction to the ZJS M247 lunation table
- What has been done with with « calendars »
- What can be done with « calendars »:
 - identification of the tomb occupant's « hand »;
 - perspectives on copying and MS transmission.

Questions

- What can *I*, a specialist in _____, do with calendars?
- What do « calendars » tell us about the date of a tomb?
- Are tomb texts « real », or are they *mingqi* funerary objects?
- Did tomb texts belong to the occupant in life, or only after death?
- Are tomb texts *written* by the occupant, or by someone else?
- How are manuscripts copied?

Introduction to the ZJS M247 lunation table

- Dimensions

- Height: \approx 23cm (1 *chi*)
- Width: 18 slips
- Binding: two cords

- Contents

- New moons, Gaozu 5 – Gaohou 2 (202-186 BCE)
- Each slip lists new moon days of one year:

十二年：十月癸未，十一月癸丑，十二月壬午，正月壬子，二月辛巳，三月辛亥，四月庚辰，五月庚戌，六月己卯，七月己酉，八月戊寅，九月戊申。(s9)

- Two personal notes:

九月：新降為漢。
[Gaozu 6 (201 BCE):] Month IX, newly surrendered to the Han (s2).

六月：病，免。
[Huidi 1 (195 BCE):] Month VI, sick, relieved [of office] (s10)

- Codicological notes

- Two year-slips spill onto the verso.

40cm										30cm									
Business card																			
庚寅二月己未三月己丑四月戊午五月戊子六月丁巳七月丁亥八月丙辰九月丙戌後九月乙酉 月癸巳八月壬戌九月壬辰										四月辛卯五月辛酉六月庚寅七月庚申八月己丑九月己未後九月 九月新降為漢【後】九月									
18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	1	2
										Verso									
Zhangjiashan M247 Gaozu 5 - Gaohou 2																			

What has been done?

1) Dating & verification of historical tables

Step 1: Match to historical lunation tables

- Tables
 - 張培瑜『三千五百年曆日天象』
 - 兩千年中西曆轉換 (<http://sinocal.sinica.edu.tw/>)
- Now you know the reign & Julian year!

Step 2: Verify that historical tables are correct

- Historical tables are computed from *li* 曆 procedure texts preserved in the Standard Histories, available from 104 BCE on.
- **Problem:** prior to 104 BCE, we are not sure how the calendar was calculated.
- **Problem:** after 104 BCE, some recorded dates don't match.
- Scholarship:
 - 張培瑜：『根据新出歷日簡牘試論秦和漢初的曆法』，『中原文物』 2007.5: 62-77
 - 李忠林：『周家臺秦簡曆譜係年與秦時期曆法』，『歷史研究』 2010.6: 36-53
 - 羅見今：『關於居延新簡及其曆譜年代的對話』，『內蒙古師範大學學報（哲學社會科學版）』 29.1 (2000): 87-95



十一年十月己丑

漢高祖十一年			前 196 年
十 月	小	己丑	1123
十一 月	大	戊午	三日庚申冬至
十二 月	小	戊子	1222
正 月	大	丁巳	1 21 十九丙午立春
二 月	小	丁亥	2 19 六日壬辰春分
三 月	大	丙辰	3 21 廿二丁丑立夏
四 月	大	丙戌	4 19 5 19
五 月	小	丙辰	八日癸亥夏至
六 月	大	乙酉	6 18 廿五己酉立秋
七 月	小	乙卯	7 17 8 16
八 月	大	甲申	十一甲午秋分
九 月	小	甲寅	9 14 1014 廿七庚辰立冬

張培瑜《三千五百年曆日天象》

What has been done?


1) Dating & verification of historical tables

Step 1: Match to historical information tables

- Tables
 - 張培瑜『三千五百年曆日天象』
 - 兩千年中西對照表 (<http://sinocal.sinica.edu.tw/>)
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- Historical tables were computed from *li* 曆 pro texts preserved in the Standard Histories from 104 BCE
- **Problem:** before 104 BCE, we are not sure if the calendar was related.
- **Problem:** after 104 BCE, some records don't match.
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 - 羅見今: 『關於居延漢簡曆譜年代的對話』, 『內蒙古師範大學學報(哲學社會科學版)』 29.1 (2000): 87-95



十一年	前 196 年
小 己丑	1123
戊午	三日庚申冬至
222	
十二月	子
1	十九丙午立春
正 月	
二 月	六日壬辰春分
三 月	
四 月	廿二丁丑立夏
五 月	
五 月	八日癸亥夏至
六 月	
七 月	廿五己酉立秋
八 月	卯
16	
甲申	十一甲午秋分
9 14	
小 甲寅	
1014	廿七庚辰立冬

張培瑜《三千五百年曆日天象》

What has been done?

2) Dating the tomb

Editors regularly use calendars & calendar dates to establish a *terminus post quem* (TPQ) for a tomb's sealing.*

『張家山漢墓竹簡（二四七號墓）』, p. 1:

據墓中所出曆譜可知，墓主人去世當在西漢呂后二年（公元前一八六年）或其後不久。

『關沮秦漢墓簡牘』, p. 156:

（M30）木牘正、背兩面所載曆譜均為二世元年（公元前二〇九年）曆譜，背面貳、參、肆、伍欄是有墓主生前到「廷賦所」交賦往返日數的記載，因之，秦二世元年「十二月戊戌嘉平」即十二月二十五日，為本墓簡牘幾年中最晚的時間，可作為該墓下葬年代的上限。

『隨州孔家坡漢墓簡牘』, p. 33:

M8 出土紀年材料有二：M8:51 木牘記有告地書：「二年正月壬子朔甲辰，都鄉燕佐戎敢言之 ... 簡文所云朔日與漢景帝後元二年吻合。另一紀念材料是 M8:56 曆日竹簡 ... 可以唯一確定其年份為漢景帝後元二年 ... 因此，M8 年代可訂為漢景帝後元二年即公元前一四二年。

*Note: with reign-years, you cannot reliably date things in advance (e.g. the problems in Loewe, « Some notes on Han-time documents from Chüyen », *T'oung Pao* 47 3/5 [1959]).

What has been done?

2) Dating the tomb

Q: How long is « not long after » ?

Case 1: Kongjiapo M8

- Calendar of Jingdi Houyuan 2 (142 BCE).
- « Gao di shu » dates to Jingdi Houyuan 2-I-*renzi* (Mar 3, 142 BCE)
- Therefore, occupent buried with that year's calendar.

Case 2: Mawangdui M3

- *Wu xing zhan* 五星占 * planetary tables, covering 246-177 BCE.
- Burial tag dates to Wendi 12-XII-*wuchen* (168 BCE)
- Therefore, nine-year gap between burial & last table entry.

Q: These are both *li*, but are the same type of document? Are they comparable?

A: No, but we'll come back to that.

What has been done?

3) Personal information

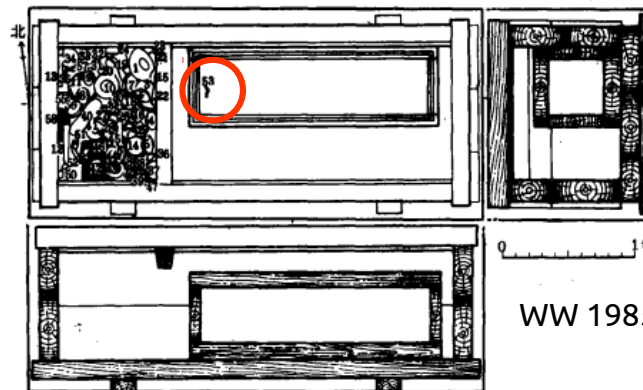
Assumption: the tomb occupant is the subject of any diary-type document in his/her tomb.

ZJS M247 lunation table chronology:

- ≤ 201 BCE: born
- 202 BCE (Gaozu 5): calendar begins
- 201 BCE (Gaozu 6): « Month IX, newly surrendered to the Han » (s2).
- 195 BCE (Huidi 1): « Month VI, sick, relieved [of office] » (s10)
- 186 BCE (Gaohou 2): table ends
- ≥ 186 BCE: Burial

Confirmation:

- Presence of a dove-head staff in M247 reveals occupant 70+ years of age (liable to be « relieved » due to « illness » in the preceding years; see Li Jingrong, « The *Ernian lüling* Manuscript », 63-64).



WW 1985.1: 2, fig. 5.

What *can* be done?

What *has* been done with « calendars »

- Dating via, and verification of, historical lunation tables
- Dating the tomb (TPQ)
- Personal information on the tomb occupant.

What *can* be done with « calendars »

- Establishing a sample of the tomb occupant's handwriting to determine the origin of other tomb MSS.
 - Q: Are tomb MSS acquired or created for personal consumption?
 - *Personal creations*: Shu-shu scholars on *rishu* miscellanies, e.g. Harper, Kalinowski and Harkness
 - *Acquired*: Yates & Barbieri-Low, etc., on « funerary workshops »
 - Q: Are tomb MSS « real » texts, or « fake » *mingqi* funerary objects?
 - Assumption: diary-like tomb documents *belong to* and were *written by* the occupant.
- Discuss features of copying and textual transmission from a new light.
 - Foci of MS culture studies:
 - Classics & philosophical literature: Feng Shengjun, Li Songru, Richter, Kern, Schaberg, Meyer, etc.
 - Divination literature: Liu Lexian, Kalinowski, Harper, etc.
 - Medical literature: Harper, Vivienne Lo, etc.
 - Legal/administrative documents: Loewe, Giele, Yates & Barbieri-Low, etc.
 - **Calendars**
 - Mathematics literature: Chemla, Morgan.

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Technical literature

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« Documents »

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Handwriting analysis

Methodological difficulties

Sample used for determining hands within the ZJS corpus

	算數書	曆譜 *	曆譜 *	Elimination	Matches
也	61	0			
其	43	0			
有	80	0			
爲	287	½			
而	85	0			
則	0	0			
實	60	0			

Preponderant forms

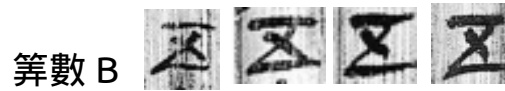


Handwriting analysis

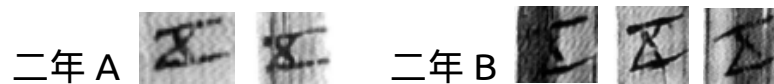
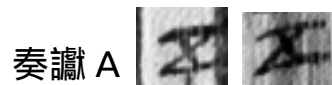
Disconnected 五



Matches



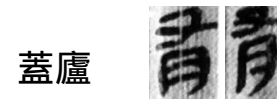
Elimination



Boxy 月

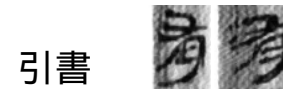


Matches



....

Elimination



Boxy 月 + curl



Handwriting analysis

Zhangjiashan scribeurs

Scripteur A	Scripteur B	Scripteur C		Scripteur D		Scripteur E	Scripteur F	Scripteur G	?	
		篆隸	古隸	篆隸	授篆				古隸	古隸
雜古 奏讞 A	古隸 二年 B	篆隸 筭數 B	古隸 奏讞 B	篆隸 蓋廬	授篆 脈書	古隸 筭數 A	古隸 引書	雜古 二年 A	雜古 曆譜	雜古 遣策
也	-	-	-	也	也	-	-	也	-	-
其	其	其	其	其	其	其	其	其	-	-
以	-	負	負	則	則	受	則	則	-	則
負	負	負	負	負	負	負	負	負	月	方
焉	焉	焉	焉	焉	焉	焉	焉	焉	-	-
而	而	而	而	而	而	而	而	而	天	-

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Handwriting analysis

Zhangjiashan scripts

篆隸			Skinny	古隸				古隸 Misc		Unidentified		
exmpl	筭數 B	蓋廬	脈書	exmpl	筭數 A	引書	二年 B	二年 A	奏讞 B	奏讞 A	曆譜	遺策
也	-			也	-	-	-		-		-	-
											-	-
							-				-	
											-	-
												-

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Scripteur C : Suan shu shu

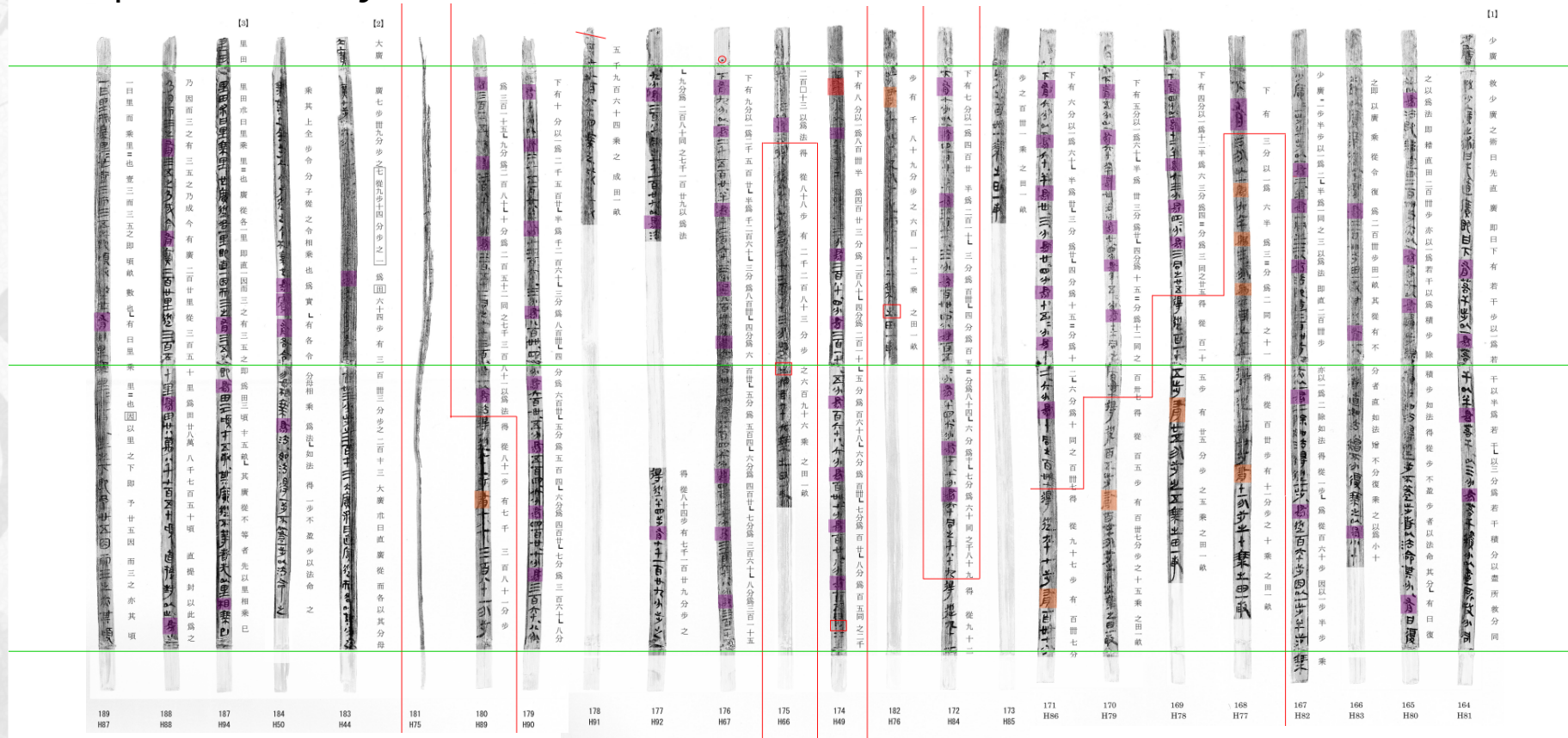
Scripteur C

- 38 percent of body,
- headings (upper margin)

Scripteur E

- 68 percent of body.

« Shao guang » 少廣 (s. 164-181)



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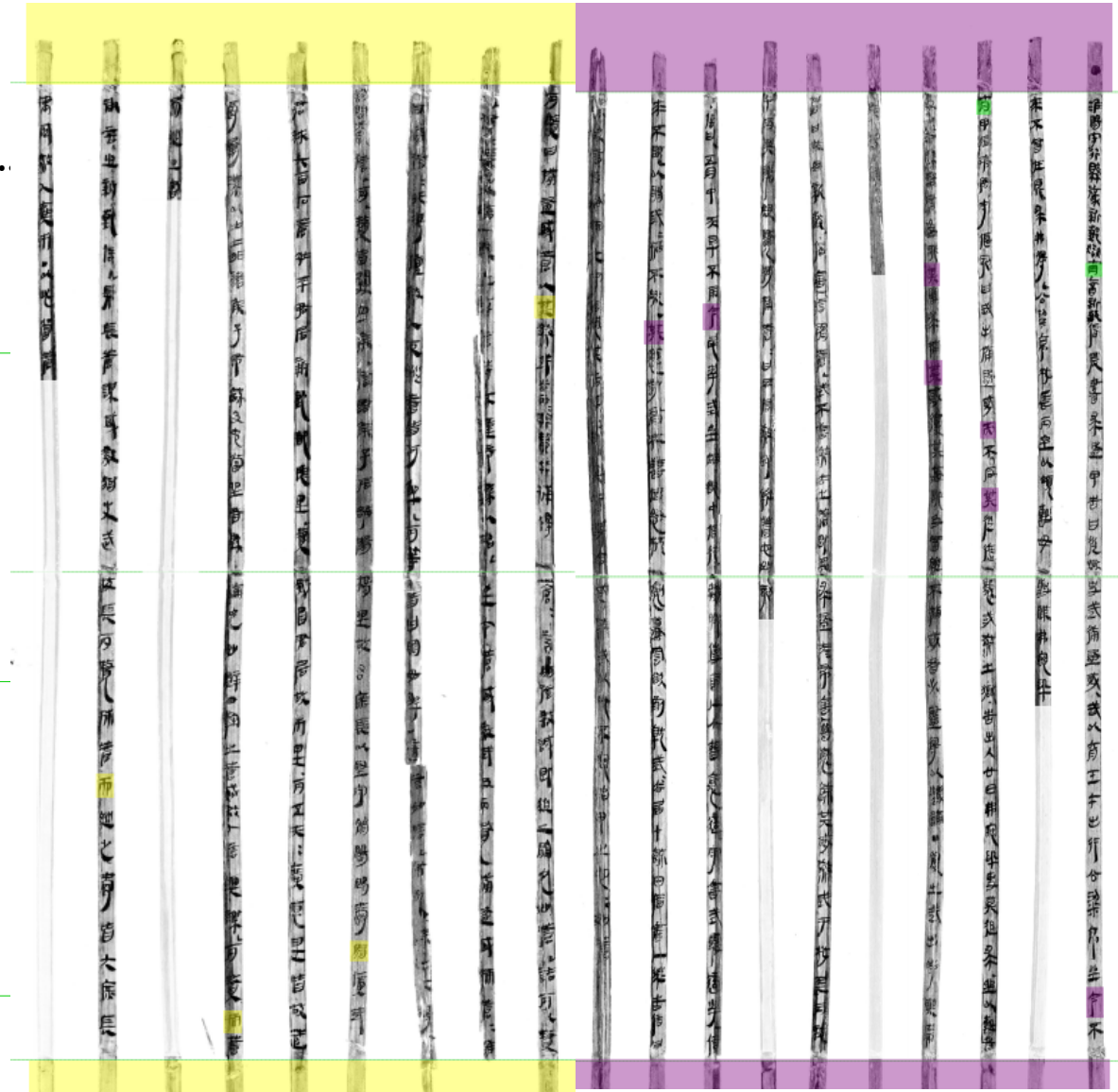
Scripteur C : Zou yan shu

Scripteur C

- 淮陽守行縣掾新鄴獄 ...
 - (finished by *Scripteur A*)
- 四月丙辰黥城旦講气(乞)鞠..
- 毛改曰：十月中與謀曰 ...
- 異時獄口曰：爲君、 ...
- 異時魯灋：盜一錢到廿 ...
- 故律曰；死夫(?)以男爲後 ...

Scripteur A

- Other stuff



Scripteur C : provisional conclusions

Conclusions

- *Scripteur C* wrote the lunation table and led the 『算數書』 & 『奏讞書』 .
- *Scripteur C* looks like a teacher.
- We assume, via the lunation table, that *Scripteur C* is the tomb occupant.
 - If so, 『算數書』 & 『奏讞書』 are not from a « funerary workshop » ;
 - If so, 『算數書』 & 『奏讞書』 are not *mingqi*.
 - If so, we can extend such methods to other corpora and begin an *empirical* discussion on what tomb occupants did and did not write.

Scripteur C : provisional conclusions

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Does a « calendar » belong to the tomb occupant?

Q: What is a « calendar » ?

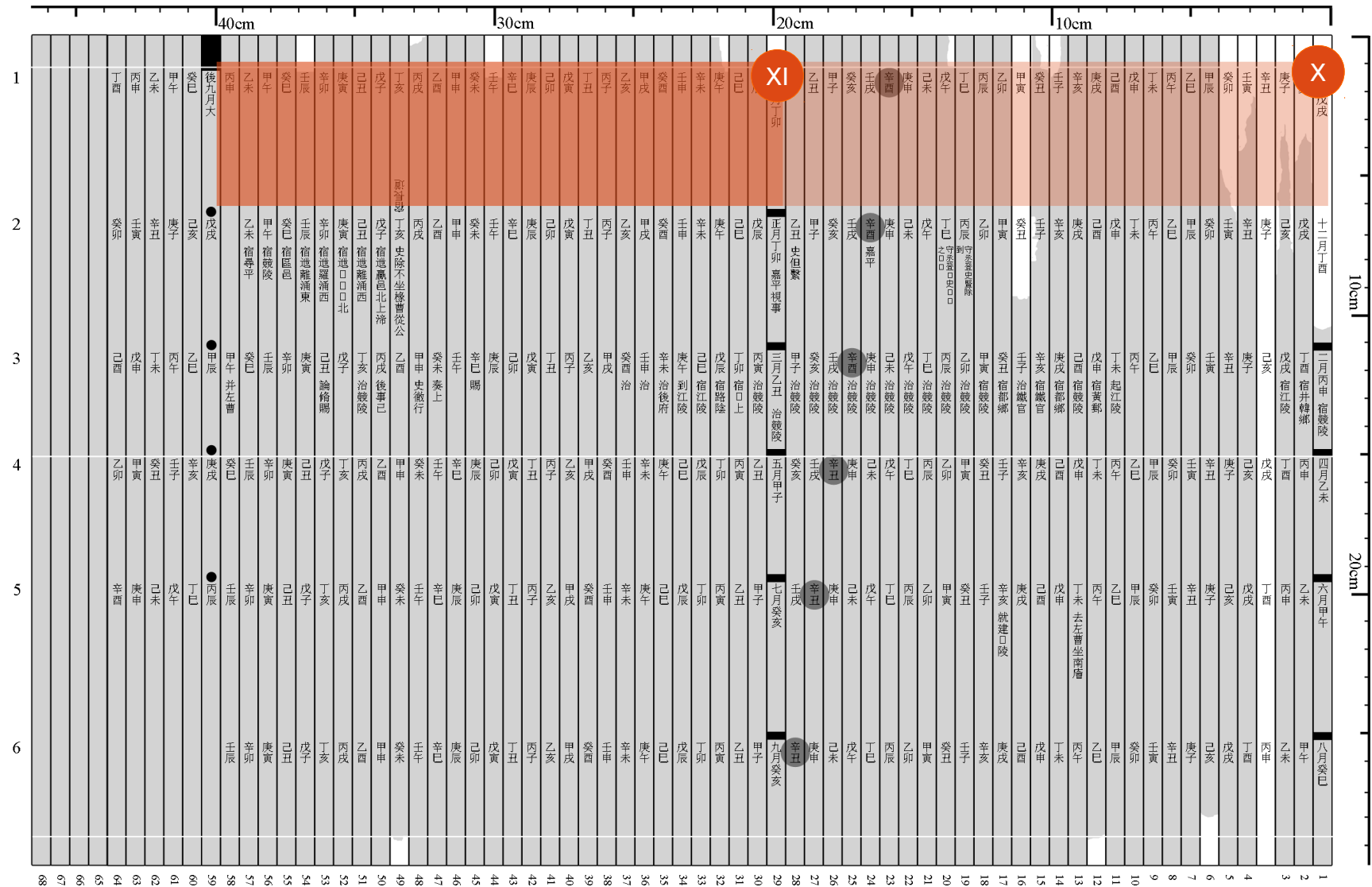
- 7th century sees break between 『具注曆日』 « almanacs » and so-called 『曆日』 * « calendars ».
- Prior to the 7th century, we have more than 60 « calendar » MSS and MS fragments.
- Typology
 - (Alain Arrault « Les premiers calendriers chinois du IIe siècle avant notre ère au Xe siècle », *Les Calendriers* [Paris: Somogy, 2002])
 - (Yoshimura Masayuki 吉村昌之, 『出土簡牘資料にはみれる曆譜の集成』, 『邊疆出土木簡の研究』 [Kyōto: Hōyū shoten, 2003])
 - Morgan (forthcoming):

By function:

- Day calendars
 - Public calendars (admin sites & Yinqueshan M2)
 - Private calendars (tombs)
- Lunation tables
 - Annual (admin sites & tombs)
 - Multi-annual (tomb: ZJS M247)

Does the « calendar » belong to the tomb occupant?

Private day-calendar: Zhoujiatai M30 『卅四年質日』 *



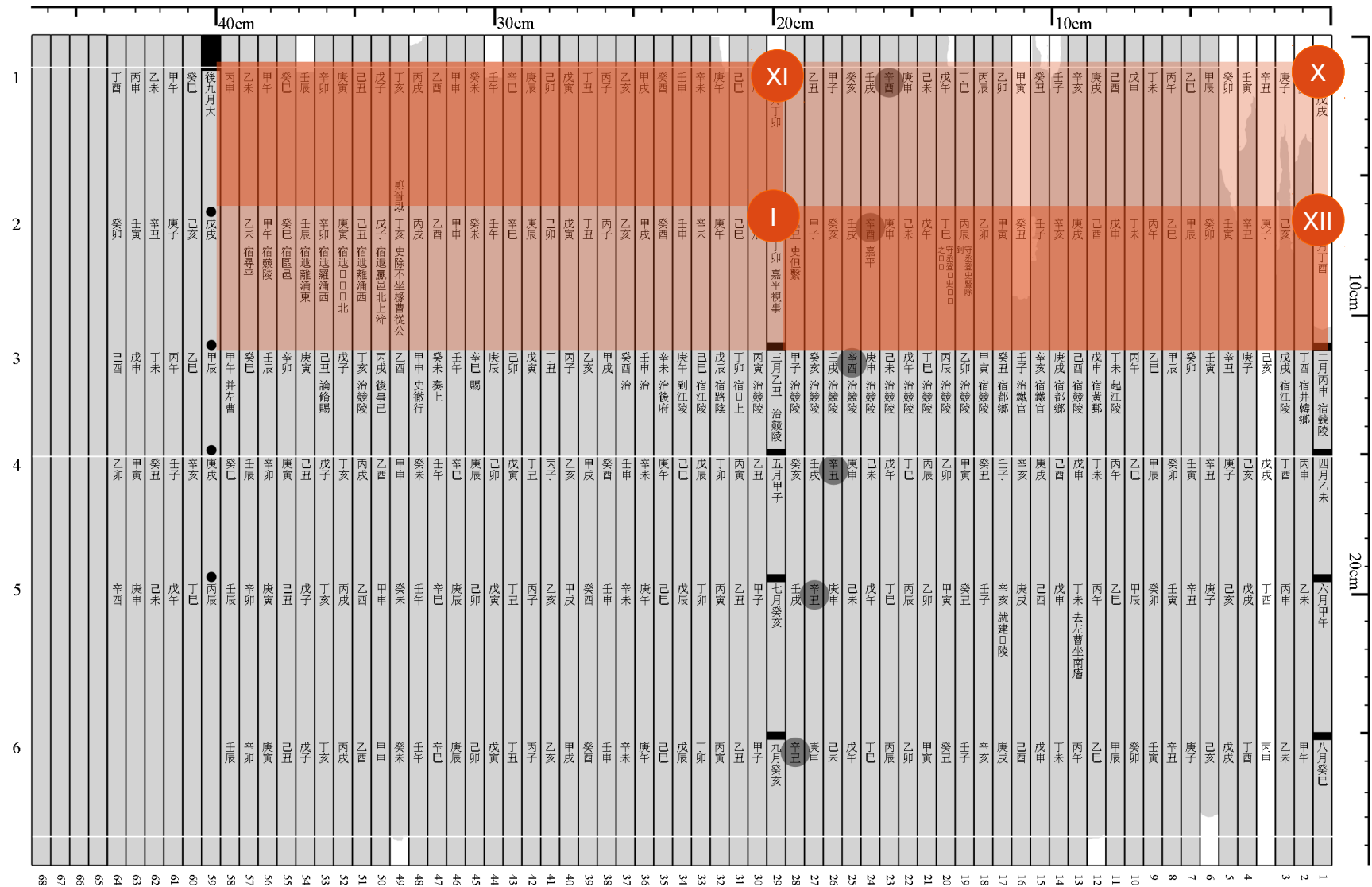
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Does the « calendar » belong to the tomb occupant?

Private day-calendar: Zhoujiatai M30 『卅四年質日』 *



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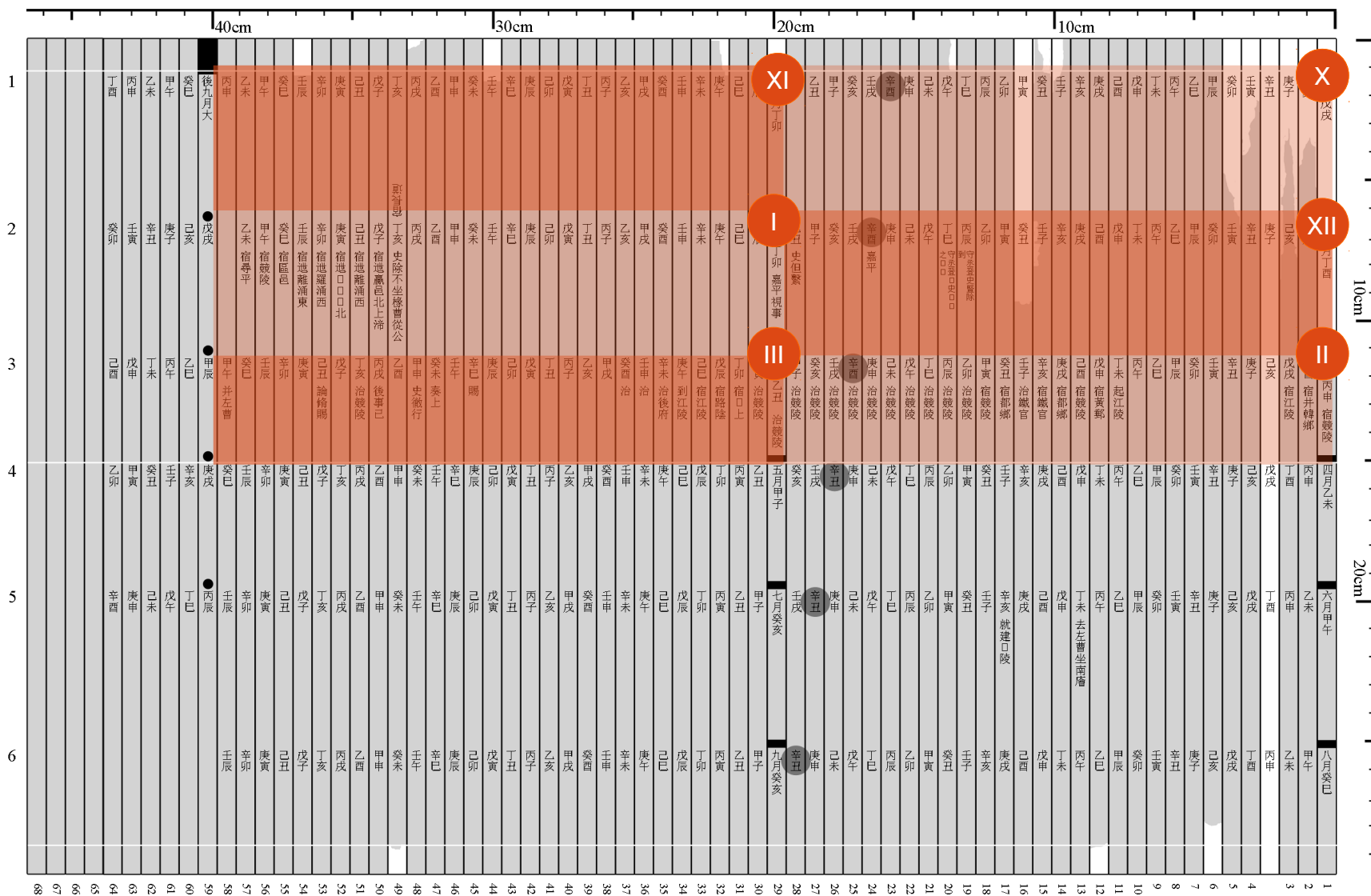
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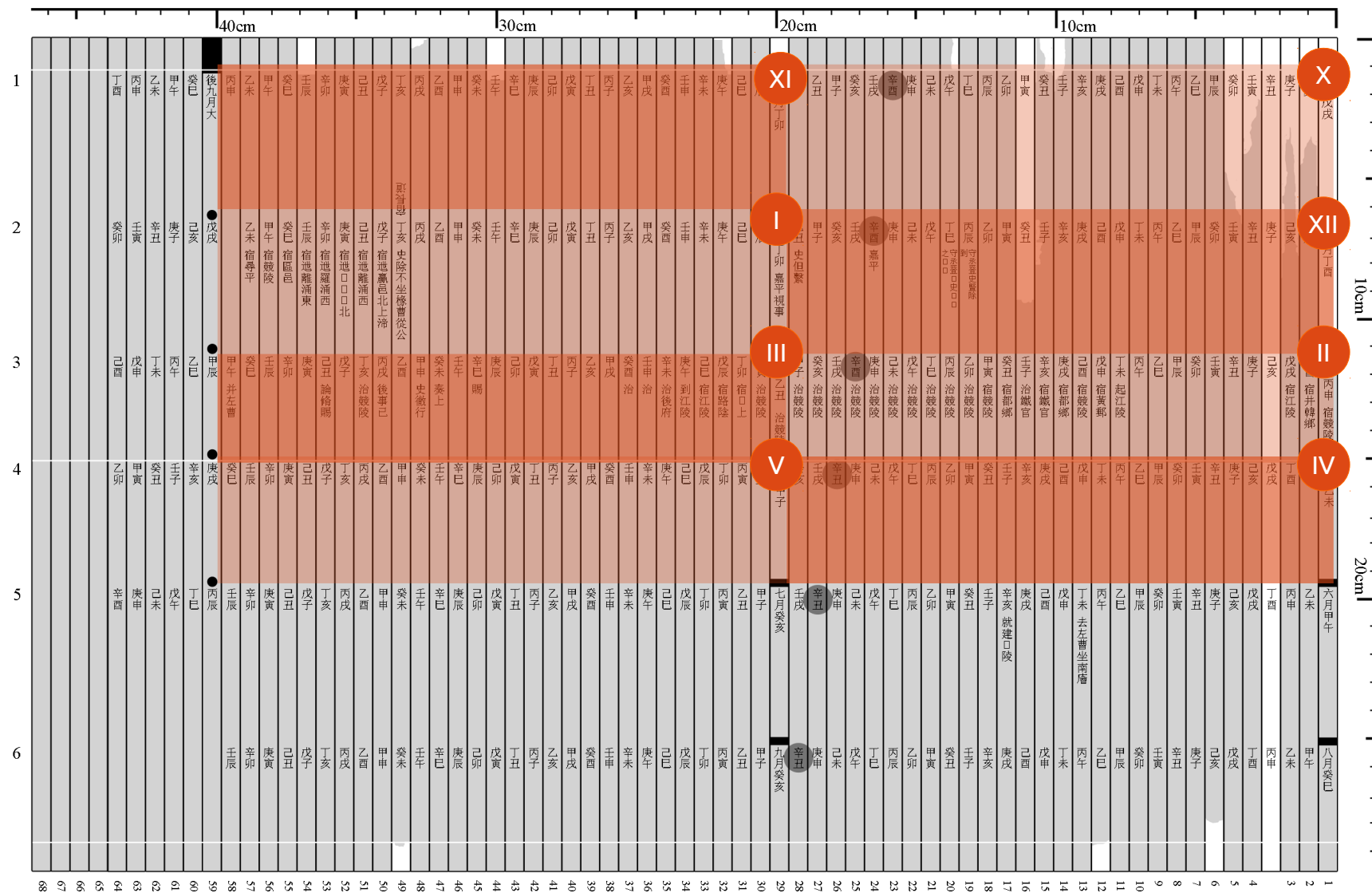
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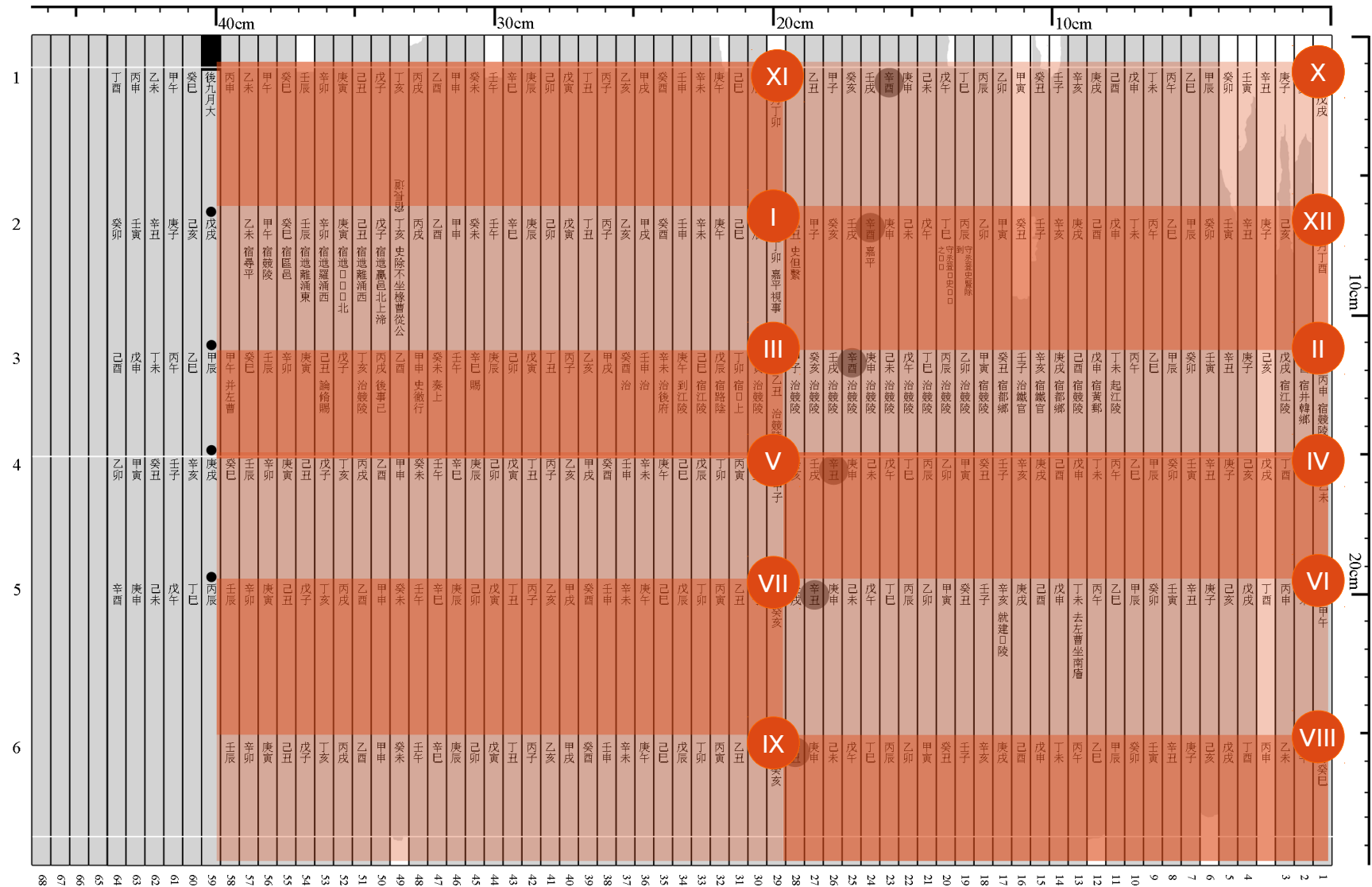
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SPHERE SCIENCES, PHILOSOPHY, HISTORY 1548-1728

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Does the « calendar » belong to the tomb occupant?

Private day-calendar: Yuelu Academy 『卅四年質日』

	50cm	40cm	30cm	20cm	10cm		
1	丁酉	乙未	甲午	癸巳	丙申	乙未	甲午
2	癸卯	辛丑	庚子	己亥	戊戌	丁酉	丙申
3	己酉	丁未	丙午	乙巳	甲辰	癸卯	壬寅
4	甲卯	癸丑	壬子	辛亥	庚戌	己酉	戊申
5	辛酉	己未	戊午	丁巳	丙辰	乙卯	甲寅
6							
	65	64	63	62	61	60	59
	58	57	56	55	54	53	52
	51	50	49	48	47	46	45
	44	43	42	41	40	39	38
	37	36	35	34	33	32	31
	30	29	28	27	26	25	24
	23	22	21	20	19	18	17
	16	15	14	13	12	11	10
	9	8	7	6	5	4	3
	2	1					
	1 ^o						

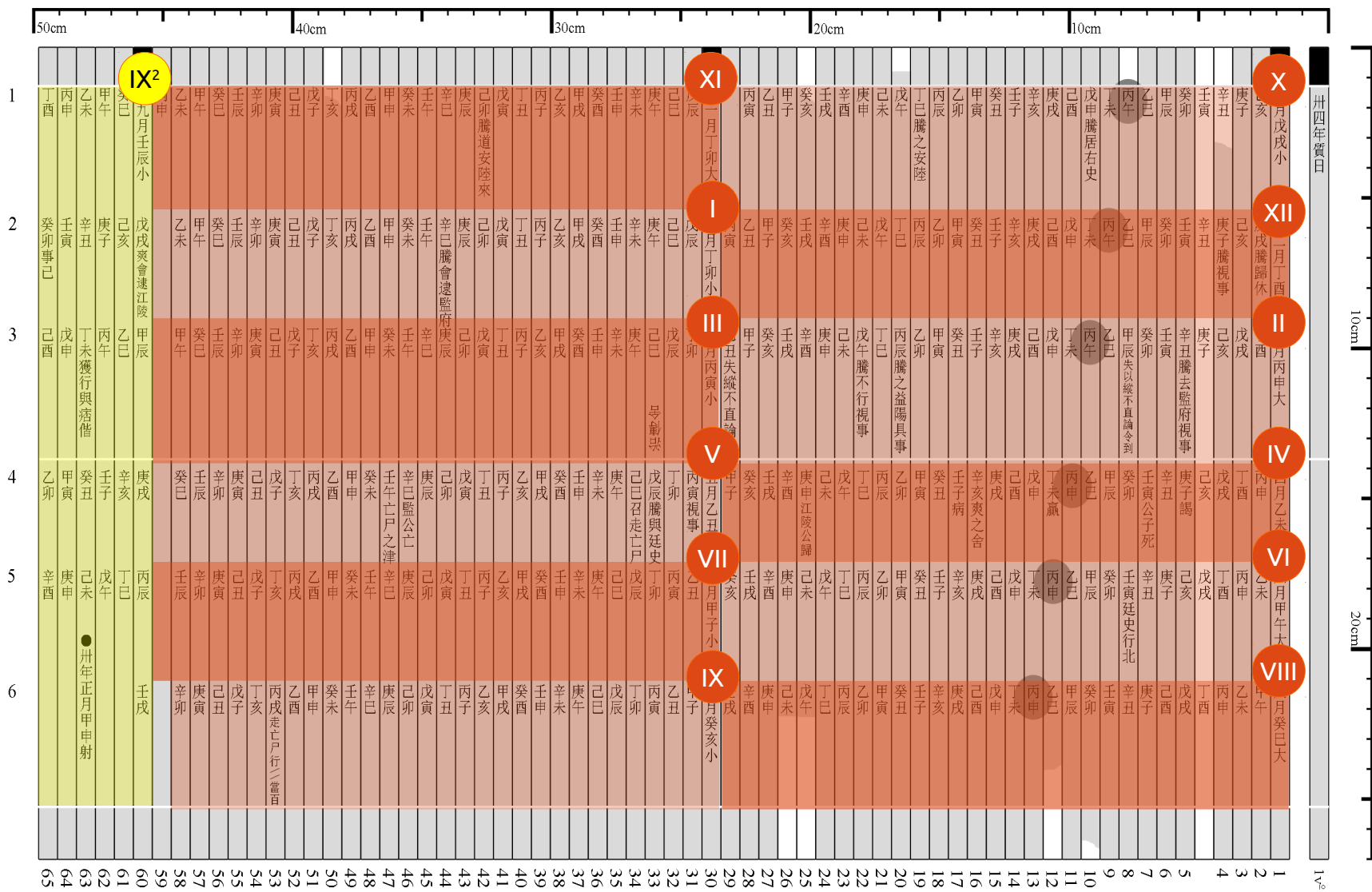
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Does the « calendar » belong to the tomb occupant?

Private day-calendar: Yuelu Academy 『卅四年質日』



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SPHERE SCIENCES, PHILOSOPHY, HISTORY

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PARIS DIDEROT PARIS 7 CNRS

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Private day-calendar: Yuelu Academy 『卅四年質日』

	50cm	40cm	30cm	20cm	10cm		
1	丁酉	乙未	甲午	癸巳	丙申	乙未	甲午
2	癸卯	辛丑	庚子	己亥	戊戌	乙未	甲午
3	己酉	丁未	丙午	乙巳	甲辰	癸卯	壬寅
4	甲卯	癸丑	壬子	辛亥	庚戌	己酉	戊申
5	辛酉	己未	戊午	丁巳	丙辰	乙卯	甲寅
6							
	65	64	63	62	61	60	59
	58	57	56	55	54	53	52
	51	50	49	48	47	46	45
	44	43	42	41	40	39	38
	37	36	35	34	33	32	31
	30	29	28	27	26	25	24
	23	22	21	20	19	18	17
	16	15	14	13	12	11	10
	9	8	7	6	5	4	3
	2	1					
	1 ^o						

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SPHERE SCIENCE, PHILOSOPHY, HISTORY ERIC PARIS DIDEROT

Does a « calendar » belong to the tomb occupant?

Zhiri 質日 MSS

1) 213 BCE UNTITLED, Zhoujiatai M30

- Names: 守丞登 × 1; 史豎 × 1; 史但 × 1; 史除 × 1; 史徹 × 1;
- Notes: administration (坐、視、治、奏上、事已、論、並曹), travel (宿、去), other (就建、賜)

2) 213 BCE 「卅四年質日」, Yuelu Academy

- Names: 騰 × 10; 公子 × 1; 爽 × 2; 江陵公 × 1; 監公 × 1;
- Notes: administration (視、謁、居、令到、治、會), travel (宿、歸、之、行), other (死、病、亡、射)

3) 212 BCE 「卅五年私質日」, Yuelu Academy

- Names: 爽 × 1;
- Notes: administration (治), travel (宿、行、歸、去), other ().

4) 210 BCE 「□七年質日」, Yuelu Academy

- Names: 兌嫗 × 1;
- Notes: administration (視), travel (歸、宿、到、之), other (死)

5) 179 BCE 「七年質日」, Zhangjiashan M336 (unpublished)

- Names: ?
- Notes: ?

6) 170 BCE 「某年質日」, Shuihudi M77 (unpublished)

- Names: ?
- Notes: ?

Does a « calendar » belong to the tomb occupant?

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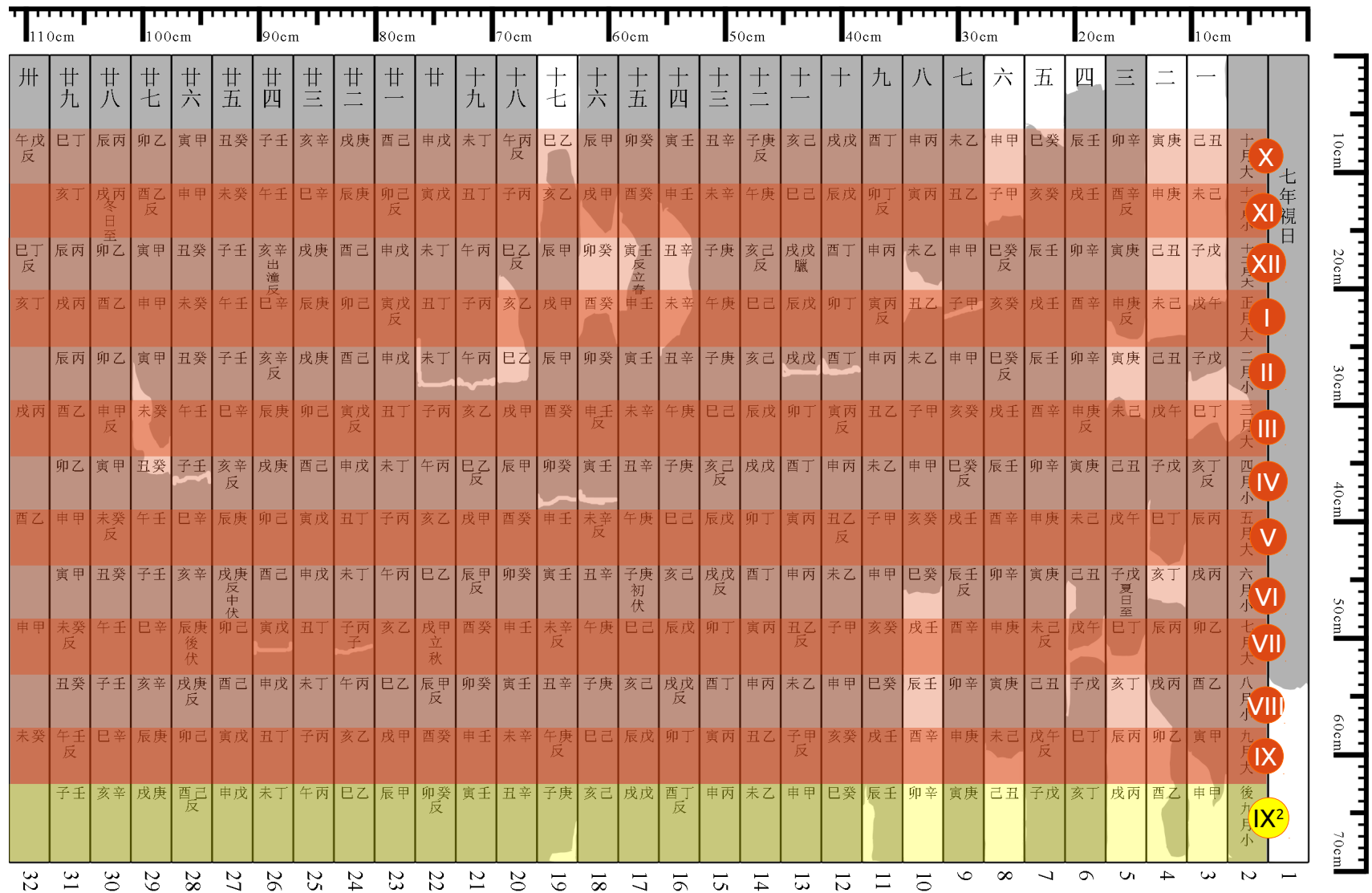
- Names: ?
- Notes: ?

6) 170 BCE 「某年質日」, Shuihudi M77 (unpublished)

- Names: ?
- Notes: ?

Does a « calendar » belong to the tomb occupant?

Public display calendar: Yinqueshan M2 『七年曆日』 (134 BCE)



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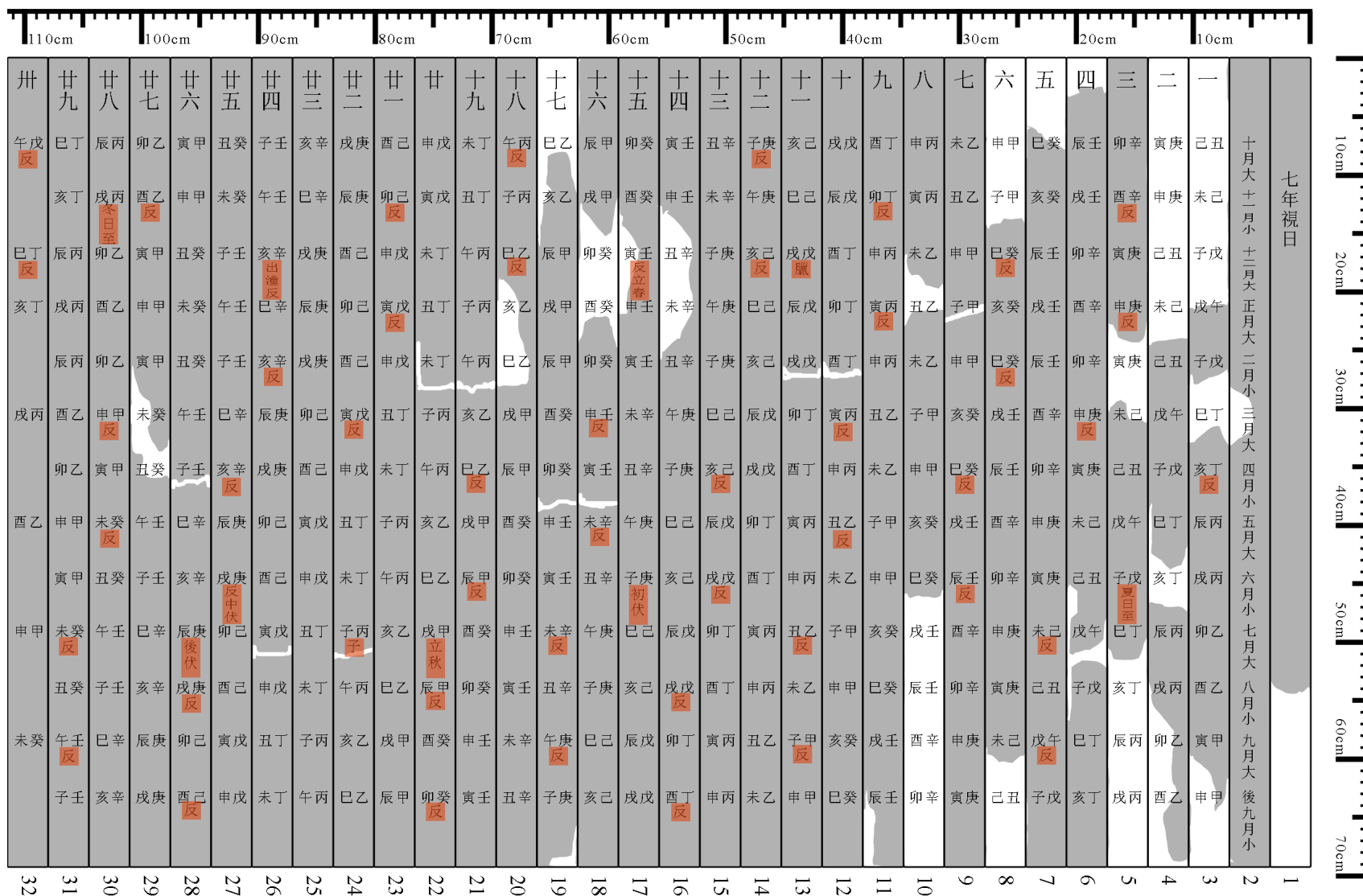
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Does a « calendar » belong to the tomb occupant?

Public display calendar: Yinqueshan M2 『七年曆日』 (134 BCE)



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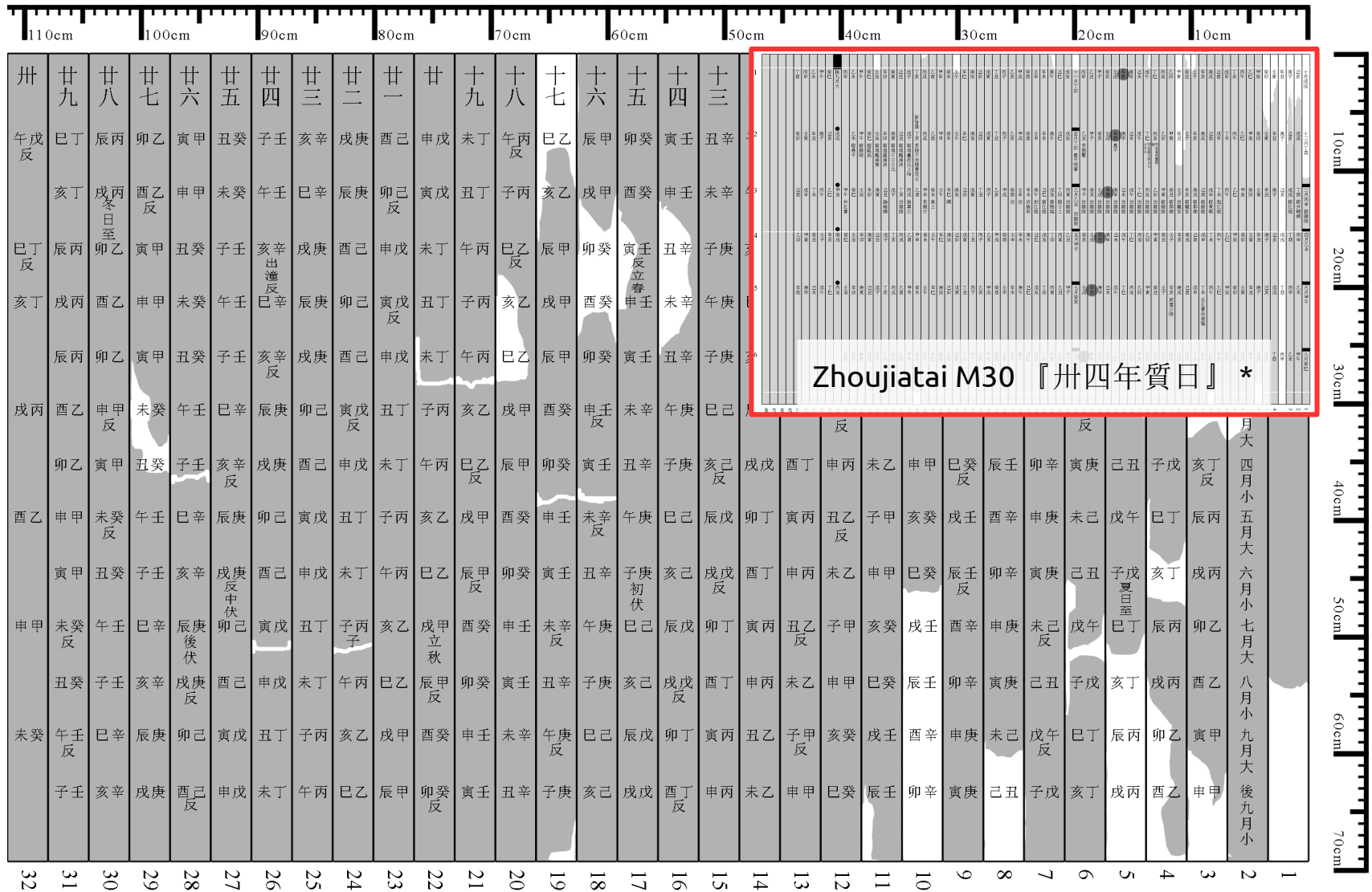
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SPHERE SCIENCES, PHILOSOPHY, HISTORY 1848-1918

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Public display calendar: Yinqueshan M2 『七年曆日』 (134 BCE)



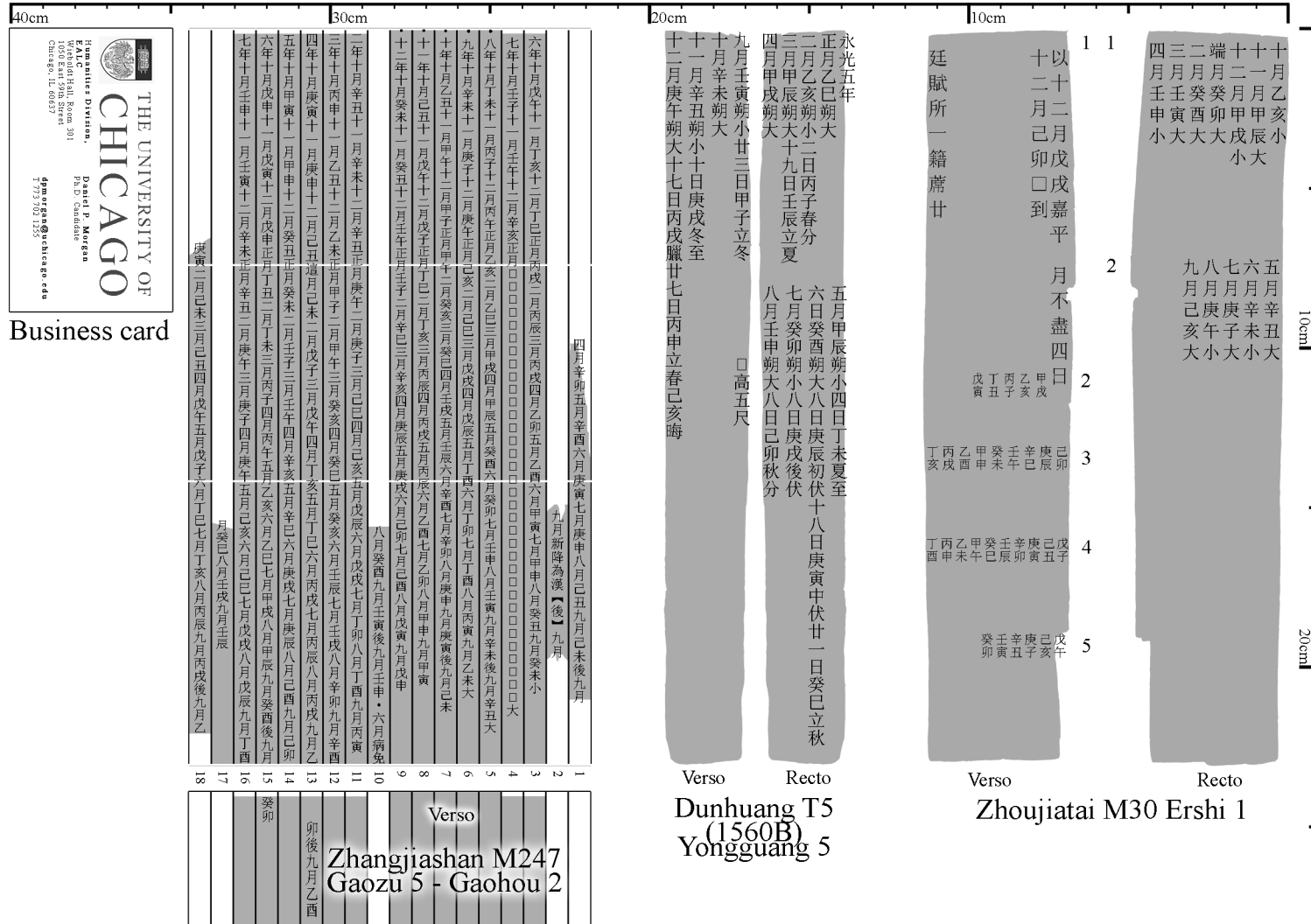
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Does a « calendar » belong to the tomb occupant?

Lunation tables



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Does a « calendar » belong to the tomb occupant?

Lunation tables

Jiaping [Festival] on XII-wuxu.³⁵ (209 BCE Feb 09),
four days out from the end of the month.

XII-yimao.⁵² (209 BCE Jan 21), ...

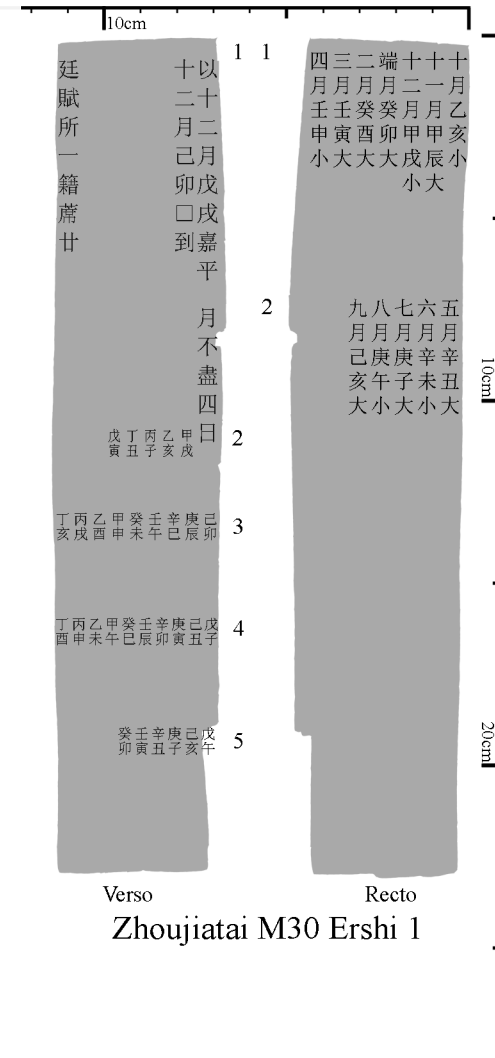
arrived at court tax office a total of 20 mat
cushions.

jiaxu, yihai, bingzi, dingchou, wuyin,

jimao, gengchen, xinsi, renwu, guiwei, jiashen, yiyong,
bingxu, dinghai,

wuzi, jichou, gengyin, xinmao, renchen, guisi, jiawu,
yiwei, bingshen, dingyou,

[wuwu], jihai, gengzi, xinchou, renyin, guimao



Does a « calendar » belong to the tomb occupant?

Assessment

- Distinguish « personal » vs. « public » calendars (based on size & annotations).
 - « public » display calendars can appear in tombs,
 - « personal » calendars conform to empire-wide formatting standards.
- Whatever « personal » or « 私 » means, some calendars record *activities*, and those activities are specific to an individual.
- Is that individual the tomb occupant?
 - **Q:** Conflicting « diaries » in same tomb? **A:** Never. (Maybe Yuelu collection has two people?)
 - **Q:** Travel records impossibly far from tomb? **A:** Never.
 - **Q:** Burial context contradicts identification? **A:** Never.
 - **Shuihudi M11:** « Bianji nian » ends at age 46; corpse of 40-45 year-old male.
 - **Zhangjiashan M247:** lunation table ends after retirement; tomb provides dove-head staff and teaching materials (?).
 - **Kongjiapo M8:** calendar dates to after death, and it is blank.
 - **Yinwan M6:** calendar mentions appointment to 功曹 ; calling cards identify the occupant with the same office.
- Conclusion: no reason to doubt the identification of « calendar » subject with tomb occupant.
 - **Q:** But did he *write* it?

Calendar-making

Hand-copying

Jixian zhuji 集賢注記 (c. 757 CE):

自置院之後，每年十一月內，即令書院寫新曆日一百二十本，頒賜親王公主及宰相公卿等，皆令朱墨分布，具注曆星，遞相傳寫，謂集賢院本。

Ever since the establishment of the [Jixian] Academy (in 725 CE), the academy has been ordered to make **120 copies** of the new *li* to disseminate to the kings and princesses of royal blood as well as the grand councillor, excellencies, ministers, etc. within month XI of every year. All of these are ordered to be distributed in red & black ink with annotations concerning the sequence of stars (*lixing*) so that they may be **passed around for copying**. [The master copies] are referred to as the Jixian Academy edition (cit. in *Yuhai*, 55.43b).

Tiansheng Decrees 天聖令 (976 CE):

諸每年司天監預造來年曆日，三京、諸州各給一本。量程遠近，節級送。樞密院散頒，並令年前至所在。

Every year, the [Clerk's Office] is to create in advance a *liri* for the upcoming year, giving **one copy each to the three capitals & various prefectures**. [They] are to be dispatched sequentially, based on the measured distance of the journey required. The Privy Council disseminates [them] and are furthermore ordered [to do so such that they] arrive before the beginning of the civil year (*nian*).

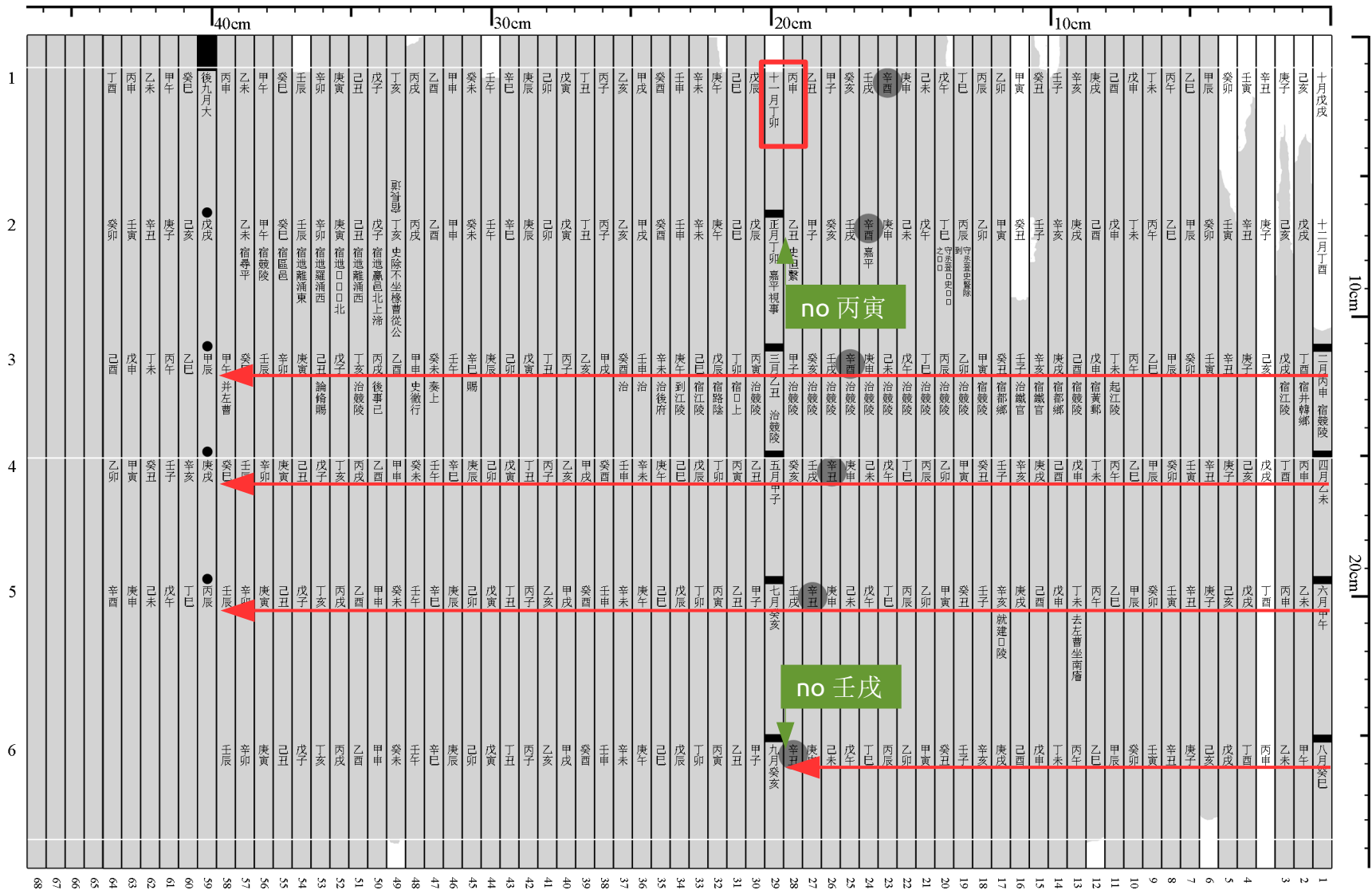
« Pass around for copying » 遞相傳寫

Private day-calendar: Yuelu Academy 『卅四年質日』

	50cm	40cm	30cm	20cm	10cm		
1	丁酉	丙申	甲午	癸巳	後九月壬辰小	丙申	乙未
2	癸卯事已	辛丑	庚子	己亥	戊戌喪會建江陵	甲辰	乙未
3	己酉	戊申	丁未	丙午	乙巳	甲辰	甲午
4	甲卯	癸丑	壬子	辛亥	庚戌	辛巳	壬辰
5	辛酉	庚申	己未	戊午	丁巳	丙辰	壬辰
6							辛卯
							庚寅
							己丑
							戊子
							丁亥
							丙戌
							乙酉
							甲申
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							壬午
							辛巳
							庚辰
							己卯
							戊寅
							丁丑
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							癸卯
							壬寅
							辛丑
							庚子
							己亥
							戊戌
							丁酉
							丙申

« Pass around for copying » 遞相傳寫

Private day-calendar: Zhoujiatai M30 『卅四年質日』 *



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The research leading to these results has received funding from the European Research Council under the European Union's Seventh Framework Programme (FP7/2007-2013) / ERC Grant agreement n. 269804.

Lunation tables for annual calendar distribution

Inherent advantages:

- small,
- light,
- fast to copy,
- expandable upon delivery

Copying fail-safes:

- formulaic,
- minimal characters to copy,
- predictable sequences of *ganzhi* and size,
- *independent* sequences of *ganzhi* and size.



Zhoujiatai M30 Ershi 1 lunation table (recto)

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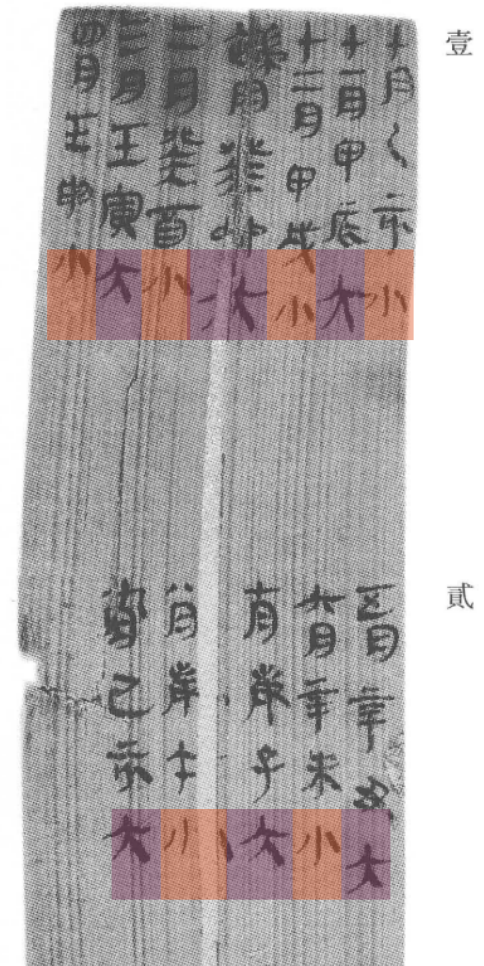
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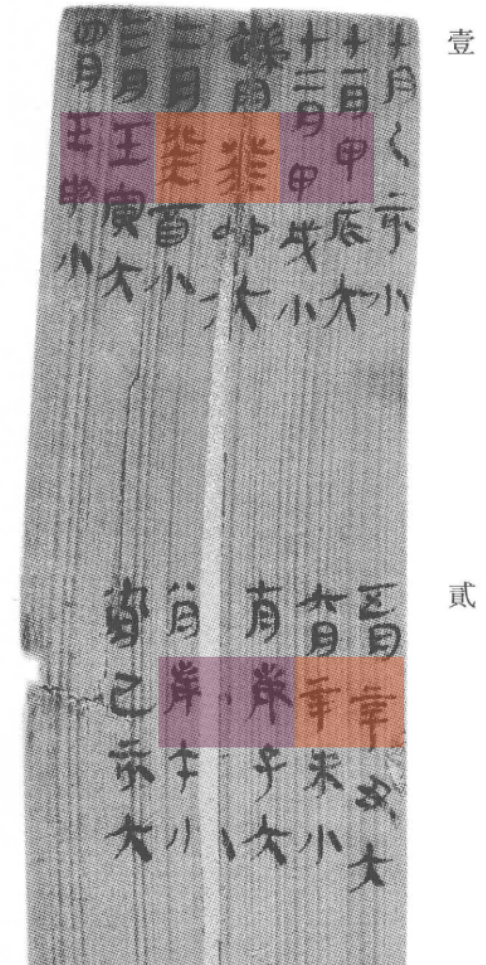
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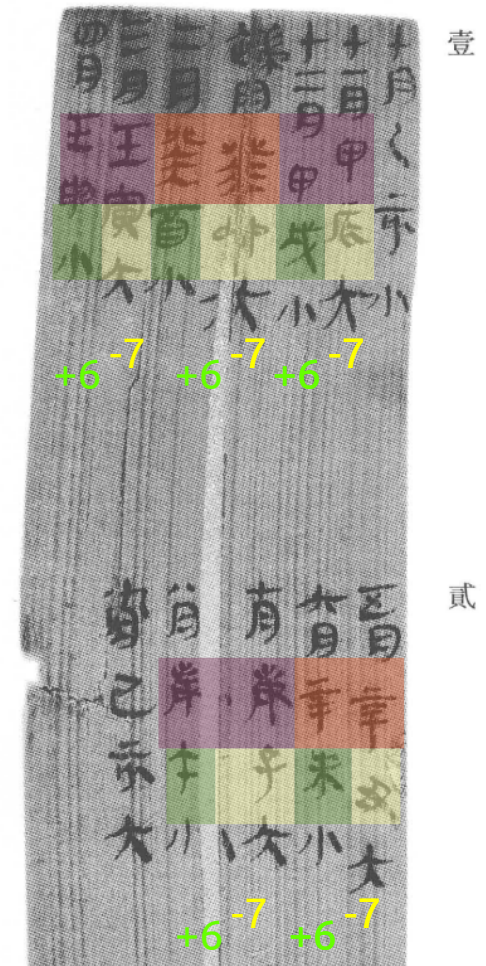
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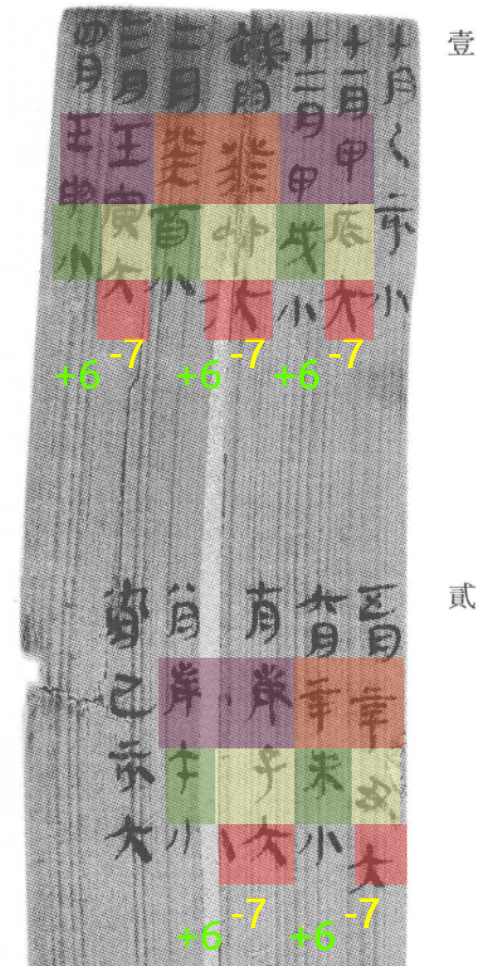
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- light,
- fast to copy,
- expandable upon delivery

Copying fail-safes:

- formulaic,
- minimal characters to copy,
- predictable sequences of *ganzhi* and size,
- *independent* sequences of *ganzhi* and size.



Zhoujiatai M30 Ershi 1 lunation table (recto)

« Pass around for copying » 遞相傳寫

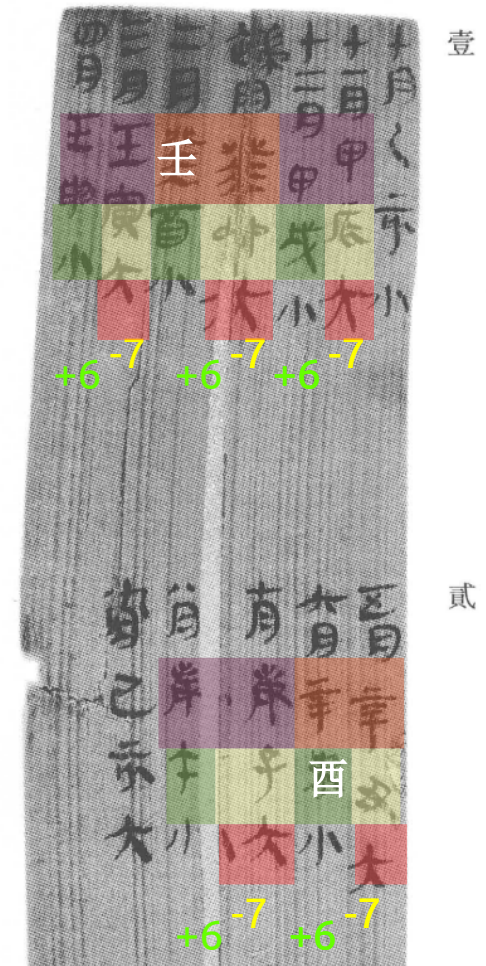
Lunation tables for annual calendar distribution

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Conclusion

- « Calendars » offer an excellent case-study in manuscript transmission:
 - diffusion of calendar-production to a local and/or individual level ;
 - required local officers to understand, unpack and correct *li* knowledge themselves ;
 - expected and safe-guarded against human error—mistakes from mindless visual copying.
- Calendars « passed around for copying » and expanded on-site, some into formats designed for recording events.
- Calendars used for recording events always specific to the individual and found in an individual's tomb (never in administrative sites).
- We all use these calendars as if they belonged to and were written by the tomb occupant, and there is no evidence to the contrary.
- *If* the tomb occupant wrote his own « diary », then we have his handwriting, and that tells us what else he wrote.
 - At Zhangjiashan, it would appear that the tomb occupant led the *Suan shu shu* and *Zou yan shu*.
 - If so, these are not *mingqi*, not products of a « funerary workshop », but *realia* belonging to the tomb occupant in life.