THE NOTION OF "SHI" 式 AND SOME RELATED TERMS IN QIN-HAN CALENDRICAL ASTROLOGY

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The discovery in 1977 at Fuyang 阜陽 (Anhui) in the tomb of Xiahou Zao 夏侯竈, lord of Ruyin 汝陰, of several astro-calendrical instruments dating from the beginning of Western Han 西漢 (ca. 165 B.C.E.) marked a decisive shift not only in studies on the type of device known by tradition under the name of *shi* 式 but also in modern studies of early Chinese science, divination, and religion, many of which regard the *shi* as the material basis for modes of thought in Warring States, Qin 秦, and Han 漢 culture.[1]

The *shi* instruments of Fuyang indeed precede the most ancient previously found by one and a half centuries. The later instruments all bear inscriptions that leave no doubt as to their connection to the Liuren 六壬 method, a system of calendrical astrology first attested to in Eastern Han 東漢 sources.[2] One of the three Fuyang devices appears to be related to the Liuren method but without the same type of inscriptions, while the two other devices seem to fit a very different bill. Researchers were thus compelled to reconsider the question of the *shi*, not only in its relation to the classical Liuren method, but also in situating those mantic devices in the context of contemporary astro-calendrical knowledge and of the divinatory practices with which they were associated.

It is against this background that the well-known articles by Donald Harper and Christopher Cullen appeared between 1979 and 1981, in the nascent issues of *Early China*. The different approaches of the two authors drew them into a polemic on the nature and function of these instru-

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1. Yan Dunjie 嚴敦傑, "Guanyu Xi-Han chuqi de shipan he zhanpan" 關於西漢初期的式盤和占盤, *Kaogu* 1978.5, 334–37; Yin Difei 殷滌非, "Xi-Han Ruyin hou mu chutu de zhanpan he tianwen yiqi" 西漢汝陰侯墓的占盤和天文儀器, *Kaogu* 1978.5, 338–43; Anhui sheng wenwu gongzuodui, "Fuyang Shuanggudui Xi-Han Ruyin hou mu fajue jianbao" 阜陽雙古堆西漢汝陰侯墓發掘簡報, *Wenwu* 1978.8, 12–25 (preliminary report with reproductions of the originals). For more recent photographs of the instruments, see Liu Haichao 劉海超, "Fuyang bowuguan cangpin jianjie" 阜陽博物館藏品簡介, *Wenwu tiandi* 文物天地 2000.1, 35–36.

2. On Liuren calendrical astrology, see n. 12 below.

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ments: while Cullen endeavored to explain their form and significance in relation to the cosmographic and astrometric conceptions of the time, Harper focused on the archaeological and textual sources that testified to the importance of the *shi* and its central motif, the Northern Dipper (*beidou* 北斗), in the domain of astrology and religion in both ancient and medieval China.[3] The translation of the term *shi* defended by each author is itself significant. If they both agree on recognizing a cosmological dimension in the conception of the *shi* (although the qualifier "cosmic" may seem extreme for an object whose symbolism is primarily astro-calendrical), they differ on what name to give the object. Cullen opts for "cosmic *model*" in reference to the overall structure of the apparatus that he attempted to reconcile with the cosmography described in the *Gnomon of Zhou*.[4] Harper leans rather toward "cosmic *board*," following a tradition initiated by Joseph Needham that preserves the primary sense of the term *shi* as a concrete instrument assigned to some well-defined uses, even though these uses remain largely unknown.[5] In any case, both translations entered into the sinological literature, primarily in connection with the study of astrology and the traditional sciences (*shushu* 數術), but also in connection with the study of the early representations of time and space, as well as the art and culture of ancient China in general.[6] While the examples of devices discovered to date and the conception of *shi* have provided an interpretative key to all these questions, the exact meaning of the term *shi* remains a source of perplexity, as its connotations are imprecise and can vary from one author to the next.

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3. Donald Harper, "The Han Cosmic Board (*shih* 式)," *Early China* 4 (1978–79), 1–10; Christopher Cullen, "Some Further Points on the *shih*," *Early China* 6 (1980–81), 31–46; Donald Harper, "The Han Cosmic Board: A Response to Christopher Cullen," *Early China* 6 (1980–81), 47–56; Christopher Cullen "The Han Cosmic Model: A Rejoinder to Donald Harper," *Early China* 7 (1981–82), 130–33.

4. *Zhoubi suanjing* 周髀算經. Further evidence on the filiation between the *shi* and Gaitian 蓋天 cosmography as described in the *Gnomon of Zhou* is provided in Cullen's translation of the classic: *Astronomy and mathematics in ancient China: the* Zhou bi suan jing, Needham Research Institute Studies 1 (Cambridge: Cambridge University Press, 1996), 43–53.

5. Needham's standard translation for *shi* is "diviner's board". He has devoted considerable attention to the study of this instrument from several points of view; see *Science and Civilisation in China*, vol. IV.1 (Cambridge: Cambridge University Press, 1962), 261–69. As noted by Cullen, the English word "board" is not normally understood as having moving parts ("Some Further Points on the *shih*," 41, n. 8). My own translation in this article is "mantic device", a generic term that matches the Chinese *zhanpan* 占盤; see n. 29 below.

6. Another rather widespread translation for *shi* in Western scholarship starting from the 90s is "cosmograph"; see Stephen Field, "Cosmos, Cosmograph, and the Inquiring Poet: A New Answer to the 'Heaven Questions'," *Early China* 17 (1992), 83–110.

The archaeological discoveries that have succeeded each other at a regular pace since the 1980s have considerably enriched our knowledge of the ideas and activities of astrologers, hemerologists, and natural philosophers of the Warring States, Qin, and Western Han. Yet the excavation reports sometimes mention the existence of objects which they refer to as *shi* when, from the descriptions, the accuracy of such identifications is not always clear. More generally, the excavated materials contain much new information on the conception and the operation of these devices as well as on related divinatory systems. The evidence includes objects that, although bearing inscriptions quite similar to those appearing on the *shi*, are not mantic devices as such. In addition, we have textual evidence in the bamboo and silk manuscripts, principally the "daybooks" (*rishu* 日書) discovered in large numbers in the tombs of the period. Some of these manuscript texts are related to the manipulation of a *shi* device, others describe complex divinatory systems most often accompanied by diagrams of the *shi* type.[7]

In the present article, I propose to review the field of *shi* studies since the 1970s; to examine our present knowledge of the evidence from archeological materials, including manuscripts; to review the evidence from transmitted sources; and to give an account of how the *shi*—both as material object and conception—has influenced modern views of early Chinese calendrical astrology.

Li Ling's 李零 seminal article from 1991 has had extraordinary influence on modern research.[8] In addition to making a comprehensive survey of all surviving examples of *shi* instruments, Professor Li examined patterns and diagrams that appear on the surface of *shi*, which he correlated with texts in excavated manuscripts and transmitted sources. By means of this approach, the study of these patterns and diagrams in relation to their use in calendrical astrology was extended to their larger cosmological and classificatory functions of representing time and space; that is, he laid a foundation for the study of what—using the expression

7. For a general presentation of the *rishu*-type manuscripts, see Liu Lexian 劉樂賢, *Jianbo shushu wenxian tanlun* 簡帛數術文獻探論 (Wuhan: Hubei jiaoyu, 2003), 27–98. To this day, the daybooks that have received the greatest scholarly attention are those discovered in 1975 at Shuihudi (Hubei), tomb 11; see Liu Lexian, *Shuihudi Qin jian rishu yanjiu* 睡虎地秦簡日書研究 (Taipei: Wenjin, 1994); Marc Kalinowski, "Les traités de Shuihudi et l'hémérologie chinoise à la fin des Royaumes combattants," *T'oung Pao* 72 (1986), 175–228; and Kalinowski, "Les livres des jours (*rishu*) des Qin et des Han: la logique éditoriale du recueil A de Shuihudi (217 avant notre ère)," *T'oung Pao* 94 (2008), 1–48.

8. Li Ling 李零, "'Shi' yu Zhongguo gudai de yuzhou moshi" '式' 與中國古代的宇宙模式, *Zhongguo wenhua* 4 (1991), 1–30; rpt. with slight changes in Li Ling, *Zhongguo fangshu zhengkao* 中國方術正考 (Beijing: Zhonghua, 2006), 69–140.

adopted in the1980s by John Major in a slightly different context—might be translated into English as "schematic cosmography."[9] On the one hand, Li Ling clarified the diverse connotations of the term *shi* through his presentation of related word compounds, each with specific denotations in transmitted sources, such as: *shipan* 式盤 or *shi*-device, *shifa* 式法 or *shi*-method, and *shizhan* 式占 or *shi*-divination. On the other hand, Li Ling coined a new term *shitu* 式圖 or *shi*-diagram, which for him was in part a convenient shorthand. "To facilitate my presentation," he wrote, "I will refer in this article to the diagrammatic patterns (*tushi* 圖式) that are represented on the *shi*[-devices] under the abbreviated form '*shi*-diagrams' (*shitu*)";[10] that is, Li Ling's term *shitu* designated the patterns and diagrams on *shi*-devices as the basis for further describing schematic designs found elsewhere. As a result, these designs were all connected to one another through the classificatory application of the term. Twenty years have passed since Li Ling started using *shitu* in connection with the *shi*-devices, and its meaning has expanded so that the notion of the *shi*-diagram is by now often applied to schematic representations of space and time that do not necessarily show a functional relationship to a specific device. Whether this modern development is an accurate representation of ideas about the *shi* in Warring States, Qin, and Han times is precisely the problem I intend to explore in the following pages.

Shi-divination

I begin with the term *shizhan*, the understanding of which affects how we look at the other compounds. When classifying Han mantic arts, Li Ling defines *shizhan* to mean, "divination practiced by means of a *shi*; that is, a kind of instrument conceived as a model of the cosmos."[11] *Shi*-divination is here understood as a set of divinatory techniques based on the manipulation of *shi*-devices such as those described by Li Ling in his 1991 article. Let us re-examine this definition by looking at the historical context in which the notion of *shizhan* was first used. Evidence from

9. John Major, "The Five Phases, Magic Squares and Schematic Cosmography," in *Explorations in Early Chinese Cosmology*, ed. Henry Rosemont Jr., JAAR Thematic Studies 50/2 (Chico: Scholar Press, 1984), 133–66.

10. 爲了敍述的方便,本書把式所代表的圖式簡稱為'式圖' (*Zhongguo fangshu zhengkao*, 69). Li Ling's focus on the term *shitu* was somehow in the air since it is incidentally used by Yan Dunjie when considering the possible filiation between the *shi*-devices from the early Han and the famous design appearing on one of the lacquered chests found in the tomb of the Marquis Yi of Zeng 曾侯乙 at Leigudun (Hubei, 433 B.C.E.); see Yan Dunjie, "Shipan zongshu" 式盤綜述, *Kaogu xuebao* 1985.4, 448.

11. 式占是以式，即一種模仿宇宙結構的工具進行占卜 (*Zhongguo fangshu zhengkao*, 30).

transmitted texts indicates that the term was not current before the Sui and Tang, when it appears in connection with the three *shi* mantic systems (*sanshi* 三式) practiced by the court astrologers of the Astronomical Bureau: the Liuren method already mentioned, the Dunjia 遁甲 (Hidden Cycles) or Leigong 雷公 (Lord of Thunder) method, and the Taiyi 太乙 (Grand One) method.[12] It is important to note that neither Tang nor Song sources for the three systems give decisive importance to the *shi* as an instrument. As for the term *shizhan*, it came to be invested with a much larger meaning that we can roughly translate as "calendrical astrology," and the methods attached to that form of astrology may be defined as "calendrological systems."[13] This shift in meaning is very clearly demonstrated in Song and later literature. However, for more ancient periods the evidence is insufficient. For Han, the few references to the term *shi* in an astro-calendrical context seem generally to refer to the operation of an instrument, but we cannot exclude the possibility that the term already had a wider meaning. For example, it is difficult to decide whether the *Xianmen shi* 羨門式, a work listed in the bibliographical treatise of the *Han shu*, should be translated as "Xianmen's mantic device" or as "Xianmen's calendrological system."[14]

Given the semantic vagueness surrounding both past and present uses of the term *shi*-divination, we should specify its meaning in the enlarged sense of "calendrological system" before we proceed further. Lu Yang 盧央 in his history of Chinese astrology has this definition: "*Shi*-divination is fundamentally a kind of formalistic astrology, whose designation is probably due to the fact that it used to be practiced with a *shi*-device."[15]

12. The *locus classicus* for *shizhan* being used to designate the three systems practiced by Tang court astrologers is *Tang liudian* 唐六典 (*Siku quanshu* 四庫全書 ed.), 14.30b–32a. On earlier evidence, see Yan Dunjie, "Shipan zongshu," 445–64. On the three classical systems of calendrical astrology, see Ho Peng Yoke, *Chinese Mathematical Astrology: Reaching out to the Stars* (London: RoutledgeCurzon, 2003). For evidence on *shi*-divination drawn from titles appearing in Sui and Tang bibliographical treatises, see Li Ling, *Zhongguo fangshu zhengkao*, 87–92.

13. The term "calendrical astrology" parallels that of "calendrical astronomy" used by specialists as a characterization of Chinese astronomical systems; see Nathan Sivin, "Cosmos and Computation in Early Chinese Mathematical Astronomy," *T'oung Pao* 55 (1969), 1–73; Cullen, *Astronomy and mathematics in ancient China*, 92–101.

14. *Han shu* (Beijing: Zhonghua, 1968), 30.1769. Xianmen could refer to Xianmen Gao 高, an obscure character from the Warring States. Relying on an anecdote quoted in the Tang dynasty encyclopedia *Yiwen leiju* 藝文類聚 (Shanghai: Shanghai guji, 1985), 75.1286, Yan Dunjie speculates that the *Xianmen shi* could represent an early form of the Taiyi system ("Shipan zongshu," 446).

15. 式占在本質上是一種形式化了的星占術，或許是由於用了栻盤而稱為式占. Lu Yang 盧央, *Zhongguo gudai xingzhanxue* 中國古代星占學 (Beijing: Zhongguo kexue jishu, 2008), 302. The long section of Lu Yang's book devoted to *shi*-divination (298–523)

In the three systems of the classical period, calendrical astrology has the following characteristics that are closely related to the calendar-based orientation of Chinese astronomy ("the art of not having to look at the heavens" as nicely put by Nathan Sivin[16]): (1) the central role played by the sexagenary cycle and its components (the ten stems and twelve branches) in the transposition of astronomical events into calendrical units; (2) the use of diagrammatic representations of time and space which incorporate the sexagenary signs and other features involved in the prognostication process, such as the five agents, the eight trigrams, numbers, and so on; (3) the presence of "wandering spirits" (*youshen* 游神) that circulate among those diagrams in correlation to the sexagenary signs and according to periodic cycles proper to each system—all this resulting in specific arrangements generally called "configurations" (*ju* 局);[17] (4) the essentially "horary" applications of this form of astrology, meaning that they aimed to establish auspicious or inauspicious qualities of a situation at a precise moment in time and not to determine the destiny of persons by relying on their birth horoscope.

Shi-device

Interestingly enough, the term *shipan*, "mantic device," begins to spread during the Tang 唐 and Song 宋, when the broader meaning of the term *shi* became commonplace.[18] In his study of the existing examples of *shi* devices in relation to the three official systems of calendrical astrology,

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includes, in addition to the three classical systems mentioned above, a description of the so-called Wind-Angle divination (*fengjiao* 風角).

16. Quoted in Cullen, "Some Further Points on the *shih*," 34. The following list is a first attempt to define the basic features of calendrical (or "mathematical" according to Ho Peng-Yoke) astrology. The formalistic dimension of this kind of astrology lies in the fact that it has less to do with the position of celestial bodies in the sky than with the abstract time cycles and correlated space orientations that determine the periodic revolutions of the mobile entities proper to each system. For example, in the Dunjia system, the series of wandering spirits called the "Nine Stars" (*jiuxing* 九星) are not related to any particular celestial body.

17. The term *youshen* is not attested to in Han sources that commonly refer to this type of calendar spirits by using the generic term *shen* (spirits), though in the *Huainanzi* one finds the expression *xi zhu shen* 徙諸神 with a similar meaning; *Huainan honglie jijie* 淮南鴻烈集解, ed. Liu Wendian 劉文典 (Taipei: Shangwu, 1974), 3.26b ("Tianwen xun" 天文訓).

18. A Tang dynasty occurrence of *shipan* is found in the *Zhitian lu* 芝天錄 quoted in *Taiping guangji* 太平廣記 (Beijing: Zhonghua, 1995), 78.495–96, in an anecdote showing Jia Dan 賈耽 (730–805) divining with a *shi*-device; see Yan Dunjie, "Shipan zongshu," 446, for an attempt to identify the type of device used by the famous Tang statesman and geographer.

the late historian of mathematics and science, Yan Dunjie, reflects this changing meaning in his own writings when he defines the *shipan* as "an instrument that is used to set up a (specific) *shi* (configuration)."[19] Let me emphasize, however, that the term *shipan* does not appear in the early treatises on calendrical astrology compiled by Yang Weide 楊惟德, a member of the Astronomical Bureau during the reign of Emperor Renzong 仁宗 in the Jingyou 景祐 era (1034–1038). These treatises use the term *shi*, sometimes followed by *ju* (configuration), to refer more precisely to the overall design of the device.[20] Furthermore, only the instrument for the Liuren system receives a consistent description. Yang specifies the types of wood used to make the two parts of the device, the size of each part according to the rank and status of its possessor, and finally the hemerological and ritual requirements for its manufacture:[21]

> Start the engraving of the *shi* on a *renzi* (n49) day, when the wandering spirit is concealed inside, and finish before the following *jiazi* (n60) day. After having performed a consecration rite and adjusted the device properly, place it in a cloth purse and carry it with you.

Overall, it appears that Yang Weide saw the device as a talismanic object invested with the prestige of tradition, rather than as something crucial to the operation of the method. The role of a device for the Dunjia and Taiyi systems is even more problematic since Yang Weide only provides information for the basic configuration of the system:[22]

> In days of old, when the Yellow Thearch received the method from the Dragon-Horse, he ordered the Lord of Winds to make a *shi* adapted to the Dunjia. The three levels were meant to represent the Three Powers: on the upper level that represents Heaven are laid out the nine stars, on the middle level that represents Man the nine doors, and on the lower level that represents Earth the eight trigrams as marking out the eight directions.

19. 佈式的工具叫式盤 ("Shipan zongshu," 445).

20. *Jingyou Taiyi fuying jing* 景佑太乙福應經, *Jingyou Dunjia fuying jing* 景佑遁甲符應經, and *Jingyou Liuren shending jing* 景佑六壬神定經. On Yang Weide, see Ho Peng Yoke, *Chinese Mathematical Astrology*, 6–8. For an easy access edition to Yang's treatises, see Li Ling and Liu Lexian, *Zhongguo fangshu gaiguan*: *Shifa juan* 中國方術概觀: 式法卷 (Beijing: Renmin Zhongguo, 1993), 223–342.

21. *Jingyou Liuren shending jing* (*Zhongguo fangshu gaiguan* ed.), 337–38. It may be added that the section on the manufacture of the device ("Shi zao shi" 釋造式), is placed near the end of the treatise (section 30 of 39 sections).

22. *Jingyou Dunjia fuying jing* (*Zhongguo fangshu gaiguan* ed.), 276. For the Taiyi system, we are told a similar story, in the *Jingyou Taiyi fuying jing* (*Zhongguo fangshu gaiguan* ed.), 233, as well as in the earlier *Taiyi jinjing shijing* 太乙金鏡式經 (*Zhongguo fangshu gaiguan* ed.), 172 (attributed to Wang Ximing 王希明 of the eighth century).

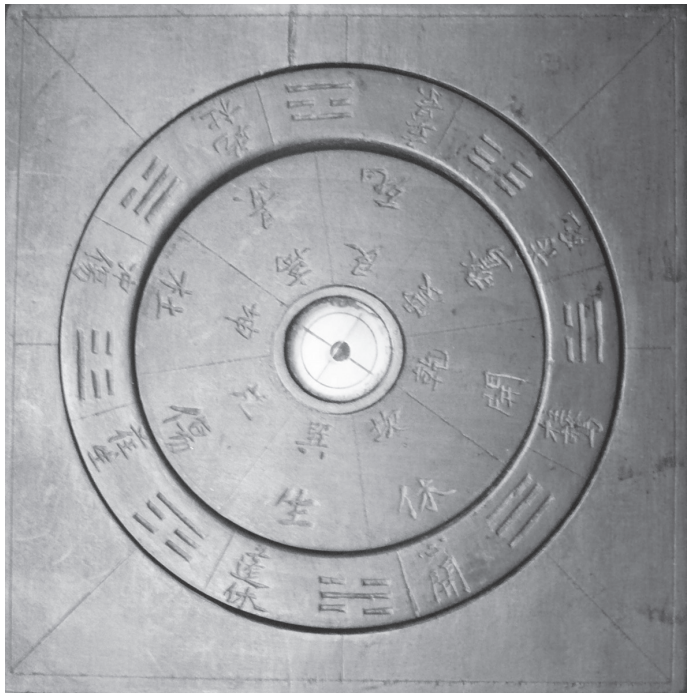

Figure 1. A modern Dunjia geomancer's compass with three concentric rings (base size 14.4 cm.); personal collection of the author.

To be sure, the absence of concrete details does not necessarily mean that the devices did not exist. After all, some of the geomancer's compasses of today derive their basic configuration from the Dunjia system (Fig. 1).[23] But these compasses do not prove that either Yang Weide or the authors of later calendrological treatises ever saw or paid attention to a physical device related to the methods they were describing. For example, a late Ming treatise on the Taiyi system contains 144 figures showing the specific configurations (called *ju*) obtained following the distribution of wandering spirits according to the space orientations and time cycles proper to the system. Ho Peng Yoke, who relies mainly on this

23. The device is composed of (1) an inner ring with the compass needle, the eight trigram names and the eight gates (*ba men* 八門); (2) a middle ring with the trigram symbols, the eight gates, and the nine stars (*jiu xing* 九星); and (3) a square base divided into eight parts representing the eight directions (*ba fang* 八方) as well as the eight solar nodes (*ba jie* 八節). On those basic features of the Dunjia system, see *Jingyou dunjia fuying jing*, 276–77. For a modern Dunjia device with at least five rings made for generating all the specific configurations of the system, see Ho Peng Yoke, *Chinese Mathematical Astrology*, 104.

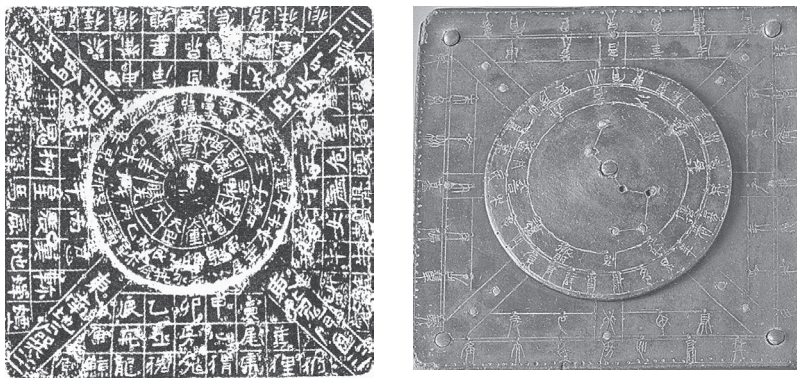

Figure 2. On the right, the Liuren device dating from the late Western Han discovered at Mozuizi (Wuwei, Gansu) in 1972; lacquered wood, base size 9 cm. (photograph from a private collection). On the left, the Liuren device from the Six Dynasties (bronze, base size 11.3 cm.); unknown provenance (after Yan Dunjie, "Ba Liuren shipan" 跋六壬式盤, *Wenwu cankao ziliao* 1958.7, 20).

work in his own presentation of Taiyi calendrology, begins by showing a reproduction of what he calls the "basic *Taiyi* board." However, this reproduction, deduced from the minimal structure common to the 144 specific configurations, does not appear in the treatise, nor indeed does the text make any allusions to the construction of a mantic device (or "board").[24]

Perhaps Yang Weide did not describe devices for the Dunjia and Taiyi systems because according to Tang and Song sources use of these systems was prohibited outside the Astronomical Bureau, whereas the Liuren system was widely diffused in society.[25] Whatever the actual situation was for the Dunjia and Taiyi systems, it is noteworthy that all existing examples of *shi*-devices from the late Western Han up to the end of the Six Dynasties are indeed Liuren devices (Fig. 2).[26] Although there are

24. Ho Peng Yoke, *Chinese Mathematical Astrology*, 45. In his presentation of the Taiyi system, Yan Dunjie shows a diagram similar to the one reproduced by Ho Peng Yoke, calling it perhaps more accurately "Taiyi *shi*-diagram" 太乙式圖; "Shipan zongshu," 458. It should be noted however that Ho cautiously avoids being too definite in his understanding of the term *shi* and refers to it by using indifferently such words as "board", "system", "cosmic board", and "cosmic board system".

25. *Tang liudian*, 14.32a.

26. There are presently six such devices; see Marc Kalinowski, "Les instruments astro-calendériques des Han et la méthode Liuren," *Bulletin de l'École française d'Extrême-Orient* 72 (1983), 309–419; Yan Dunjie, "Shipan zongshu"; and Li Ling, *Zhongguo fangshu zhengkao*, 69–85, for a general survey and a commented bibliography of previous studies. Reproduced in Fig. 2 are: on the right side, the lacquered Liuren device (square base: 9 cm) dating from the Wang Mang period, discovered at Mozuizi 磨咀子 (Wuwei,

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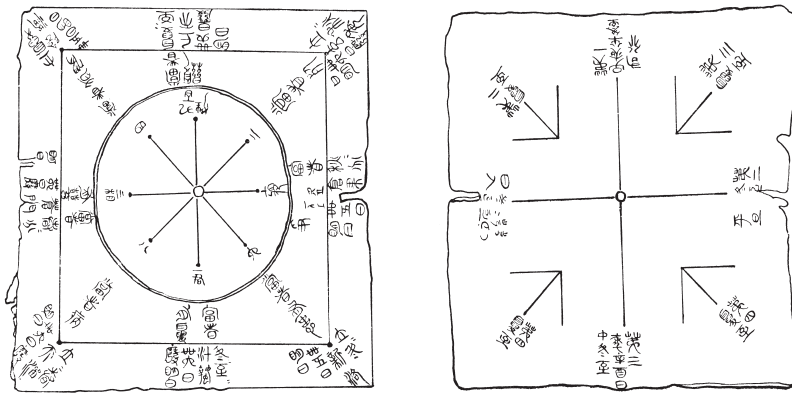

Figure 3. The Nine Palaces device from Fuyang (Anhui); lacquered wood, base size 14.2 cm. (after Yin Difei, "Xi-Han Ruyin hou mu chutu de zhanpan he tianwen yiqi," 341); the image on the right side shows the diagram and inscriptions appearing on the back of the square base.

variations, they all exhibit some basic common features: a square base below (the "earth"), on which are displayed the sexagenary signs (i.e., the stems and branches) and the twenty-eight stellar lodges (*xiu* 宿); and a revolving disk above (the "heavens"), with the seven stars of the Northern Dipper in the center, then a series of twelve wandering spirits (Monthly Generals, *yuejiang* 月將) characteristic of the system, and finally another series of the twenty-eight stellar lodges on the outer part of the disk.[27]

The discovery of the three Fuyang instruments is noteworthy in the first place for proving that early Han calendrologists used several types of mantic devices. I leave aside the so-called "lodge dial" that, for various reasons—not least because its base is circular—is not considered by modern specialists as belonging to the group of *shi*-devices.[28] The second instrument, which Yan Dunjie calls a "mantic device" (*zhanpan* 占盤), is physically related to the later Liuren devices since it also consists of a square base to which is attached a revolving disk (Fig. 3). But the inscriptions on the two parts of the instrument, as well as on the back side of the square base, appear to belong to an entirely different method,

Gansu) in 1972, presently at the Gansu Provincial Museum; and on the left side, the bronze Liuren device (square base: 11.3 cm) of unknown provenance from the late Six Dynasties, presently at the Shanghai Museum.

27. The series of Monthly Generals are displayed on the disk in a clockwise direction, following the twelve branches: Shenhou 神后/*zi*-b1 子, Daji 大吉/*chou*-b2 丑, Gongcao 功曹/*yin*-b3 寅, and so on; see n. 34 below. For reports on the Fuyang findings, see n. 1 above.

28. This round lodge dial (*yuanpan* 圓盤) is commonly seen as being used in connection with the Dipper device; see Harper, "The Han Cosmic Board," 3; Cullen, "Some Further Points on the *Shih*," 34.

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known as the "Circulation of Taiyi among the Nine Palaces" (*Taiyi xing jiugong* 太一行九宮). This method is attested to in transmitted sources, yet differs greatly from the official Taiyi system—which probably explains Yan Dunjie's reluctance to call it a *shi*-device.[29] The numbers from one to nine are arranged in a star-like pattern on the revolving disk, with number five in the center, surrounded by the other numbers connected to it by straight lines in the typical arrangement of the "magic square of three." This has its most ancient occurrence here, and could have been at the time a fairly common way to represent the Nine Palaces. The same star-like pattern is found in the Mawangdui 馬王堆 *Xingde* 刑德 (Punishment-Virtue) manuscripts, where the nine cells that make up the diagram are explicitly called *gong* 宮 "palace."[30]

The third instrument in the Fuyang findings is the famous Dipper device (*beidou shi* 北斗式). It noticeably suggests a Liuren device, yet its revolving disk lacks the twelve Monthly Generals which are characteristic of the system. Instead we have the notation of the twelve lunar months of the year connected to some of the stellar lodges situated along the outer periphery of the disk (Fig. 4).[31] These twelve lodges, usually referred to as the twelve Monthly Lodges (*yuexiu* 月宿), mark the rough position of the sun in the sky for the twelve months of the lunar-solar calendar current at that time.[32] I have shown elsewhere that the identical series of Monthly Lodges is found in many manuscripts of the Qin and Han as well as in the Liuren treatises predating the Song, in contrast to other series mentioned in the ancient texts, which always present variations from one text to another. Moreover, the use of the Monthly Lodges was not so much to mark the twelve solar stations (*richan* 日躔) corresponding to the twelve months of the year, but rather to count the

29. See Yan Dunjie, "Guanyu Xi-Han chuqi de shipan he zhanpan," 335–37; "Shipan zongshu," 451–52.

30. For a reproduction and study of the diagram, see Marc Kalinowski, "The *Xingde* 刑德 Texts from Mawangdui," *Early China* 23–24 (1998–99), 178. On the magic square of three in relation to the Fuyang Nine Palaces device, see Xing Wen 邢文, *Boshu Zhouyi yanjiu* 帛書周易研究 (Beijing: Renmin, 1997), 103–10.

31. The diagram on the right side of Fig. 4 shows the elements inscribed on the surface of the Dipper device: x1, x2, x3 for the stellar lodges; I, II, III for the months (Monthly Lodges); s1, s2, s3 for the ten stems (*gan* 干); b1, b2, b3 for the twelve branches (*zhi* 支). The stems and branches run in a clockwise direction, whereas lodges and months are arranged counterclockwise.

32. For example, Southern Dipper (x8 *nandou* 南斗) is connected to the eleventh month (XI) because this is the month when the sun reaches the winter solstice according to the lunar-solar calendar current in those days. Similarly, Eastern Well (x22 *dongjing* 東井) represents the Monthly Lodge of the fifth month (V), the period of the year when the sun is in the summer solstice position. The same applies to the spring equinox (second month, II) when the sun dwells in Stride (x15 *kui* 奎), and to the autumn equinox (eight month, VIII) when the sun dwells in Horn (x1 *jiao* 角).

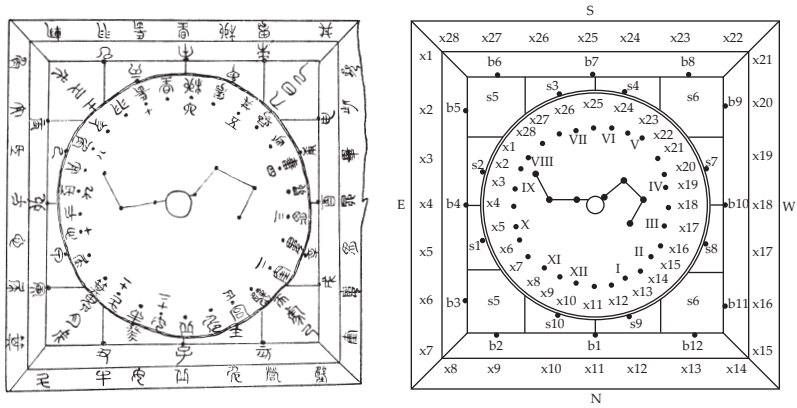

Figure 4. The Dipper device from Fuyang; lacquered wood, base size 13.5 cm. (left from Yin Difei, "Xi-Han Ruyin hou mu chutu de zhanpan he tianwen yiqi," 340; right redrawn after Kalinowski, "The *Xingde* 刑德 texts from Mawangdui," 140). For the coding system used to identify elements appearing on the surface of the device, see n. 31.

days of each month. According to this day-count, the Monthly Lodge of a given month designated the first day of the month (*shuoxiu* 朔宿, "new moon lodge," in certain texts), the following lodge the second day, and so forth, to the end of the month when the day-count starts again with the Monthly Lodge assigned to the first day of the next month in the sequence of months.[33] Unfortunately, it is not possible to determine whether the users of the Dipper device understood the Monthly Lodges to belong to this day-count system, or whether they were already used to designate the entire month and not only its first day, as was the case with the Monthly Generals in the classical Liuren system.[34]

To these two early Han mantic devices, we may add a third one. The preliminary excavation report of Huxishan 虎溪山, Tomb 1, discovered in 1999 at Yuanling 沅陵 (Hunan province), describes an instrument composed of a square base with eight rectangular boxes arranged in a circle around a revolving disk attached to the base by a central pivot (Fig. 5). Due to the worn and damaged condition of the device the inscriptions on it are illegible, except for a few sexagenary signs written in red ink

33. See Marc Kalinowski, "The Use of the Twenty-Eight *xiu* 宿 as a Day-Count in Early China," *Chinese Science* 13 (1996), 55–81.

34. In the Liuren system, the Generals and the lunar months are both identified by the twelve branches (see n. 27 above); therefore the celestial position of the sun for a given month is understood as a branch-to-branch relationship. For example, if the divination concerns the eleventh month of the calendar year, the diviner will adjust his device in order to connect General Daji (celestial mansion *chou*-b2 which in theory includes not only the Monthly Lodge Southern Dipper [see n. 32 above] but also lodge x9 *niu* 牛, Ox) on the mobile disk to branch *zi*-b1 (monthly indicator, *doujian*, of the eleventh month) on the square base.

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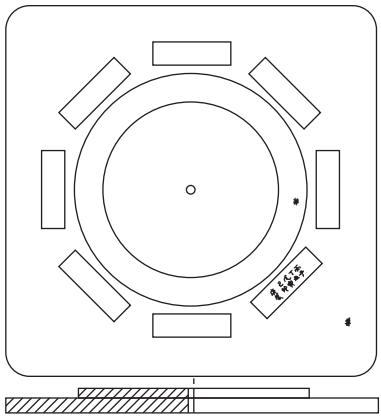

Figure 5. The Huxishan device (redrawn after "Yuanling Huxishan yihao mu fajue jianbao," 49).

that are still visible inside one of the boxes.[35] The report speculates that there were similar inscriptions in all the boxes, thus forming a complete sexagenary cycle with seven or eight signs per box. If this instrument was actually used for divination, we would have today three mantic devices of the *shi* type, nearly identical in form and size, but very different with regard to their inscriptions.[36]

Modern interest in the Dipper device also lies in the fact that the astro-calendrical dimension is much more prominent in comparison with the classic Liuren devices. Historians of science have shown that both it and the lodge dial from the same tomb could serve to follow the daily and annual revolutions of the fixed stars, just as pivoting celestial maps are used by present day amateur astronomers to perform diverse calculations and to learn to navigate amidst the stars and constellations. For example, if we want to map current star positions in the sky in the evening during the months of the solstices or equinoxes—and more particularly the orientation of the handle of the Northern Dipper—we only need to rotate the celestial map so as to line up the chosen hour with

35. See Hubei sheng wenwu kaogu yanjiusuo, "Yuanling Huxishan yihao mu fajue jianbao" 沅陵虎溪山一號墓發掘簡報, *Wenwu* 2003.1, 48–49. The signs still visible in one of the boxes are *bingzi* 丙子 to *gengchen* 庚辰.

36. It is not excluded that the Huxishan device was used to play some sort of a game. Archaeological findings have provided several game boards bearing sexagenary signs or designs similar to those found on mantic devices; see n. 55 below, and Li Xueqin 李學勤, "'Boju zhan' yu guiju wen" '博局占' 與規矩紋, *Wenwu* 1997.1, 49–51; Li Ling, *Zhongguo fangshu zhengkao*, 132–39; Michael Loewe, *Ways to Paradise: The Chinese Quest for Immortality* (London: George Allen and Unwin, 1979), 75–85. For a fascinating recent discovery, see Huang Fengchun 黃風春 and Liu Guosheng 劉國勝, "Zuozhong sanhao Chu mu chutu de qiju wenzi ji yongtu chukao" 左冢三號楚墓出土的棋局文字及用途初考, in Hubei sheng wenwu kaogu yanjiusuo, *Jingmen Zuozhong Chu mu* 荊門左冢楚墓 (Beijing: Wenwu, 2006), 227–32.

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March 20th, June 21st, September 23rd, and December 22nd, respectively, in order to obtain the desired adjustments.[37] The same procedure may be accomplished with the Dipper device by aligning the Monthly Lodges of the second (spring equinox), fifth (summer solstice), eighth (autumn equinox), and eleventh month (winter solstice) on the revolving disk with the sign *you* 酉 (5 to 7 pm) on the square base (Fig. 6).[38]

Although approximate, the four adjustments that result perfectly match the famous passage from the *Heguanzi* 鶡冠子:[39]

> When the handle of the Dipper is pointing east (leftwards), spring spreads throughout the world; when it is pointing south (upwards), summer spreads throughout the world; when it is pointed west (rightwards), autumn spreads throughout the world; and when it is pointing north (downwards), winter spreads throughout the world.

The Dipper device is therefore an instrument whose origin is closely related to the astronomical reckoning of the movements of the sun and the moon among the stars throughout the year. Leaving aside the question of the cosmographic model that underlies it, the presence on the revolving disk of a coherent flat representation of the celestial vault is sufficient to see the Dipper device as a kind of "mantic astrolabe" meant primarily to serve the needs of calendrologists.

The few occurrences of the use of a *shi* in Han texts concern, in most cases, the Dipper device since they generally refer to the Northern Dipper constellation, alongside other elements used to adjust the device, such as the lunar months and the sidereal positions of the sun. The applications of the instrument could be properly divinatory, to interpret a dream, find a missing person, and so on. It could also be magical in the sense that the user exploited the lethal power associated with the orientation of the Northern Dipper's handle. In his early articles, Harper already noted that the excavated manuscripts testify to the central role attributed to the

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37. The basic applications of the Fuyang "lodge dial" suggested by Cullen in his *Early China* 7 article ("Some Further Points on the *Shih*," 34–36) may also account for those of the Dipper device.

38. See n. 32 above for the connection in Han times between the Monthly Lodges and the four critical periods of the year (solstices and equinoxes). As a result, when the sun dwells in Stride (x15) in the early evenings of the second month (spring equinox), Dipper's handle will point towards east (branch *mao*-b4); by the same token, it will point towards south during the summer solstice evenings (fifth month, branch *wu*-b7), towards west at the autumn equinox (eight month, branch *you*-b10), and north at the winter solstice (eleventh month, branch *zi*-b1).

39. 斗柄東指天下皆春, 斗柄南指天下皆夏, 斗柄西指天下皆秋, 斗柄北指天下皆冬; *Heguanzi huijiao jizhu* 鶡冠子彙校集注, ed. Huang Huaixin 黃懷信 (Beijing: Zhonghua, 2004), 5.76 ("Huan liu" 環流).

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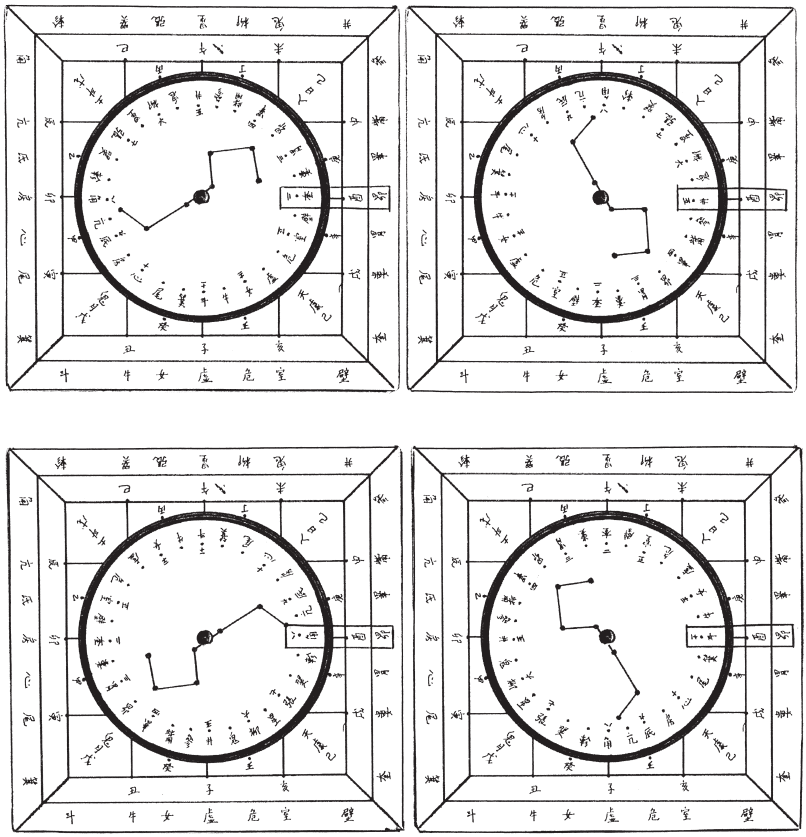

Figure 6. Orientation of the Dipper's handle in the evening at the spring equinox (upper left), the summer solstice (upper right), the autumn equinox (lower left), and the winter solstice (lower right). On the keying of the device, see n. 38.

Northern Dipper in the operation of mantic astrolabes.[40] The bamboo slips discovered in 1993 at Zhoujiatai 周家臺 (Hubei) in a tomb dating to the end of the Qin dynasty (ca. 209–206 B.C.E.) are in this regard the most revealing. We find there texts accompanied by a diagram that, without being identical to that inscribed on the surface of the Dipper device, indicates the affinity between them (Fig. 7).[41] The mantic procedure itself

40. Harper, "The Han Cosmic Board," 2–5; "A Response to Christopher Cullen," 52–56.

41. See Hubei sheng Jingzhoushi Zhouliangyuqiao yizhi bowuguan, *Guanju Qin Han mu jiandu* 關沮秦漢墓簡牘 (Beijing: Zhonghua, 2001), 104–17. The slips can be divided into five sections: (a) the twelve months and the twenty-eight stellar lodges arranged according to the Monthly Lodge system, (b) a list of the stems and branches as orientation marks (c) a diagram (Fig. 7) showing a Day Court diagram in the center

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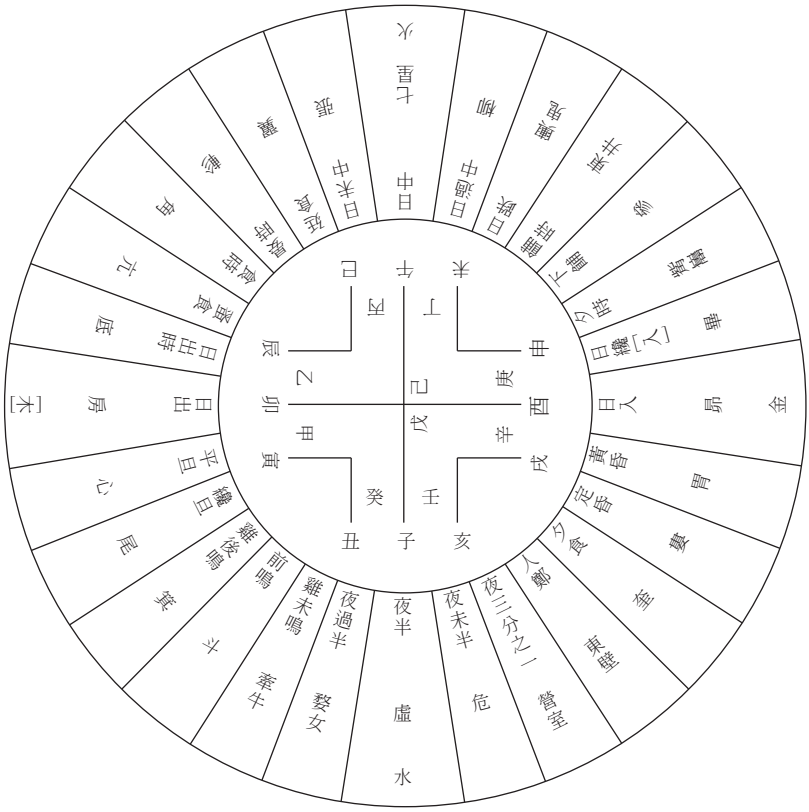

Figure 7. The Zhoujiatai diagram showing a Day-Court pattern in the center and a division of the day into twenty-eight units corresponding to the twenty-eight stellar lodges (after *Guanju Qin Han mu jiandu*, 107); variants and aggregated graphs have been replaced by Standard Chinese characters.

was related to the basic setting of the device as described in texts of the Eastern Han and in the later Liuren treatises. Briefly, it involved determining the orientation of the handle of the Dipper for a given month, according to the hour of any day in that month.[42] Since the whole day was divided into twenty-eight units corresponding to the twenty-eight stellar lodges, the goal of the operation was to determine the lodge that indicates "the position where the Dipper lies" (*dou suo cheng* 斗所乘), and

and a division of the day into twenty-eight units corresponding to the twenty-eight lodges, (d) prognostications for the twenty-eight lodges, (e) a method for finding the orientation of the Dipper (*qiu dou shu* 求斗術). For an interpretation of this group of slips, see Peng Jinhua 彭錦華 and Liu Guosheng, "Shashi Zhoujiatai Qin mu chutu xiantu chutan" 沙市周家臺秦墓出土線圖初探, *Jianbo yanjiu* 簡帛研究 2001, 241–50.

42. This is usually formulated as: *yi yuejiang jia zhengshi* 以月將加正時 (connect the Monthly General to the proper time of the day).

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to search for the relevant prognostications in the list of the twenty-eight "horary lodges" (*shixiu* 時宿) attached to the manuscript.[43]

This document raises two questions that are not easy to answer. First, are we dealing here with a type of manual on the uses of the Dipper device? At first glance, there is no evidence that an instrumental model is involved; the diagram and the texts alone suffice to operate the system, and nothing indicates that the copyist or the user of the text even knew that this mantic technique was somehow associated with a specific instrument. The Kongjiapo (Hubei) manuscripts dating to the beginning of the Western Han and published in 2006 confirm this point. They contain a similar procedure, but present the data showing the changing orientation of the Dipper's handle according to the month and hour of the day in the form of a double-entry table, rather than by means of a diagram. Provided that the reconstruction of the original state of the manuscript is reliable, the table was accompanied by a list of predictions for the twenty-eight stellar lodges ordered according to the principle of the Monthly Lodges.[44] In short, the divinatory functions of the Dipper as a seasonal and monthly indicator (*doujian* 斗建), together with its daily and hourly revolutions, were widely known in the milieu in which the excavated manuscripts were circulating. In as much as these techniques do not refer to the use of an instrumental model, there is no reason to assume they were necessarily derived from a *shi*-device.

The second question is the extent to which the actual uses of the *shi*-device were limited to the methods described in Qin and Han manuscripts. In the classical Liuren system, such methods constituted a preliminary stage following which diviners engaged in sophisticated calculations to establish horoscopes for clients. What was the situation under the Warring States, Qin, and early Han? Were there other applications of the Dipper device that might prove the existence of a well-defined and fully developed calendrological system? I will come back to this point in the last section on the *shi*-method. Let me just quote one single example. The recent publication of the manuscripts dating to the Qin period found at Fangmatan 放馬灘 (Gansu) has brought to light a large batch of bamboo slips on divination by the twelve pitch pipes (*lü* 律).[45]

43. These expressions appear in the *qiu dou shu* section of the manuscript (slip 243); see n. 41 above.

44. Hubei sheng wenwu kaogu yanjiusuo, *Suizhou Kongjiapo Han mu jiandu* 隨州孔家坡漢墓簡牘 (Beijing: Wenwu, 2006), 133–36 (slips 49–77) for the list of predictions, and 136–37 (slips 78–89) for the double-entry table. Even though the text refers to the same basic elements as those in the Zhoujiatai manuscripts (stellar lodges, Monthly Lodges, hours of the day, the Dipper as a monthly indicator), the way they were used in prognosticating might have been quite different.

45. See Dai Nianzu 戴念祖, "Qin jian 'Lü shu' de yuelü yu zhanbu" 秦簡《律書》的樂律與占卜, *Wenwu* 2002.1, 79–83. For further references and debates, see Marc Kalinowski,

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Figure 8. The Eastern quadrate of the Six Dynasties Liuren device (see Fig. 2, bottom part of the illustration on the left) showing the connections between the cyclical animals (Tiger, Hare, Dragon) and their sexagenary signs (branches *yin*-b3 month I, *mao*-b4 month II, *chen*-b5 month III), shown here in boldface.

One of the methods correlates the pitch pipes to a threefold division of the day, forming an ensemble of thirty-six units identified by the names of thirty-six animals, including the well-known series of the twelve cyclical animals (*shengxiao* 生肖). The discovery is significant, because this series of thirty-six animals is known from later texts to be related to the Liuren system, and it also appears on the square base of the Six Dynasties *shi*-device mentioned above.[46] Can we deduce that users of the Dipper device knew this series and used it as they used the twenty-eight stellar lodges inscribed on the square base of the instrument? It is of course difficult to say. However, one point merits mention: in the twelve pitch pipes system, the animals and the three periods of the day are arranged such that the usual twelve cyclical animals always correspond to the "morning" period. In the Liuren system, they are divided equally over the three periods: four for the "morning," four for the "afternoon," and four for the "night." Given the structure of the Six Dynasties device, this latter arrangement was obviously made to have the twelve cyclical animals placed on the square base next to the corresponding twelve branches (Rat = *zi*-b1, Ox = *chou*-b2, and so on; Fig. 8).[47] This suggests that in the

"Théorie musicale et harmonie calendaire à la fin des Royaumes combattants," *Études chinoises* 30 (2011), 99–138.

46. See Fig. 2; the thirty-six animals are placed in the outer cases of the square base, nine on each side. On this series of animals and their relation to the Six Dynasties Liuren device, see Loewe, *Ways to Paradise*, 207; Marc Kalinowski, *Cosmologie et divination dans la Chine ancienne: Le Compendium des cinq agents (*Wuxing dayi 五行大義, *VIe siècle)* (Paris: École française d'Extrême-Orient, 1991), 107–8, 437–447; Shimizu Hiroko 清水浩子, "Sanjūroku kin shōkō" 三十六禽小考, in *Yinyō gogyō no saiensi: Shisōhen* 陰陽五行のサィエンス. 思想編, ed. Takada Tokimasa 武田時昌 (Kyoto: Kyoto daigaku jinbun kagaku kenkyūjo, 2011), 87–99.

47. Fig. 8 shows the Eastern quadrate of the Six Dynasties Liuren device reproduced

third century B.C.E., the set of thirty-six animals had an existence of its own without any obvious connection to the use of the Dipper device.

Finally, it is worth noting that the Fangmatan daybooks are, to my knowledge, the only documents where the term *shi* appears in a hemerological context.[48] Although these are mere fragments and the calculation technique is unknown, it seems quite certain that the term does not refer to an instrument. The following is a first attempt to translate one of the fragments:

> 占盜：以亡辰為式，投得其式為有中閒，得其前五為得為聞，得其後伍為不得，不得其前後之伍為復亡。
>
> Prognostication on theft: Take the branch when the loss occurred as *shi*; if the throwing matches the *shi*, it is right within; if it matches the five positions ahead, it will be obtained or heard of; if it matches the five positions behind, it will not be obtained; and if it does not match the five positions ahead or behind, it will be lost again.[49]

Shi-diagram

Modern studies of representations that we may call "cosmograms" (*shitu*), for the sake of clarity, reveal the existence of a minimal structure composed of a central cross forming an orthogonal division (*ersheng* 二繩), with four right angles in the corners opening to the exterior (*sigou* 四鉤). This structure is now generally called a "cord-hook" diagram in modern studies, and in the Kongjiapo 孔家坡 daybooks (published in 2006) we find the name Day Court (*riting* 日廷) attached to it. Interestingly enough, this minimal structure appears on the base of the Dipper

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in Fig. 2 (bottom part). In the column on the left, I have added the division of the day as indicated in the Six Dynasties *Wuxing dayi*, chapter 40 ("Lun sanshiliu qin" 論三十六禽): "The reason why there are three animals for each branch is that the day is divided into three parts, morning, afternoon, and evening." (see Kalinowski, *Cosmologie et divination dans la Chine ancienne*, 437). In the Fangmatan daybooks, Tiger, Hare and Dragon are all morning animals; see Gansu sheng wenwu kaogu yanjiusuo, *Tianshui Fangmatan Qin jian* 天水放馬灘秦簡 (Beijing: Zhonghua, 2009), 97–98 (slips 212, 215 and 218).

48. The text is based on the new transcription of the Fangmatan Daybook B by Yan Changgui 晏昌貴, "Tianshui Fangmatan Qin jian yizhong 'Rishu' fenpian shiwen (gao)" 天水放馬灘秦簡乙種 '日書' 分篇釋文 (稿), *Jianbo* 5 (2010), 39 (slip 322). As suggested by Prof. Yan (private communication), *yi ri chen wei shi* 以日辰為式 has been amended to *yi wang chen wei shi* 以亡辰為式.

49. If the term *shi* had to be translated, something like "basic pattern" or "configuration" in the sense of *ju* 局 would probably be the most suitable. *Heguanzi*, 5.154–55 ("Du wan" 度萬), has: "Five fives is twenty-five, thus is arranged the sub-celestial realm (*yi li tian xia* 以理天下); six sixes is thirty-six, thus is conceived the year pattern (*yi wei sui shi* 以為歲式)."

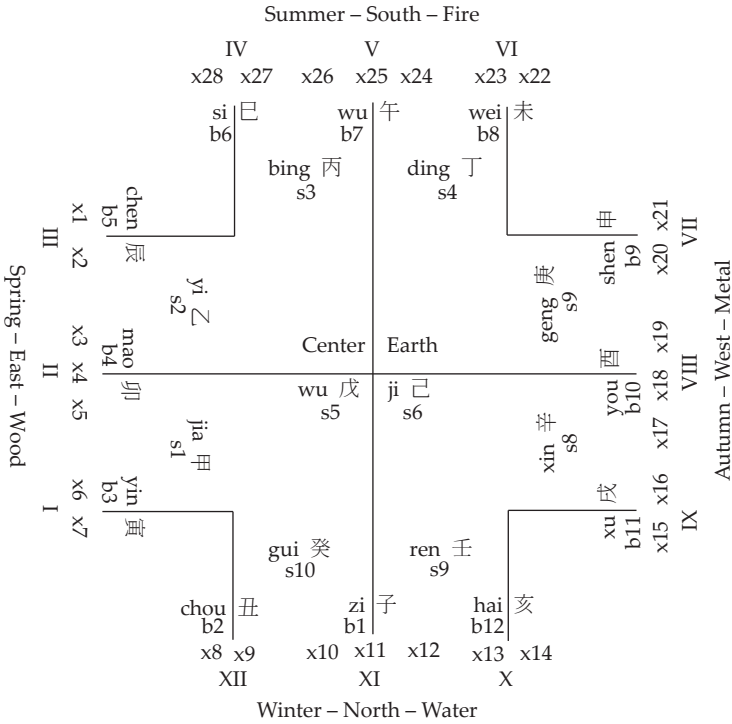

Figure 9. A synoptic view of the elements usually associated with the Day-Court diagram.

device, as well as on the reverse side of the Nine Palaces device and of the Huxishan device. Far from being limited to the Fuyang instruments, we find it reproduced on a large variety of media: on silk and bamboo slips as well as on wooden boards.[50] The inscriptions arranged on the cord-hook diagram vary from one context to another. A schematic representation that shows the elements which are most often associated with the diagram includes: the ten stems (s1, s2, s3, . . .), the twelve branches (b1, b2, b3, . . .), the twenty-eight stellar lodges (x1, x2, x3, . . .), the twelve lunar months (I, II, III, . . .), as well as the implicit time (the four seasons) and space (the five sectors) symbolism upon which the whole diagram is based (Fig. 9).

The primary function of the cord-hook diagram is to indicate positions in space and in time, in the manner of a compass, the orientations of which

50. See Fig. 3 for the Nine Palace device; and "Yuanling Huxishan yihao mu fajue jianbao," 49, for the reverse side of the Huxishan device where several small cord-hook diagrams are still visible. For other occurrences, see Kalinowski, "The *Xingde* 刑德 Texts from Mawangdui," 135–47.

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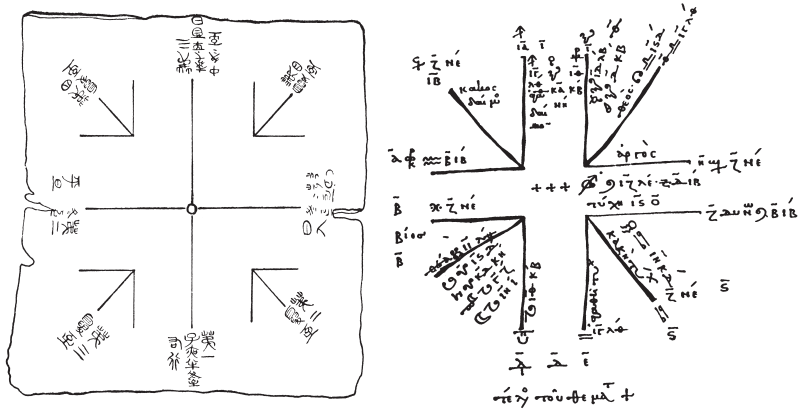

Figure 10. On the left, the cord-hook diagram with inscriptions on the back of the Fuyang Nine Palaces device (see Fig. 3). On the right, a late fifth century Greek horoscope (after Neugebauer and Van Hoesen, *Greek Horoscopes*, 156).

can extend from four to eight, twelve, sixteen, and up to twenty-four positions. The extreme flexibility of the diagram and the intimate connection that it establishes between spatial and temporal coordinates gives it an obvious cosmological dimension. Some eighty years ago, Marcel Granet formulated this specificity of Chinese traditional cosmology perfectly in the chapter devoted to these questions in *La pensée chinoise*: "Forming a complex of emblematic conditions simultaneously determinative and determined, Time and Space are always conceived as an integrated set of concrete and diverse clusters of sites [*fang* 方] and occasions [*shi* 時]."[51] While recognizing that the cord-hook diagram is rooted in the symbolism and mythic iconography of early China, we should be aware that its uses, as evidenced by excavated texts and artifacts, are almost exclusively confined to the astro-calendrical domain. The origin of the diagram remains unclear, but it was probably designed primarily to meet the technical requirements proper to the practice of astrologers and calendrologists. The similarity between a Greek horoscope and the cord-hook diagram etched on the back of the Nine Palaces device shows that the schematic representations of space and time in astrologies based on different cosmological contexts could lead to solutions that are in many ways very close to each other (Fig. 10).[52]

51. "Formant un complexe de conditions emblématiques à la fois déterminantes et déterminées, le Temps et l'Espace sont toujours imaginés comme un ensemble de groupements, concrets et divers, de *sites* [*fang* 方] et d'*occasions* [*shi* 時]." (*La pensée chinoise*, Paris 1934; rpt. Paris: Albin Michel, 1968), 79.

52. See n. 1 above for references concerning the Nine Palaces device. The Greek

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In other words, a serious understanding of the astro-calendrical cosmograms that are known today from the excavated texts and artifacts must take into account their functions as divination media. It is a fact that we are still far from being able to draw a functional typology of pre-Han and Han cosmograms. For the cord-hook diagram alone, the documentation is so rich and the contexts of utilization so diverse that only an in-depth study could succeed in providing reliable conclusions.[53] Some occurrences are mere empty structures whose function seems to have been primarily decorative. When they bear inscriptions, priority is generally given to the twelve branches placed on the twelve extremities of the diagram in a clockwise direction ("leftward" according to the traditional terminology), often with the ten stems also arranged in the same direction. The diagram thus gets its full meaning as a "Day Court," a spatial representation of the stem and branch components of the sexagenary cycle. But this basic representation rarely appears alone. The Kongjiapo manuscripts, for example, contain three Day Court diagrams placed side by side. Under the twelve branches placed on the extremities of the cords and the hooks, we find very different types of inscriptions.[54]

The distinctive feature of the cosmogram represented on the surface of the Dipper device is that the elements of the Day Court diagram are associated with the twenty-eight stellar lodges, and these with the twelve Monthly Lodges. To my knowledge, the excavated materials include four other examples of cosmograms with a comparable configuration. First is the Zhoujiatai diagram discussed above (Fig. 7). The second

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horoscope shows planetary positions among the zodiacal signs on 497 October 28; the different sectors of the diagram correspond to the twelve *loci* of classical Ptolemean astrology; reproduced and studied in O. Neugebauer and H.B. Van Hoesen, *Greek Horoscopes* (Philadelphia: The American Philosophical Society, 1987), 152–57 (and illustration #20).

53. A valuable survey of all diagrammatic representations appearing in the excavated texts may be found in Huang Ruxuan 黃儒宣, "Patterns of the Almanacs (*Ri-shu*)" 日書圖像研究 (Ph.D. dissertation, adviser Zhou Fengwu 周鳳五, National Taiwan University, 2010). Even though the author deals with all types of diagrams and designs, cosmograms (*shitu*) and their relation to the mantic devices are given special attention.

54. See *Suizhou Kongjiapo Han mu jiandu*, 144–46, for a reconstructed transcription of the original slips. In the first diagram explicitly named *Riting* 日廷 (Day Court), there are terms that appear to describe a kind of hemerological cycle otherwise unknown. For the second, the inscriptions are the twelve months arranged according to the "monthly indicator" (*doujian*) function of the Dipper; a short text inserted next to it (slips 129^{3}–131^{3}) specify the way to make auspicious or inauspicious predictions in relation to the orientations of the handle of the constellation (*douxi* 斗擊). Lastly, the third diagram shows the triangular relations between the twelve branches known as the "three unions" (*sanhe* 三合) pattern.

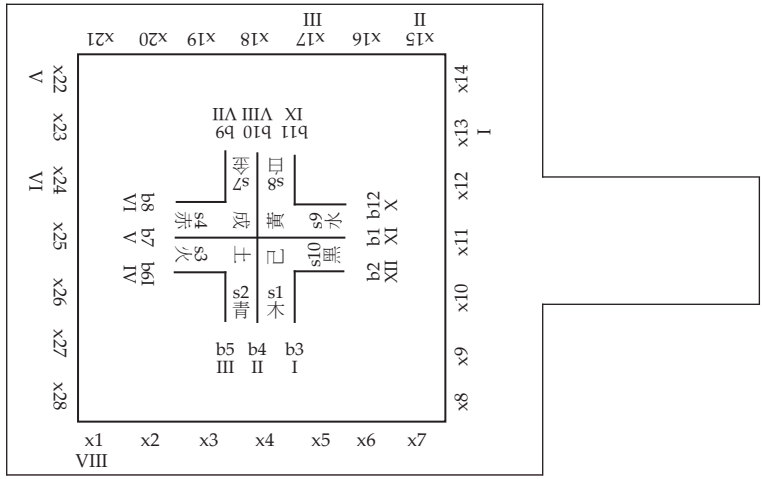

Figure 11. The wooden board with a handle from Wangjiatai (16 cm. × 14 cm. for the rectangle, 6.5 cm. × 3.8 cm. for the handle); adapted from Wang Mingqin, "Wangjiatai Qin mu chutu de mushi," redrawn by David Goodrich; for the coding system, see n. 31.

example comes from Qin Tomb 15 at Wangjiatai (Hubei). The diagram is inscribed on a nearly square wooden board with a handle (Fig. 11).[55] The ten stems, the five agents, and the five colors are placed inside the cord-hook diagram; the twelve extremities of the diagram are connected to the twelve branches and the twelve lunar months. On the periphery of the space bounded by a square, we have the twenty-eight stellar lodges arranged counterclockwise ("rightward," according to the traditional terminology), as well as the notation of the Monthly Lodges. The filiation between these two cosmograms and the Dipper device seems quite evident.

The two other examples are more problematic. One is from the Mawangdui silk manuscript that was given the name "Shifa" 式法 (*Shi*-method) when the first report on it was published in 2000; the other

55. Preliminary report in Jingzhou diqu bowuguan, "Jiangling Wangjiatai 15hao Qin mu" 江陵王家臺 15 號秦墓, *Wenwu* 1995.1, 42. The diagram shown in Fig. 11 is based on a unpublished conference paper by Wang Mingqin 王明欽, "Wangjiatai Qin mu chutu de mushi" 王家臺秦墓出土的木式, plate 1. The coding for the stems, branches, stellar lodges and months is identical to that used for the Fuyang Dipper device (see n. 31 above). According to Wang Mingqin, a Liubo game pattern (*boju wen* 博局紋) appears on the reverse side of the board with badly damaged inscriptions identified as sexagenary signs (16cm × 14cm for the rectangle part, 6.5cm × 3.8cm for the handle), just as the wooden tablet of late Western Han found at Yinwan 尹灣; see Li Xueqin, "'Boju zhan' yu guiju wen" and n. 36 above.

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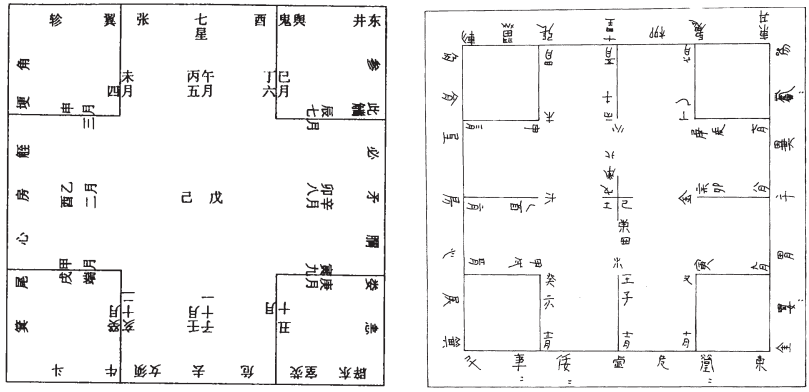

Figure 12. On the left, a cosmogram from the Mawangdui *Shifa* manuscript (adapted from "Mawangdui boshu 'Shifa' shiwen zhaiyao," *Wenwu* 2000.7, 93). On the right, the pattern appearing on the surface of the lacquered wooden board from Yizheng (base size 21 cm.; adapted from "Jiangsu Yizheng Liuji Lianying Xi-Han mu chutu zhanbu qipan," 22).

is inscribed on a lacquered wooden board found in 2006 at Yizheng (Jiangsu) in a Western Han tomb. The diagrams and their inscriptions are practically identical, suggesting that we have here a fixed configuration used within the framework of a specific mantic method (Fig. 12).[56] On the other hand, both are unusual for having the twelve branches arranged counterclockwise ("rightward"), and not clockwise ("leftward") as is the case on the Dipper device as well as on the Wangjiatai board and the diagram from Zhoujiatai. The clockwise layout of the twelve branches around the cord-hook diagram is absolutely required in order to adjust the revolving disk to the square base of the device.[57] Despite their

56. See Mawangdui Han mu boshu zhengli xiaozu, "Mawangdui boshu 'Shifa' shiwen zhaiyao" 馬王堆帛書《式法》釋文摘要, *Wenwu* 2000.7, 93, for the "Shifa" cosmogram (plate 6, "Shitu" 式圖). The name originally given to the manuscript was "Zhuanshu yinyang wuxing" 篆書陰陽五行 (Seal script Yin-Yang and Five-Agents). For a color reproduction of the Yizheng board (square base: 21cm), see the inside front cover of Yizheng bowuguan, "Jiangsu Yizheng Liuji Lianying Xi-Han mu chutu zhanbu qipan" 江蘇儀征劉集聯營西漢墓出土占卜漆盤, *Dongnan wenhua* 2007.6, and 19–22 for details. There are some minor variations between the two cosmograms.

57. When arranged clockwise (north-east-south-west), the branches are connected to the twelve lunar months according to the monthly indicator function of the Dipper (*doujian*). On the "Shifa" and Yizheng cosmograms, the first branch (*zi*-b1 子) is also connected to the eleventh lunar month (in the middle of the northern quadrate; see the lower part of Fig. 12), but the following branches move counterclockwise (north-west-south-east), in a "rightward" direction; see Xing Wen, "Hexagram Pictures and Early *Yi* Schools. Reconsidering the *Book of Changes* in Light of Excavated *Yi* Texts," *Monumenta Serica* 51 (2003), 595. It has been suggested that this counterclockwise arrangement could

similarity to the Dipper device, in my judgment it is better to classify these two cosmograms in a separate functional category. Hopefully, we will have more information on their uses when the Mawangdui manuscript is fully published.

Shi-method

Unlike the other three terms, *shifa* does occur in Han sources in an astro-calendrical context. The title *Xianmen shifa* 羨門式法 (Xianmen's *shi*-method[s]) occurs in the *Han shu* bibliographical treatise, immediately preceding the title already mentioned above. Since both are said to have consisted of twenty *juan*, it is difficult to decide if they represent two different treatises related to the Xianmen tradition, or if the *Xianmen shifa* was a companion to the *Xianmen shi* containing various methods (*fa*) associated with this *shi*.[58] Whatever the case may be, the problem that remains unresolved is whether the methods required the use of a particular mantic device.

In its current modern usage the term *shi*-method remains unclear. Those who use it do not seek to establish distinctions among possible meanings of *shi*. For example, the authors of the article in which the partial transcription of the Mawangdui *Shifa* first appeared justify the title that they assigned to the manuscript by claiming that the greater part of the methods described in it are "related to the operation (*yunzuo* 運作) of a *shi*."[59] No details are provided, however, and the fragments transcribed in the article do not attest to the use of a mantic device. I suspect that the authors might have been influenced by the presence of the diagram just discussed since they decided to call it a *shi*-diagram.[60]

To be sure, in the manuscripts of the late Warring States and early Han there are texts dealing with calendrical astrology (*shizhan*) as I have defined it above. Systems matching the four characteristics of this

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be related to the twelve Monthly Lodges on the Dipper device. This remains highly speculative because, if it was the case, branch *zi*-b1 (month XI) should have been connected to the preceding position which corresponds to its Monthly Lodge (Southern Dipper, x8, branch *chou*-b2); see Fig. 4.

58. *Han shu*, 30.1768; see n. 14 above.

59. 與 '式' 的運作有關 ("Mawangdui boshu 'Shifa' shiwen zhaiyao," 85).

60. See Fig. 12 and n. 56 above for references. Due to the ambivalence of the term *shi*, we don't really know if the authors meant that the use of this *shitu* cosmogram was somehow related to the operation of a specific device; see Xing Wen, "Hexagram Pictures and Early *Yi* Schools," 593–95. The change of the original title of the manuscript to *Shifa* has been questioned by several scholars; see Li Ling, "Canjia "Xinchu jianbo guoji xueshu yantaohui" de jidian ganxiang" 參加 '新出簡帛國際學術研討會' 的幾點感想 (http://www.jianbo.org; accessed on December 30, 2000); Yan Changgui, *Jianbo shushu yu lishidili lunji* 簡帛數術輿歷史地理論集 (Beijing: Shangwu, 2010), 116.

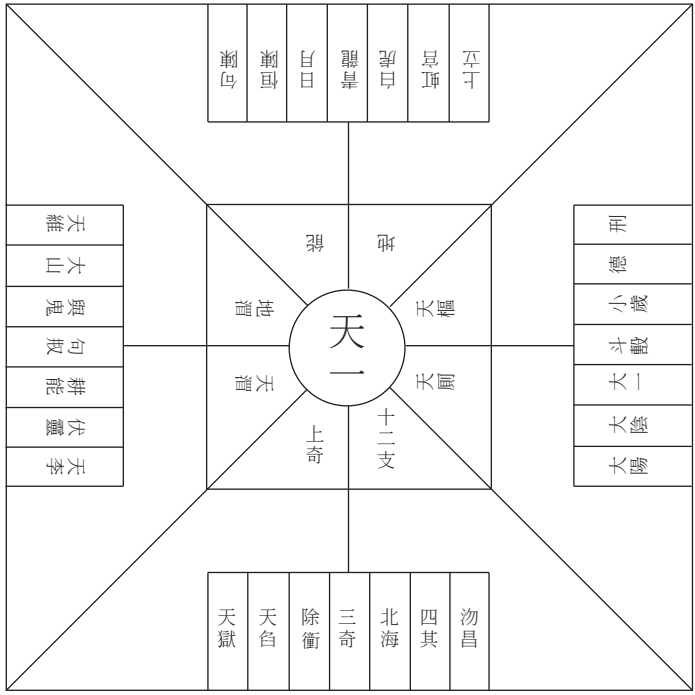

Figure 13. The *Tianyi* (Heavenly One) diagram in the Mawangdui *Yinyang wuxing* B manuscript; re-drawn after Li Ling, *Zhongguo fangshu xukao*, 251 (some variants replaced by Standard Chinese characters).

form of astrology are easily identifiable, notably among the Mawangdui manuscripts. For example, the method of the daily revolutions of a series of six wandering spirits on the Nine Palaces diagram in the *Xingde* manuscripts shows affinities with the classical systems of calendrical astrology, even though it is unrelated to the Dipper device and does not refer at all to the twenty-eight stellar lodges.[61] The same is true of the methods presented in the *Yinyang wuxing* B (or *Lishu yinyang wuxing* 隸書陰陽五行) the contents of which are said to parallel those of the *Shifa*. We await full publication of the manuscript, but let me just mention the diagram showing the deity Tianyi 天一 (Heavenly One) in the center (Fig. 13).[62]

61. See Kalinowski, "The *Xingde* 刑德 Texts from Mawangdui," 193–95.

62. The diagram was first published in Fu Juyou 傅擧有 and Chen Songchang 陳松長, *Mawangdui Han mu wenwu* 馬王堆漢墓文物 (Changsha: Hunan chubanshe, 1992), 145; for the reconstruction shown in Fig. 13 and identifications of the calendrical functions and wandering spirits inscribed in the thirty-six cases of the diagram, see Li Ling, *Zhongguo fangshu xukao* 中國方術續考 (Beijing: Zhonghua, 2006), 250–52; see also Liu Lexian, *Jianbo shushu wenxian tanlun*, 130–43.

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Although enigmatic, this diagram, with its central circle, its eight diagonals connecting the center to the periphery, and the four groups of seven cases arranged on the four sides, shows an indisputable affinity with the *shi* type of designs and belongs to the category of cosmograms. The situation becomes complicated, however, when we attempt to explain the link between the central figure of the diagram and the thirty-six names of calendrical functions and wandering spirits that surround it. The majority are also known to be part of independent mantic techniques that do not relate directly to the periodic cycle of Tianyi as described in the manuscript. For example, we find the expression *douxi* 斗繫 (Dipper Attachment) which, in the Zhoujiatai and Kongjiapo manuscripts, designates divination by the orientations of the handle of the Dipper discussed previously.[63]

What was the intention of the maker of the diagram? Was he trying to give a panoramic vision of the components of a well-defined system, or did he want to establish the superiority of the Tianyi method against all sorts of procedures current in his time by incorporating them in the diagram? Without the complete text of the manuscript, which has not yet been published in its entirety, we must fall back on transmitted texts such as the *Huainanzi*, which underscore the reputation accorded to Tianyi in the astrological conceptions of the early Western Han: "Among the celestial spirits, none is more eminent than Green Dragon; some would say Heavenly One (Tianyi), others rather Supreme Yin."[64] At the end of the first century B.C.E., the "Five Agents" section of the *Han shu* bibliographical treatise includes, next to *Xianmen shi* and *Xianmen shifa*, a work in six *juan* entitled *Tianyi*, a title suggesting that there indeed existed a fairly consistent mantic system based on the periodic movement of Heavenly One.[65]

As practically all the books listed in the "Five Agents" section of the bibliographical treatise are lost, our understanding of pre-Han and Han astrological and calendrical practices relies for the most part on the excavated texts and artifacts such as the Mawangdui silk manuscripts and the so-called "daybooks." The latter consist primarily of what appear to be miscellanies with very heterogeneous contents, combining all sorts

63. In the middle section of the rectangle on the right-hand side of the diagram as reconstructed by Li Ling (Fig. 13). Next to it is *xiaosui* 小歲 which is another name for the Dipper as a monthly indicator (*doujian*).

64. *Huainanzi* 3.30a ("Tianwen xun").

65. *Han shu*, 30.1768. For the competition between different hemerological methods in Western Han, see the famous anecdote preserved in *Shi ji* (Beijing: Zhonghua, 1959), 127.3222 ("Rizhe liezhuan" 日者列傳); and Liu Lexian, "Cong chutu wenxian kan 'Shi ji—Rizhe liezhuan'" 從出土文獻看 '史記——日者列傳', *Guwenzi yu gudaishi* 古文字與古代史 1 (Taipei: Academia Sinica, 2007), 435–52.

of practical knowledge and ready-made methods. Some are simple lists of lucky or unlucky days while others contain tables that show how to connect series of mantic functions to certain time cycles or space orientations for prognostication purposes; still others include methods that rely on more sophisticated calculations and are supported by diagrams.[66]

Whatever their degree of complexity, all these prescriptions and procedures are designed to assess the auspicious or inauspicious character of a given situation and determine the lucky or unlucky times to take action. They are examples of what the transmitted texts call the art of "selecting days" (*zeri* 擇日) that we currently translate as "hemerology" (from the Greek ήμερο λογέω, "the art of counting days").[67] In modern studies, widespread use of the term *shifa* to refer to some mantic methods described in the manuscripts has created its own problem, because it does not permit us to identify the boundary that separates a *shi*-method from a simple hemerological procedure. On the one hand, the solution that posits the existence of a Dipper device or another type of mantic device as the basis for *shi*-methods, which in turn are related to calendrical astrology, seems both naïve and misleading, and it is most often unfounded. On the other hand, the mere presence of a cosmogram is in itself insufficient evidence that we are dealing with a *shi*-method. For example, the Day Court diagram and its correlated components are widespread and used in most of the daybooks. Moreover, there is no evidence that a clear distinction was made by the hemerologists (*rizhe* 日者) of the Warring States, Qin, and Western Han between strictly calendrical prescriptions and methods that fall within the domain retrospectively qualified as *shi*-divination—not that it would be improper to make such a distinction.[68] On the contrary, the archaeological discoveries of the past decades offer a unique opportunity to deepen our knowledge of early developments in Chinese calendrical astrology. It is precisely the closeness of the links uniting this form of astrology to hemerological techniques in general that requires us to better delineate ideas and practices using terms whose meanings are clear and devoid of ambiguity.

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66. For an attempt to classify the methods described in the Shuihudi daybooks according to their technical features, see Kalinowski, "Les traités de Shuihudi et l'hémérologie chinoise," 224–27.

67. Use of the word "hemerology" in Western scholarship has been mainly in Near Eastern studies where it designates the calendar based techniques of selecting auspicious time periods, and therefore is a ready-made translation for the Chinese art of selecting days (*zeri* or *xuanze* 選擇); see René Labat, *Hémérologies et ménologies d'Assur* (Paris: Adrien-Maisonneuve, 1939).

68. On the activities of the hemerologists (*rizhe*) in Qin and Han, see Liu Lexian, "Cong chutu wenxian kan 'Shi ji–Rizhe liezhuan'," 436–41.

Conclusion

From these few considerations on the current uses of the term *shi* and its compounds emerge the following points. First, the multiple meanings of this term, because of the gradual shift between its strict sense as mantic device and its broad sense as calendrical astrology, give rise to serious misunderstandings when it is used alone, as often happens in studies on early China. Second, the existence during the Han of several instruments of the *shi* type no longer permits us to consider the term as referring to a singular and unique model. Following the usage introduced by Yan Dunjie, it now seems necessary to use a generic term such as "mantic device" (*zhanpan*) to describe such devices, and to specify, when required, if the device in question is a Dipper device or astrolabe, a Nine Palaces device, a Liuren device, and so on. Even if the Han narratives that depict the operation of a *shi* concern principally the Dipper device, its origins and status as an astro-calendrical instrument remain uncertain. While recognizing the cosmic model dimension of the apparatus, Cullen notes that neither the *Zhoubi suanjing* 周髀算經 nor the cosmographic writings of the Han mention it explicitly, and this also applies to the "Treatise on the Celestial Offices" of the *Shi ji* where the Northern Dipper occupies a central place.[69] In this regard, if the Dipper device is undoubtedly related to late Warring States astrographic and calendrical theories, it is primarily an offshoot of those theories with applications that belong to the domain of divination and magic.

We saw that the discovery of early Han mantic devices contributed to a boom in studies of the patterns and designs that appear on the surface of these instruments. Again, the notion of *shi*-diagram in exclusive relation with mantic devices has begun to lose out to an understanding that extends to all spatial representations of calendrical time cycles, of which the excavated texts and artifacts now offer numerous examples. It is a whole field of investigation still largely untapped that is offered to the attention of researchers. The working out of a functional typology of these diagrams will permit a better understanding of their uses in the practice of pre-Han and Han diviners and astrologers.

Finally, the discovery of the Dipper device has allowed us to push back the origins of the Liuren method to the astro-calendrical conceptions and schematic designs of the late Warring States and early Han. As a result there have been scholarly debates on the broad meaning of

69. However, as pointed out by Cullen in his *Early China* article ("Some Further Points on the *shih*," 46, n. 74), when Sima Qian writes that the Northern Dipper "turns in the center" (*yun yu zhong yang* 運于中央), he might have had in mind the idealized scheme of the *shi*.

shi-divination as "calendrical astrology" and on the formative stage of this form of astrology so characteristic of the Chinese mantic tradition. Unlike astrometeorology (*zhanhou* 占候) and planetary astrology, which are relatively well documented in the canonical texts and official histories, calendrical astrology is conspicuous by its absence in early sources. The bamboo and silk manuscripts fill in the gap to a certain extent. At the same time, the manuscripts provide a new challenge for research in the area of calendrical astrology and hemerology. Evidence of the latter dates to the end of the second millennium B.C.E., and the boundaries distinguishing it from calendrical astrology remain unclear and poorly understood.[70]

70. On evidence for uses of sexagenary hemerology in the Shang oracle bones, see David Keightley, *The Ancestral Landscape: Time, Space, and Community in Late Shang China (ca. 1200–1045 B.C.)* (Berkeley: University of California, Institute of East Asian Studies, 2000), 29–43. Lu Yang, *Zhongguo gudai xingzhanxue*, 298–99, describes the formation of calendrical astrology as a continuous process of change between observational astrology in early times to formalistic astrology in the Han.