



CAMBRIDGE
UNIVERSITY PRESS

The "Bamboo Annals" Revisited: Problems of Method in Using the Chronicle as a Source for the Chronology of Early Zhou. Part 2: The Congruent Mandate Chronology in "Yi Zhou shu"
Author(s): David W. Pankenier

Source: *Bulletin of the School of Oriental and African Studies, University of London*, Vol. 55, No. 3 (1992), pp. 498-510

Published by: Cambridge University Press on behalf of School of Oriental and African Studies

Stable URL: <http://www.jstor.org/stable/620195>

Accessed: 23/03/2010 21:28

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/action/showPublisher?publisherCode=cup>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



School of Oriental and African Studies and Cambridge University Press are collaborating with JSTOR to digitize, preserve and extend access to *Bulletin of the School of Oriental and African Studies, University of London*.

<http://www.jstor.org>

THE *BAMBOO ANNALS* REVISITED: PROBLEMS OF
METHOD IN USING THE CHRONICLE AS A SOURCE
FOR THE CHRONOLOGY OF EARLY ZHOU.
PART 2: THE CONGRUENT MANDATE
CHRONOLOGY IN *YI ZHOU SHU*

By DAVID W. PANKENIER
Lehigh University, Bethlehem, Penn.

The account given of the *Bamboo Annals* pre-Conquest chronology in Part 1 of this paper bears comparison with the internally consistent chronological sequence found in *Yi Zhou shu*, whose coherence has not been fully appreciated by those attempting to reconstruct the chronology. As we saw in the discussion of King Wu's reign in Part 1, *Yi Zhou shu* 'Da kuang' and 'Wen zheng' chapters are correct in dating the appointment of King Wu's siblings as viceroys in the former Shang domain, which event we know took place in the Conquest year, to the 13th year of the Mandate, a finding that is fundamentally incompatible with Chou Fa-kao's, David Nivison's, and Edward Shaughnessy's account.⁴⁵ The same two chapters in combination with 'Zuo luo' are also correct in implying that King Wu died in the 14th year. Furthermore, 'Wen zhuan' chapter of *Yi Zhou shu* correctly dates King Wen's demise to the '9th year of the Mandate' in those very words.

Edward Shaughnessy, by not enumerating events according to the Mandate sequence,⁴⁶ side-steps the necessity of reconciling the *Yi Zhou shu* record of King Wen's death in the 9th year with the contradictory account in *Shiji* which has Wen dying in the 7th year. Though Shaughnessy recognizes that the central problem facing the third-century editors of the *Bamboo Annals* was the difficulty of reconciling a 12th-year Conquest date with a 13th-year Conquest tradition,⁴⁷ his mistaken assumption that the 12th-year date was present in the original tomb text led him to assign it priority over the pre-Qin, 13th-year date given in *Yi Zhou shu*, and so he ignored the evident contradictions that follow from this approach. As the analysis here shows, when proper account is taken of the 13th- and 14th-year records in *Yi Zhou shu*, and when these data are collated with the reconstructed *Bamboo Annals*, the only reasonable conclusion is that the original *Bamboo Annals* also assigned the Conquest to the 13th year of the Mandate. If Shaughnessy had counted down in his own table⁴⁸ from King Wen's death in the 9th year of the Mandate (1050) to 1045, his date for the Conquest, he would have found himself counting to fourteen. But identifying 1045 as the 14th year of the Mandate would have contradicted his earlier thesis in 'On the authenticity of the *Bamboo Annals*' where he argued forcefully, and correctly, that King Wu died in this same 14th year. Like David Nivison,⁴⁹ Shaughnessy no doubt hypothesized the existence of two different 'royal' calendars, thus allowing for differing accounts of King Wen's death in both a 7th and a 9th year. But neither scholar offers adequate substantiation for such an expedient hypothesis when in fact the 9th-, 13th-, and 14th-year dates in the one text—*Yi Zhou shu*—are *already mutually consistent* as the dates of those

⁴⁵ See Part 1 of this paper, *BSOAS*, LV, 2, 1992, n. 39.

⁴⁶ Shaughnessy, 'The "Current" *Bamboo Annals*', 50, 41.

⁴⁷ *ibid.*, 41.

⁴⁸ *ibid.*, 50.

⁴⁹ Nivison, 'The dates of Western Chou', 524.

events in the Mandate calendar. Implicit in the argument from expediency, therefore, is the improbable assumption that the *Yi Zhou shu* 9th-year account of King Wen's death accords with the Mandate calendar, while the *Yi Zhou shu* 14th-year account of King Wu's death is dated according to King Wen's hypothetically separate 'royal calendar'.⁵⁰

To this should be added a 'King Wu 1st-year' record in *Yi Zhou shu* which mentions a *bingchen* new moon in King Wu's first year and which accurately identifies 29 July 1049.⁵¹ Even more striking is the '23rd-year' record in the 'Feng bao' chapter, mistakenly included among entries concerning King Wen's reign,⁵² that correctly identifies *gengzi* as the cyclical date of the new moon day of the fourth month (26 April 1046) and describes how the lords of the various states allied with Zhou convened in Feng to be reconfirmed in their status as vassals by King Wu, which event we know took place just after the Conquest, hence in the 13th year, again impossible in Chou Fa-kao's, David Nivison's, or Edward Shaughnessy's account. Finally, as we saw earlier, 'Xiao kai' chapter contains a proven record from King Wen's 35th year, correct to the year, month, and cyclical day, of the total lunar eclipse of 12–13 March 1065.

In other words, allowing only for the commonest of copyist's errors (writing '23' for '13', and '3' for '1') in two passages in the received text of *Yi Zhou shu*, all six chronological passages garnered from this important pre-Qin source, including two precise new-moon dates and a lunar eclipse, are mutually consistent and support in detail the reconstruction of the *Bamboo Annals* chronology provided here.⁵³ In contrast, David Nivison and Edward Shaughnessy argue that the dated passages in *Yi Zhou shu* which do not support their 1045 dating of the Conquest are either fakes or else refer to two different calendars, one of which is their own hypothetical construct.

Once again: the Guoyu record placing Jupiter in Quail Fire

This is not the place to rehearse in detail the arguments adduced elsewhere in relation to the passage in *Guoyu* 'Discourses of Zhou' giving the location of

⁵⁰ The 7th-year account of King Wen's death derives from the 'Basic Annals of Zhou' in which Sima Qian states that King Wen died seven years after receiving the Mandate. Elsewhere, as we saw above (Part I, n. 33), Sima Qian states that King Wen died six years after attacking the Quan Yi barbarians, which is consistent, since he implies in the 'Basic Annals of Zhou' (*Shiji*, 4: 117–18) that this campaign occurred in the year following the receipt of the Mandate. However, *Shang shu dazhuan* dates the Quan Yi campaign to the 4th year of the Mandate (see table 4), which is corroborated by the *Bamboo Annals* and the *Shijing*, and confirmed by *Yi Zhou shu* which has King Wen dying in the 9th year of the Mandate, six years (inclusive) later. It appears, therefore, that Sima Qian was basically correct about the approximate timing of King Wen's death relative to the Quan Yi campaign, but not about the timing of that campaign relative to the Conquest. Therefore, Sima Qian's 7th-year date for King Wen's death derives from the historian's own presentation of the relative chronology and not from a variant 'royal calendar'.

⁵¹ *Yi Zhou Shu*, 'Bao dian' 寶典 chapter has '3rd year' but *Xin Tang shu* 新唐書, 27B.604, quotes the passage as saying '1st year'.

⁵² See Part I, n. 14.

⁵³ All this evidence I adduced by 1983; see 'Appendix A: Chronology of Kings Wen and Wu', in 'Early Chinese astronomy and cosmology', 319 ff., for annotation and explication of the texts cited. Left out of discussion here is the 'Shi fu' chapter of *Yi Zhou shu* whose dated entries display clear evidence of manipulation by the Warring States period chronologists who first attempted a reconstruction of the calendar of the Conquest year. Those dated records, the parallel 'Wu cheng' text quoted by Liu Xin in his 'Canon of the Ages', and the Yinli reconstruction of the early chronology are all analysed in my 'Reflections of the lunar aspect on Western Zhou chronology' (*T'oung Pao* [1992]). The two new moon dates, together with the lunar eclipse record of 1065 B.C. from the 'Xiao kai' chapter of *Yi Zhou shu*, which identify the precise year in King Wen's reign, the month, and the exact day, could not possibly have been retrospectively calculated since the data only became meaningful in absolute terms once King Wen's reign and the Mandate calendar were correctly dated astronomically; see my 'Astronomical dates in Shang and Western Zhou'. This suggests that Shaughnessy's conclusions are in need of revision in regard to the unreliability of passages from *Yi Zhou shu* which do not contain commentary by Kong Zhao 孔晁; cf. Shaughnessy, 'Authenticity of the *Bamboo Annals*', 159–63.

various celestial bodies at the time of the Conquest. Some clarification is in order, however, in view of the efforts by David Nivison and Chou Fa-kao to cast doubt on the authenticity of the text itself and to question the accuracy of my interpretation in regard to the location of Quail Fire. The passage in *Guoyu* is of considerable importance, as recognized already by Liu Xin two thousand years ago, because Jupiter's reported location in Quail Fire alone has the potential of pinning the date of the Conquest down to within twelve months. If I am correct in my interpretation of the *Guoyu*, it adds decisive confirmation of the *Bamboo Annals* chronology and the date 1046 for the Conquest; without it the reconstruction presented here is in no way compromised but must still be confronted directly if alternative hypotheses are to be taken seriously.

Simply stated, the location of Jupiter at the time of the Conquest recorded in *Guoyu* is precisely correct for the *Bamboo Annals* date of 1046 B.C., most especially if the spatio-temporal concept 'Quail Fire year' is defined in the same rigorous manner as in the Mawangdui manuscript *Wuxing xhan* 五星占 'Prognostications of the Five Planets' discovered in 1973, a text which preserves a detailed record of accurate observations of Jupiter (*suixing* 歲星) from the late third to the early second century B.C.⁵⁴ This indisputably authentic record proves that a Jupiter *sui* 'year' such as 'Quail Fire' began with the first appearance of the planet at dawn after its annual period of invisibility and ended with its last appearance at dusk;⁵⁵ it confirms also that a Quail Fire year is the first such twelve-month period of visibility during which Jupiter appears within the boundaries of the three asterisms known as 'Beak' 喙, 'Neck' 頸, and 'Crop' 嗉 (i.e., the range in longitude between δ Hydrae and δ Crateris, also known as lunar mansions 'Willow' 柳, 'Seven stars' 七星, and 'Spread' 張). In the case of the mid eleventh century B.C. the first such Quail Fire year following the planetary conjunction of 1059 fell during the period 15 July 1059 to 13 July 1058, the next fell during the period 20 July 1047 to 19 July 1046.⁵⁶ This definition necessarily means that in a Quail Fire year the planet reaches a point in the sky opposite the sun where it will be visible for several weeks during most of the night while stationary at a location very close to α Hydrae, the

⁵⁴ See Chen Jiujin 陳久金, 'Cong Mawangdui boshu Wuxing zhan de chutu shitan woguo gudai de suixing jinnian wenti' 從馬王堆帛書「五星占」的出土試探我國古代的歲星紀年問題, *Zhongguo tianwenxue shi wenji* 中國天文學史文集 (Beijing, 1978), 1–65.

⁵⁵ Compare the following statements about Jupiter's annual motion, the first from the Warring States astronomer Gan De 甘德 as quoted in *Kaiyuan zhanjing* 開元占經 (23:3a), and the second from the Mawangdui MS 'Wu xing zhan' (*Wenwu* 11 [1974], 37):

(Gan de) 'In all Jupiter takes twelve *sui* to complete one circuit [of the heavens]; [after] altogether 370 days, at dusk [Jupiter] enters [the void] in the west; thirty days [later] it again appears at dawn in the east.'

(MWD MS) 'Jupiter . . . is visible for three [hundred sixty-five days; then at dusk it enters the void in the west and is concealed] for thirty days; [after] 395 days it again reappears in the east; [in twelve] *sui* it makes one circuit of the heavens . . .'

What is especially noteworthy, apart from the fact that the passage is obviously the product of careful, long-term observation of Jupiter's rising and setting, is the use of *sui* to refer to the period of Jupiter's visibility: twelve *sui* make up the period of the planet. Technically, *sui* refers, therefore, not to a conventional calendar year, but to the twelve-month period of the planet which begins and ends in successive months of the year, depending on Jupiter's 'age' in the cycle. The rising and setting observations of the planet for each year given in the MS confirm this usage. Hence, Jupiter *sui*, whether in the Zhou dynasty or in the twentieth-century A.D., are defined solely with respect to the location of the planet among the stars and are unaffected by changes in the location of the solstices and equinoxes brought about by precession.

⁵⁶ See my 'Astronomical dates', 10, where the locations of the planet are those computed by W. Stahlman and O. Gingerich, *Solar and planetary longitudes for years –2500 to 2000 by 10-day intervals* (Madison: University of Wisconsin Press, 1963). The tables have an accuracy of plus or minus one degree. The positions of the determinative stars given there have a similar margin of error which, for the purpose in question, may be deemed inconsequential.

famous 'Bird Star' after which this quadrant of the sky—'Vermilion Bird'—is named.⁵⁷

The definition and record of actual observational practice from *Mawangdui* is consistent with the information provided in *Zuozhuan* 左傳, *Huainanzi* 淮南子, *Shiji*, *Hanshu*, *Erya* 爾雅, *Zhou bei suan jing* 周髀算經 as well as in virtually all other pre-Qin and Han sources, including the works of the fourth-century B.C. astronomers Shi Shen 士申 and Gan De 甘德 preserved in later texts.⁵⁸ It is not consistent, clearly, with the dating of 1045 for the Zhou Conquest advocated by Chou Fa-kao, David Nivison, and Edward Shaughnessy, which is why David Nivison, for his part, was obliged to argue that the *Guoyu* text as a whole is a fake, while admitting that the Quail Fire record 'obviously has some basis in fact'.⁵⁹ Chou Fa-kao, on the other hand, uncritically accepts Zhang Yuzhe's assessment placing Jupiter in Quail Fire in the spring of 1057 B.C.,⁶⁰ and then subtracts Jupiter's nominal period of twelve years to arrive at the spring of 1045 as the time indicated by the *Guoyu* passage. Chou does not consider the fact that by spring of 1057 Jupiter had been within the bounds of Quail Fire, if nominally defined (as with Zhang Yuzhe) as lunar mansions Willow, Seven Stars, and Spread, ever since the mid-summer of 1059, a period of some 18 months (a situation repeated, of course, in 1047–45). The reason for this is because those three lunar mansions together span a range of some 40° in longitude, only about 30° of which Jupiter can traverse in any twelve-month period.

Obviously, unless one is able to specify more precisely what 'Quail Fire' referred to in spatio-temporal terms, as does the 'Prognostications of the Five Planets', the *Guoyu* datum that Jupiter was in Quail Fire, by itself, would be insufficient to distinguish between two years. It is a fact, however, that the sequence of *first* and *last* appearances of the planets have been of special interest to virtually all ancient peoples, from Meso-America to Mesopotamia, from very early in their history, and China is no exception. The sightings of the conjunctions of 1059, 1576, and 1953 B.C., all of which occurred very close to the time of appearance or disappearance of the planets as a group at dusk or dawn, no doubt resulted in part from the attention devoted to planetary apparitions at just those times. Given those sightings and given the survival of an authentic record of this kind of precise timing of Jupiter's rising and setting from the third century B.C. it is hardly far-fetched to presume that early Zhou astrologers also

⁵⁷ The auspicious significance of Jupiter's stationary episodes is affirmed in *Jin shu*: 'Predictions made by Jupiter as it advances or retrogrades refer to the State represented by the constellation it occupies. When Jupiter remains in a (particular) group it manifests the virtues of the State shown by that constellation, and a rich harvest can be expected. To wage war on this state would be fatal because disaster will fall upon its enemy. Happy tidings are foretold when Jupiter remains undisturbed in its path. When it advances or retrogrades and fails to observe the usual stages in its cycle, disaster will fall upon the State concerned. When this happens, launch no important projects and avoid using the army. . . .', tr. Ho Peng Yoke, *The astronomical chapters of the Jin Shu* (Paris, 1966), 122–3 (italics mine). This probably explains why the first campaign launched by King Wu was aborted, see 'Astronomical dates', 15. In January of 1045, in contrast, Jupiter would have been just about to depart Quail Fire after spending eighteen months in that space astrologically associated with Zhou, hardly a propitious time to launch an attack on Shang, as Chou, Nivison and Shaughnessy would have it.

⁵⁸ See Pankenier, 'Astronomical dates in Shang and Western Zhou', *Early China*, 7, 1981–82, 8–10, and esp. Pankenier, 'Early Chinese astronomy and cosmology: the "Mandate of Heaven" as Epiphany', Stanford University Ph.D. dissertation, 1983, 121 ff.

⁵⁹ Nivison, 'The dates of Western Zhou', *Harvard Journal of Asiatic Studies*, 43.2, 1983, 512.

⁶⁰ Chou, 'Xi Zhou niandai xin kao', 1; see also Chou Fa-Kao, 'Wu Wang ke Shang de niandai wenti 武王克商的年代問題', *Bulletin of the Institute of History and Philology*, 56, 1, 1985; cf. Zhang Yuzhe 張鈺哲, 'Halei huixing de guidao yanbian de qushi he ta de gudai lishi 哈雷彗星的軌道演變的趨勢和它的古代歷史', *Tianwen xuebao* 天文學報, 19, 1, 1978, 116–17.

followed the cycle of Jupiter's period of visibility, indeed, that is precisely what the very ancient term *sui xing* actually means: the 'year star' whose annual *period of visibility* is just twelve months.⁶¹

Now, unless one simply disregards the evidence from Mawangdui, it must be admitted that of the roughly eighteen months Jupiter will spend within the limits *nominally* defined by the lunar mansions Willow, Seven Stars, and Spread, at most only the twelve months immediately following the planet's *first* dawn appearance within the range so defined can count as a Quail Fire year.

Neither Chou Fa-kao nor David Nivison confronts the universal agreement among reliable sources, including the Mawangdui MS, that Jupiter *sui* are bounded by the planet's periods of invisibility, which necessarily means that a Quail Fire *sui* cannot possibly coincide with a 'civil year' as conventionally defined, nor can it refer to a 'civil year' such as 1045 following a year *during all twelve months of which* the planet was already located in Quail Fire.⁶² David Nivison, in fact, concedes that Jupiter was in Quail Fire in 1058, the first year of the Mandate,⁶³ a year which meets all the criteria for a Quail Fire *sui* stipulated above,⁶⁴ but then he denies the validity of the same criteria when they militate in favour of the subsequent Quail Fire *sui* twelve years later—July 1047 to July 1046—as the interval during which the Conquest occurred.⁶⁵

Furthermore, David Nivison's argument⁶⁶ that the phenomenon of precession of the equinoxes would have altered the stellar location of Quail Fire is untenable. This notion is eloquently contradicted, to take just one example, by the caption on the Tunhuang manuscript copy of a star chart made by Qian Lezhi 錢樂之 (fl. mid fifth century A.D.): 'From 9° in Willow to 17° in Spread, the chronogram *wu* is Quail Fire. The "Southern Quadrant is Fire" means that in the fifth lunar month when the *yang* influence reaches its peak, Antares culminates at dusk. "Seven stars" is the location of the Vermilion Bird; therefore it is referred to as "Quail Fire". It is the allotment of Zhou.'⁶⁷

⁶¹ Nivison, 'The dates of Western Chou', 512, for his part admits that, 'It is likely that Jupiter's position at the time of the Conquest was thought important and was remembered. The recently discovered *Li kuei* 利簋 inscription . . . though difficult to interpret, appears to say this . . .'

⁶² It is striking that although Nivison ('The dates of Western Chou', 511–12) refers repeatedly to Han conventions, Han standards, and Han astrology, he never once mentions the Mawangdui MS, 'Wu xing zhan'. That text does not bear him out, as I point out, in regard to the application of the concept 'Quail Fire' in actual practice.

⁶³ Nivison, '1040 as the date of the Chou Conquest', 78.

⁶⁴ Nivison ('The dates of Western Chou', 512) explicitly accepts the criterion that Jupiter's heliacal rising the preceding year must occur in Quail Fire for the subsequent 'civil' year to be so designated, though he avoids mentioning whether such heliacal rising in mid-summer is the first or the second such rising in Quail Fire. If the former, then Jupiter will typically spend a full twelve months near the Bird Star in the space nominally identified as Quail Fire, if the latter, only the spring of the subsequent 'civil' year will be spent in Quail Fire before Jupiter, having already passed by the Bird Star many months before, advances eastward out of Quail Fire.

⁶⁵ Nivison ('The dates of Western Chou', 511), also says of the *Guoyu* passage, 'The first line . . . [giving the location of Jupiter in Quail Fire] is literally true of the year 1046, which was the year of the Conquest in the Shang calendar.' By this Nivison is conceding nothing but merely means to say that his date of January 1045 for the Conquest is also the year 1046, if one speaks in terms of a supposed Shang convention according to which the solstitial month of the Zhou calendar for 1045, in which he dates the Conquest, would correspond to the last month of the Shang year 1046. In any case, the distinction between the Shang and Zhou calendars being made here is speculative, particularly in view of the proven use of the Xia convention in *Yi Zhou shu* to date the lunar eclipse of 1065. Nivison's arguments in this connexion are all the more surprising considering the latitude of three months he is prepared to accept in defining the first month for the purposes of dating the bronze inscriptions throughout Western Chou. It is difficult to see the value of talking in terms of theoretically distinguishable Shang and Zhou conventions at this early date when a consistent practice is not even demonstrable for the subsequent centuries of Western Zhou; cf., Zhang Peiyu, 'Early China Forum', *Early China*, 15, 1990, 142.

⁶⁶ Nivison, 'The dates of Western Chou', 512.

⁶⁷ This star map, dating from about 940, is in turn based on the map of stars and constellations, together with explanation and astrological commentary, made by Chen Zhuo 陳卓 (fl. c. 310).

Although the precise degree figures here reflect a departure from the nominal definition as a result of the standardization in size of the Jupiter stations introduced at the time of the Han Tai Chu 太初 calendar reform of 104 B.C., implicit in the definition is a much more ancient conception. By the fourth century B.C. when the original author of this definition of Quail Fire, Gan De, was active, the summer solstice had already long since moved out of the bird asterism as a result of precession, and yet this revised and updated star map dating from the Song dynasty still perpetuates a conception of the mid-summer location in Quail Fire (i.e., peak influence of *yang*) obsolete since the ninth century B.C. Just as in the West, astrological conceptions and astronomical reality clearly took leave of one another at a relatively early date. Such a fossilized astrological definition of Quail Fire, astronomically accurate not later than the early part of the first millennium and still well attested in Warring States times, could not have been invented during the Han. This fact alone attests to its authenticity and currency in the eleventh century B.C.

Still more questionable is David Nivison's disregard of the conclusive evidence cited by Qiu Xigui,⁶⁸ that the heretofore poorly understood musical terminology in the same passage in *Guoyu* is indisputably authentic and dates at least from the early Warring States period. This discovery conclusively confirms Joseph Needham's observations regarding the antiquity of the entire musicological argument found in the text,⁶⁹ to which the astronomical indications are, significantly, incidental. The original purpose of the *Guoyu* author in composing this text, contrary to David Nivison's conjectures,⁷⁰ had virtually nothing to do with dating the Conquest in any absolute sense.

According to *Sui shu* 隋書 (19.504), Chen based his work on the catalogues of stars of Shi Shen, Gan De, and Wu Xian, the fourth-century B.C. astronomers; cf. Needham, *Science and civilisation in China*, Vol. 2: *History of scientific thought* (Cambridge, 1956), 263–71. The Dunhuang MS is published in *Wenwu*, 3, 1966, 27–38. The explanations accompanying each region of the sky such as that translated here are also reproduced in *Kaiyuan zhanjing*, 64: 1a–11a. Lunar mansion Seven Stars, the middle mansion in Quail Fire, which as a cardinal station must contain three mansions, is referred to here as Quail Fire because it contained the Bird Star α Hydrae which represented the entire constellation.

⁶⁸ Qiu Xigui 裘錫圭, 'Tantan Suixian Zeng Hou Yi mu de wenzi ziliao' 談談隨縣曾侯乙墓的文字資料, *Wenwu*, 7, 1979, 29.

⁶⁹ See Needham, *Science and civilization in China*, vol. 4, *Physics and physical terminology*, Part I: *Physics* (Cambridge, 1962), 140.

⁷⁰ Nivison, 'The dates of Western Chou', 510 ff. As for the rest of Nivison's treatment of the *Guoyu* text, careful examination of his outline of this 'rigorous mathematical proof' that the text is a first-century B.C. forgery shows that his entire edifice of conjecture rests on the assumption that the 'forger' accepted the 'Wu cheng' dates for the Conquest as quoted in *Han shu*. This assumption is ultimately founded on the fact that the passage identifies the date of the battle as the 'second month' (which actually proves correct, though not in Nivison's view). Nivison's subsequent argument which proceeds from this is wholly the result of conjecture as to what the putative forger 'must' have had in mind, in which Nivison advances, among other things, unprecedented interpretations for key terms (e.g., *chen* 辰 as 'the east moving 30-tu 度 zodiac space 15 tu east and west of the sun, in which no star can be seen'), while ignoring parallel passages in *Zuo zhuan* and archaeological evidence bearing on the authenticity of the text; see 'Early Chinese astronomy and cosmology', 168, 181. Most extraordinary is the claim that the 'forger' would have been so knowledgeable in astronomy as to be capable of extrapolating astronomical conditions a millennium earlier, which handiwork he then was able to insinuate into a well-known text whose musicological gist had already been quoted approvingly by Sima Qian (*Shiji*, 25.1240). And yet the very same forger was also so incompetent as to employ in his purportedly ancient record the official Han definition of the solstitial point when, as every one of his contemporaries knowledgeable in calendrical astronomy would have been aware, that location had only recently been redefined in the Tai Chu reform of 104 B.C. as a consequence of the obvious obsolescence of the nominal definition in effect throughout the Zhou. One can only wonder whom such a 'forger' would have thought he was fooling. As I argued in 'Early Chinese astronomy and cosmology', the passage can be interpreted to describe correctly celestial conditions in the fall of 1047 B.C. which would be consistent with a date of early 1046 for the Conquest, and not 1045.

Adjustments to the Bamboo Annals 'end of dynasty' summaries

The three 'end of dynasty' summations found in the *Bamboo Annals* have long played an influential role in attempts to evaluate the chronology provided in the text of the chronicle itself, from which they frequently diverge. Here it will be convenient to take them up individually and to discuss briefly how they were affected by the post-discovery revisions to the original chronology.

All versions of the *Bamboo Annals* contain the comment, 'From Tang's destruction of Xia down to Zhou 紂 there were twenty-nine kings and 496 years.'⁷¹ The factor 496 years plays no role in the current *Bamboo Annals* chronology since that figure does not correspond to the term it is said to define, it is merely a component of the span of 508 years from the supposed first year of Shang 1558 to the last year of Di Xin 1051 (see Part 1, table 1). There is thus no apparent explanation for this summation in the present chronology, the reason being of course that it was rendered invalid by the third-century distortion worked on the date of the Mandate-conferring conjunction. At the time of the compilation of the original *Bamboo Annals* chronology the figure 496 years did have a very precise function (table 2): it identified the span from the beginning of Shang to the *de jure* conclusion of the dynasty with the transfer of the Mandate to Zhou, since 1063 (the assumed date for the Zhou Mandate portent brought by the editors to the still unreconstructed *Bamboo Annals* which incorporated the general four-year error) plus 496 equals 1558 (inclusive count; still the current *Bamboo Annals* date for the beginning of Shang). As we have seen, the true figures were 1059 + 496 = 1554, but the difference between them remains the same. The 496 year period for the Shang Dynasty was also known to the late Warring States period Yinli chronologists; Chen Mengjia and Tung Tso-pin have both pointed out that in the Yinli scheme this figure could only define the span from the beginning of the dynasty to the transfer of the Mandate to Zhou and not to the last year of Di Xin.⁷² Evidently, the distinction between the *de jure* date of the Zhou Mandate and the *de facto* beginning of the dynasty was still clearly understood as late as the fourth century B.C. Some three centuries later in mid-Han times, the significance of this crucial 496-year factor was completely lost on Liu Xin, who put the length of the Shang Dynasty at 629 years.⁷³ If the twelve years actually remaining to Di Xin (1058–47) after the receipt of the Mandate by Zhou are added to the figure 496 years, we arrive at a total of 508 years for the *de facto* term of the Shang dynasty, which is the precise sum given in the *Bamboo Annals* for the reigns of all the Shang Kings.⁷⁴

Although the evidence relating to the actual distribution of these years among the twenty-nine or thirty Shang kings is still insufficient to attempt a definitive solution to this problem, the figure 508 years deserves to be taken seriously as a total for the dynasty. In individual cases the *Bamboo Annals* figures can be shown to be unreliable; for example, Di Xin is assigned fifty-two years, though we now know that he actually only reigned for forty years; Di Yi is assigned only nine years even though the oracle bone and bronze inscriptions would seem to indicate that he ruled more than fifteen.⁷⁵ But in some cases the

⁷¹ Fang, *Guben zhushu jinian jizheng*, 38–9, 233.

⁷² Chen Mengjia 陳夢家, *Yinxu buci zongshu 殷墟卜辭綜述* (Beijing, 1956), 212; Tung Tso-pin 董作賓, *Yinli pu 殷曆譜* (Sichuan, 1945), vol. 1, 4:3a; Pankenier, 'Astronomical dates', 17–18.

⁷³ *Han shu*, 21B.1014.

⁷⁴ Notice that this means that Di Xin's reign cannot have exceeded 40 years, while the 1045 conquest hypothesis requires him to have 41; cf. e.g., Shaughnessy 'The "Current" *Bamboo Annals*', 50.

⁷⁵ Chen Mengjia, *Yinxu buci*, 208–10; cf. e.g., Virginia C. Kane, 'The chronological significance of the inscribed ancestor dedication in the periodization of Shang dynasty bronze vessels', *Artibus Asiae*, 35.4, 1973, p. 341, n. 16.

Bamboo Annals may be surprisingly accurate. For example, I demonstrated earlier⁷⁶ that the twenty-one years remaining to Xia Jie, from the planetary portent in his 10th year to the defeat in his 31st year, when added to the 496 years of the Shang yields the result 517 years for the interval between the planetary conjunctions, which is demonstrably correct (table 1), both in terms of the *Bamboo Annals* chronology and as the precise period of Triple Conjunctions of Jupiter, Saturn, and Mars—516.33 years.

It now appears that the significance of the figure 496 years for the Shang was only lost when the distinction between the *de jure* and the *de facto* end of the dynasty became obscured during Warring States times, probably as a result of the confusion about what ‘received the Mandate’ originally meant.⁷⁷ One representative view already mentioned was that of Mencius, who because of a misreading of *Shangshu* thought that the term referred to King Wen’s succession in Zhou. The same misconception is to blame for the confusion between the Mandate calendar and the years of King Wu’s reign so apparent in *Shiji*. Without an adequate knowledge of the role of the Mandate-conferring portent it was almost impossible by the Han dynasty to understand the role of the Mandate calendar in the Conquest chronology. Liu Xin appears to be one of the very few at the time who correctly grasped the significance of the Mandate calendar and its astronomical connexions. As we saw above, the scholars who reconstructed the *Bamboo Annals* after its discovery evidently still laboured under the same misapprehension as Mencius, since they misplaced a reference to the Phoenix augury alluding to the planetary conjunction by entering it under the year of King Wen’s accession in Zhou many years before.⁷⁸ Whoever was responsible apparently understood that there was a connexion between the augury and the receipt of the Mandate, but like Mencius he took the Mandate of Heaven to be something acquired by King Wen by virtue of his succession in Zhou.

The second summation of particular interest concerns the centennial of the founding of the Zhou Dynasty. It is found in two versions, one in the *Bamboo Annals* and one quoted from the original text in the biography of Shu Xi in *Jin shu*. The original version read: ‘From Zhou’s receipt of the Mandate to King Mu was 100 years.’⁷⁹ In contrast, the *Bamboo Annals* version reads: ‘From King Wu to King Mu [Zhou] ruled the state for 100 years.’⁸⁰

According to the *Bamboo Annals* chronology, the combined reign of the

⁷⁶ Pankenier, ‘Astronomical dates’, 18.

⁷⁷ Toyoda Hisashi 豊田久 demonstrates that, although the earliest literary and inscriptional sources clearly distinguish the role of King Wen as recipient of the ‘esoteric’ Mandate from the role of King Wu as the one who established the temporal authority of the Zhou over the ‘Four Quarters’, this feature of the references to the Mandate becomes rapidly attenuated. By the late ninth century, the distinction is no longer made and both Wen and Wu are spoken of as having ‘received the Mandate’. See Toyoda, ‘Shū ōchō no kunshuken no kōzō ni tsuite: “temmei no yōju”-sha o chūshin ni’ 周王朝の君主権の構造について「天命の膺受」者を中心に in Matsumaru Michio 松丸道雄 (ed.), *Seishū seidoki to sono kokka* 西周青銅器とその国家 (Tokyo, 1980), 394, 396, 401, 405, 415.

⁷⁸ An entry in the *Bamboo Annals* in the 12th year of Wen Ding of Shang (Fang, *Guben zhushu jinian jizheng*, 229), says that ‘a Phoenix alighted on Qishan’ 有鳳集于岐山. Shen Yue’s original comment to this record identifies this as the year King Wen acceded to the throne in Zhou. In fact, this augury and the one concerning the Red Crow which is presently juxtaposed with the report of the planetary conjunction signalling the conferral of the Mandate on Zhou both refer to the same event; cf. *Guoyu* (1:11b), ‘When the Zhou arose, the Phoenix sang on Mt. Qi’. The report of the Phoenix augury was no doubt moved to its present location during reconstruction of the *Bamboo Annals* as a direct result of the common misinterpretation of a passage in *Shang shu* by Mencius and others; see Part 1, n. 30.

⁷⁹ *Jin shu*, 51.1432.

⁸⁰ Fang, *Guben zhushu jinian jizheng*, 245.

Duke of Zhou and King Cheng lasted 37 years, Kang Wang's reign lasted 26 years, and Zhao Wang's reign 19 years, for a combined total of 82 years. It is evident therefore that *zhi* 至 'to' cannot be taken to include the long reign of King Mu, which in any case would be contrary to the usual meaning of the word. If we add the *Bamboo Annals* total of 17 years for King Wu to the 82 years down to the year preceding King Mu's first year we obtain the total 99 years for the period. '100 years' in the current *Bamboo Annals* version of the summation thus appears to be a rounded figure for the 99 years from 1061 (King Wu's first year in the text of *Bamboo Annals*) to 963 (King Zhao's last year) in the transmitted version of the chronology.

Now, we know that the comment in the original *Bamboo Annals* made no mention of King Wu at all. Instead the reference was to the 'receipt of the Mandate', a phrase which the scholars involved in reconstructing the chronicle took to refer to King Wu's receipt of the Mandate by virtue of his succession. This is a mistake, as we have seen, but a common misconception, and in making the error here as well the editor displays a reassuring consistency. As a result of the astronomical dating of the Mandate conjunction we now know that the phrase 'received the Mandate' actually refers to the portent revealing the conferral of the Mandate in 1059. The centennial of this even was 959, hence 958 must be the year of King Mu's accession (table 1). We also saw above that this first year date for King Mu is consistent with the four-year distortion present throughout the chronology, since the chronicle dates his accession to 962. Furthermore, taking *zhi* 'to' to mean 'to but not including' as it usually does, we arrive at the precise figure 100 years for the span from 1059 to 959 B.C.

If we now accept the figure 82 years for the total reign years from the beginning of the reign of King Cheng to the last year of King Zhao, and add to this the 12 years of the Mandate calendar from 1058 to 1047 plus the six post-Conquest years from 1046 through 1041, we again arrive at the figure of precisely 100 years. This confirms not only the authenticity of the original comment as quoted in *Jin shu*, but also the fundamental accuracy of the reconstruction presented here. From this we can conclude: (i) the author of the current version of the comment was not averse to 'rewriting' or emending the original wording of the received text if his understanding of the chronology required him to do so; (ii) *zhi* 'to' in the original summations cannot mean 'to and including'; (iii) the *Bamboo Annals* total of 82 years for the period from King Cheng (including the regency of Zhou Gong) through King Zhao is correct; (iv) the figure 17 years for the reign of King Wu is integral to and a product of the post-discovery reconstruction of the text.⁸¹ The inflation of his reign by 12 years, from 5 to 17, a predictable consequence of the 'twenty-one year' model applied to the Conquest chronology, produced the figure 99 years for the period Wu to Mu and hence a good agreement with the centennial comment.

The third summation in the *Bamboo Annals*, that for Western Zhou as a whole, is first quoted in Pei Yin's 裴駰 fifth-century commentary *Shiji jijie* 史記集解:⁸² 'From King Wu's annihilation of Yin down to King You was 257 years.' This passage was usually adduced in support of the now obsolete 'short-chronology' date of 1027 for the Conquest. Another early source, *Zizhi tongjian waiji* 資治通鑑外記 compiled by Liu Shu 劉恕 (1032–78), quotes the

⁸¹ Here we have the main rationale for the transposition of a 17th-year record from the reign of King Cheng to the reign of King Wu during the reconstruction of the text; for another view, see Shaughnessy, 'On the authenticity of the *Bamboo Annals*', 176.

⁸² *Shiji*, 4.149, n. 4.

same comment on two occasions.⁸³ In one place it says, 'Western Zhou [lasted] 257 years', and in another, 'From King Wu to King You was 257 years', so that here we have two more versions of the same statement that may or may not be equivalent to Pei Yin's.

As Noel Barnard demonstrated thirty years ago,⁸⁴ the 'short chronology' Conquest date of 1027 is irreconcilable with both the *Bamboo Annals* figures for King Cheng to King You and with what is known about the reign lengths of the Dukes of Lu from *Shiji*. In addition, Barnard points out that the result 1027 which derives from the addition of 257 plus 771, the *last* year of King You, requires us to take *zhi* 'to' in an inclusive sense, i.e., to mean 'to and including' King You's reign. Not only is this interpretation of *zhi* impossible to justify, it is also in flat contradiction with the preceding summation in which *zhi* 'to' can only mean 'to but not including'. This is true regardless of which chronology one considers—the *Bamboo Annals* 1062–963 = 100/99, or my own dating based on the astronomical date of the Mandate 1059/1058–959 = 100 (table 1). Neither could possibly include the reign of King Mu. Since both the centennial summation and the present one must derive from the same period, and presumably from the same hand, it is highly unlikely that the same word would have been used in contrary senses in identical contexts. Hence, if the original did actually read 'to King You' then this cannot be construed to include the 11 years of his reign.

Several scholars have suggested that the figure 257 years resulted from the transposition of the last two digits of an original 275.⁸⁵ Rong Mengyuan⁸⁶ and Zhao Guangxian,⁸⁷ arguing for Conquest dates of 1055 (i.e., 781 + 275 = 1055) and 1057 (i.e., 782 + 275 = 1057) respectively, both conclude that 'to King You' should not be understood to include the 11 years of King You's reign. In contrast, David Nivison,⁸⁸ when arguing for a Conquest date of 1045 (771 + 275 = 1045), took *zhi* 'to' to include the eleven year reign of King You.

While the tendency has consistently been to see in this third comment a summation of the whole of Western Zhou, there is no reason *a priori* why this should be the case, or why the present placement of the summation in the *Bamboo Annals* at the conclusion of King You's reign should be assumed to be correct. The present location of the summation may simply be a consequence of the way it was interpreted and manipulated during reconstruction of the chronicle. That it has been completely rewritten is obvious from the form the

⁸³ *Zizhi tongjian waji* (Sibu congkan ed.), 3:13a.

⁸⁴ [Book Review of] Chou Hung-hsiang 周鴻翔 *Shang-yin ti-wang pen-chi* 商殷帝王本紀, *Monumenta Serica*, 19, 1960, 501–15.

⁸⁵ In 'Astronomical dates', p. 31, n. 112, I still subscribed to this interpretation. Later, however, the additional work which led to 'Early Chinese astronomy and cosmology', led me to abandon this view as unconvincing for reasons which will become apparent.

⁸⁶ Rong Mengyuan 榮孟源, 'Shitan Xi Zhou jinian', 試談西周紀年, *Zhonghua wenshi luncong* 中華文史論叢, 1, 1980, 19.

⁸⁷ Zhao Guangxian 趙光賢, 'Cong tianxiang shang tuiduan Wu Wang fa Zhou zhi nian 從天象上推斷武王伐紂之年', *Lishi yanjiu* 歷史研究, 10, 1980, 59. Zhao makes use of the same study by Zhang Yuzhe concerning the historical changes in the orbit of Comet Halley cited above as the authority for Chou Fa-kao's conclusions with regard to the *Guoyu*. Zhang claimed to have dated an apparition of Comet Halley to the spring of 1057, which finding is adduced by Zhao in his argument for that year as Conquest year. Unfortunately, as I have noted elsewhere, Zhang's calculations have not stood up under scrutiny by other researchers using more rigorous methods; see Donald K. Yeomans and Tao Kiang, 'The long-term motion of comet Halley', *Monthly Notices of the Royal Astronomical Society*, 197, 1981, 635–42. In actual fact, the return of comet Halley in question might have been observed either late in 1059, the year of the Mandate conjunction, or early in 1058, the first year of the Mandate; for full discussion, see 'Early Chinese astronomy and cosmology', 184 ff.

⁸⁸ Nivison, 'The dates of Western Chou', 539.

summary now takes in the current *Bamboo Annals*: ‘When King Wu extinguished Yin the year was *gengyin* (1051 B.C.); 24 years later the year was *jiayin* (1027) and the cauldrons were settled at Luo. Down to King You it was 257 years; altogether it was 281 years. From King Wu’s first year *jimao* (1062) to King You *gengwu* (771) it was 292 years.’⁸⁹ This emended summary, with its obvious redundancies and interpolated cyclical dates, is clearly a product of post-reconstruction attempts to reconcile the summations with the reconstructed text of the chronicle. Not only does it incorporate cyclical dates and sub-totals as an integral part of the whole, when neither could have been present in the original, it also contradicts the early version quoted by Pei Yin that has the figure 257 years beginning with the *Conquest*, and *not* the ‘settling of the cauldrons at Luo’.

We saw above in the case of the centennial summation how an original ‘From the receipt of the Mandate . . .’ was transformed into ‘From King Wu . . .’ to agree better with the revised version of the chronology in which King Wu came to the throne in 1061 B.C. (Note that in the rewritten summary above King Wu’s first year has been further adapted, to 1062, to yield exactly 100 years down to the date of 962 for King Mu given in the text of the *Bamboo Annals*.) Similarly, although the summation for Shang containing the total 496 years now reads ‘down to [Shang] Zhou’, it does not now, nor did it ever, identify either the beginning or the end of his reign. What it did define was the date of the transfer of the Mandate to the Zhou, so that here again we see that the comment must originally have been based on the date of the Mandate and the *de jure* beginning of the dynasty. It follows, then, that the third comment as well took this all-important date as its initial reference point in the *Conquest* period, and that, just as in the previous two cases, subsequent commentators interpreted that reference as best they could.

Based on the two premises, first, that ‘to King You’ originally meant ‘to but not including’, and second, that the reference date in *Conquest* period was the receipt of the Mandate portent as in the previous two cases, what ought the sum in the original comment to have been? Judging from the initial reconstruction of the chronology which assigned the *Conquest* to 1050 and thus generated the four-year general error, the figure ought to have been 281 years (table 2).

This figure of 281 years is recognizable as the sum of the sub-totals for the two portions of the Western Zhou chronology (100 years plus 181 years) which are still reflected in the transmitted version of the *Bamboo Annals*. The figure 281 years would thus have defined the period from the first year of the Mandate, then thought to be 1062, ‘down to King You’, i.e., to the last year of King Xuan or 782. Because of the subsequent distortions worked on the conjunction-to-*Conquest* interval during further post-discovery reconstruction of the text, the earlier date of 1062 for the beginning of the Mandate was obscured and the figure 281 years, like the other summations of 496 and 100 years which also depended on that crucial date, lost its significance and had to be reinterpreted. It is not surprising, therefore, that ‘281 years’ now appears in the bloated version of the summation for Western Zhou quoted above as an unexplained redundancy supposed to identify the period from the *Conquest* (now defined in the comment as 1051 solely for the purpose of this summation!) down to the *last* year of King You, 771 B.C. Not only does the author of this summation come up with an anomalous date 1051 for the *Conquest*, he also is obliged to violate the principle that ‘down to King You’ must not include the 11 years of his reign. This expedient of including the 11 years of You’s reign in the 281-year total was

⁸⁹ Fang, *Guben zhushu jinian jizheng*, 260.

made necessary by the shift of the starting date from an implied 1062 (i.e., 'from receipt of the Mandate' in the unreconstructed text of *Bamboo Annals*) to 1051 (i.e., 'from King Wu's destruction of Yin'), with a consequent decrease of 11 years.

Here, then, we have the explanation for (i) the emendation of the starting point of this summation (as well as the centennial summation), (ii) for the anomalous dates of King Wu's accession (1062 in the summary vs. 1061 in the text of *Bamboo Annals*) and the Conquest (1051 vs. 1050 in the text), and (iii) for the impossible inclusion of King You's 11 years in the total. It is apparent that the same hand that emended the centennial comment was also responsible for this extended summary for Western Zhou, which if it appeared in the original chronicle at all, ought to have read: 'From the receipt of the Mandate through King You altogether was 281 years.' As they now stand, all three summations are inconsistent both with the facts and with the text of the *Bamboo Annals*. They do not constitute, either singly or as a group, a variant chronological 'tradition' as Nivison argues but are transparently ad hoc constructions which simply attempted unsuccessfully to tie up loose ends left by the third-century reconstruction of the text.

Conclusions

From the foregoing discussion several general conclusions can be drawn about the chronology contained in the *Bamboo Annals*. Foremost among them is that it is possible to explain all significant idiosyncrasies in both the relative and absolute dating of the entire Conquest period in the current *Bamboo Annals* chronology by reference to only two fundamental and consistent dislocations integral to the *Bamboo Annals* system. The first is a general four-year error which is self-evidently present throughout the chronology for the period 1580–962, and the second is an unrelated eight-year error during the immediate pre-Conquest period which was produced during the process of reconstructing the chronicle in the third century A.D., and which in certain predictable instances compounds the first. The first error arose from assigning the Han period dating of 1050 to the Zhou Conquest in the chronicle, probably after its recovery from the tomb, while the second error is clearly integral to the 'twenty-one year model' adopted after A.D. 281 to analyse the Conquest chronology.

Therefore, the only two chronological models for the Conquest period now distinguishable in the *Bamboo Annals* are the 'twenty-one year' solution (1071–1050) which resulted from the actual process of reconstruction in the third century, and the antecedent system which can be shown to have included an enumeration of the years using first Di Xin's reign count, and then for the period between King Wen's demise and that of King Wu using the Mandate calendar first promulgated by King Wen immediately after the planetary portent of 1059 B.C. According to the relative dating system in place prior to discovery of the text, therefore, from Di Xin's accession to King Wu's demise was 42 years (inclusive) or 40 years of reign for Di Xin and two post-Conquest years for King Wu. When the present *Bamboo Annals* chronology is analysed on its own terms the sequence of events in the original chronicle yields absolute dates 1086–1047 for Di Xin, 1099–1050 for King Wen, 1058–1045 for the fourteen years of the Mandate calendar, 1046 for the Conquest in 13th year of the Mandate, and 1049–1045 for King Wu.

It is quite unnecessary, indeed it is a mistake, to attribute the distortions in the *Bamboo Annals* Conquest chronology to any other source. It is particularly questionable to resort to a series of hypothetical discrepancies of varying length alleged to exist in the chronicle, since it is apparent that such expedients only

become necessary when the attempt is made to reconcile the *Bamboo Annals* with the Qin and Han period view that the Conquest took place in a '12th year', whether identified as 1045 or 1040. Indeed, this investigation of the *Bamboo Annals* Conquest chronology as a whole shows that the commencement of the Mandate calendar was not delayed for two years for 'ritual' reasons,⁹⁰ and that the Conquest did not take place in the 12th year of King Wu (or even the 12th year of the Mandate),⁹¹ both of which assumptions are crucial to the 1045 and 1040 Conquest hypotheses.

Moreover, because of unresolved methodological problems, other studies of the Conquest chronology that have attempted to validate fundamental premises by first establishing the entire chronology of Western Zhou, on the whole involve far too much imprecision and circularity. Rather than assuming that the *Bamboo Annals*—which after all displays a remarkable accuracy in precisely dating verifiable astronomical events at least as early as 1576 B.C.—is in error in implicating 1046 as the date of the Conquest, I have presented and tested here evidence to the contrary. The results show the *Bamboo Annals* chronology to be coherent, consistent and in full agreement with both *Guoyu* and *Yi Zhou shu* in identifying Mandate year 13—1046 B.C.—as the date of the overthrow of Shang. Just as Henri Maspero demonstrated in the case of the chronology of the late Warring States period, the *Bamboo Annals* account for the Conquest period, when analysed on its own terms, proves more coherent, complete, and reliable than any other text as a primary source for the chronology of early Zhou.

⁹⁰ Nivison, 'The dates of Western Chou', 524.

⁹¹ Contrary to Edward Shaughnessy's conjecture, there is no support in the current *Bamboo Annals* chronology for the notion that King Wu's conquest of Shang occurred in a '12th year' in the unreconstructed version of the chronicle; cf. Shaughnessy 'The "Current" *Bamboo Annals*', 41.

⁹² This 1045 date for King Wu's death departs from my account in 'Astronomical dates in Shang and Western Zhou', 35, where the seventeen years of Wu's reign were incorrectly factored. Subsequent analysis in 1983 resolved the anomaly which was then revised for 'Appendix A: Chronology of Kings Wen and Wu' in 'Early Chinese astronomy and cosmology'. This analysis showed that the current *Bamboo Annals* total of seventeen years for King Wu should be factored into five years of actual rule plus the (8 + 4 =) twelve years of inflation inherent in the 'twenty-one year' solution to the chronology devised in the third century. For discussion see 'Transformations in King Wu's reign'.

⁹³ Present evidence indicates that King Cheng's reign nominally commenced in the first month of spring in 1042 B.C. after the completion of mourning for King Wu. By all accounts, King Cheng was then still under age and the Duke of Zhou assumed the role of Regent from that date. If the traditional figure of seven years for the Regency and the 1036 B.C. date for the events of the 'Luo gao' 洛誥 are both correct, as first proposed by Leopold de Saussure, 'La chronologie chinoise et l'avènement des Tcheou', *T'oung Pao*, 23, 1932, 312, then 1035 ought to have been the first year King Cheng ruled in his own right. However, the recently discovered *He zun* 何尊 inscription (*Wenwu*, 1, 1976, 60–6; tr. Michael Carson, 'Some grammatical and graphical problems in the *Ho tsun* inscription', *Early China*, 4, 1979, 41–4) suggests that 1036, 'when the King first moved his residence to Cheng Zhou', was King Cheng's 5th cult year, making 1040 B.C. his official first year. This is confirmed by the combination of the *Bamboo Annals* report of Tang Shuyu's 唐叔虞 investiture as Marquis of Jin in King Cheng's tenth year (Fang, *Guben zhushu jinian jizheng*, 240) and the *Guoyu* (10:3a) statement that in that very year Jupiter was in Great Fire (Scorpius), making the date 1031 B.C. Conceivably, the *Bamboo Annals* entry for King Cheng's 'first' year, which speaks about the Duke of Zhou's appointment to preside over the one hundred officials as well as about Cheng's capping and ascending the throne, is a composite of two 'first years', the nominal first year 1042 when King Cheng was still a minor, and 1040 when he presumably reached majority and ascended the throne.