CORRIGENDUM

Geometrical Figures and Generality in Ancient China and Beyond: Liu Hui and Zhao Shuang, Plato and Thabit ibn Qurra – CORRIGENDUM

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In the article (Chemla 2005), I provided a critical edition and translation of two texts. One text was a passage from *The Gnomon of the Zhou*, a book dealing with mathematical astronomy and probably completed in the form in which we know it around the beginning of the Common Era (translation on pp. 127–135). The other text was a passage from *The Nine Chapters on Mathematical Procedures*, a book that in my view took its final form in the first century C.E. (translation on pp. 146–151). I edited and translated both texts along with the third–century commentaries with which they were handed down through written transmission. In Chinese sources of the past, the main text was distinguished from its commentaries by the size of the characters: main texts in larger characters, commentaries in smaller characters. I reproduced this contrast by using the same feature, using larger characters for the main text and smaller characters for the commentaries. Unfortunately, the contrast was modified in the printed version of the Chinese texts in Appendixes A and B (pp. 164–166) of my critical edition. I give the two texts again, together with the footnotes and the references, this time displaying the characters with adequate contrast.

NB: The sign "○" is used in Chinese transcriptions as the equivalent of a period, or full stop, in English; the inverted comma is used conventionally in Chinese transcriptions in connection with enumerations/lists.

Appendix A

商高曰：數之法出於圓方。 [...][1] 圓出于方，方出于矩，圓規之數，理之以方。方周匝也。方正之物，出之以矩。矩，廣長也。矩出于九九八十一。推圓方之率，通廣長之數，當須乘除以計之。九九者，乘除之原也。故折矩，故者申事之辭也。將為句股之率，

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[1] I skip here a section of the commentary that is not essential in the context of this corrigendum.

故曰"折矩"也。以為句廣三，應圓之周。橫者，謂之廣，句亦廣。廣短也。股修四，應方之匝。從者，謂之脩，股亦脩。脩，長也。徑隅五。自然相應之率。徑，直；隅，角也。亦謂之弦。既方之，外半其一矩[2]。句股之法，先知二數然後推一。見句、股然後求弦，先各自乘，成其實。實成勢化，爾乃變通。故曰"既方"。其"外"[3]，或并句股之實以求弦，實[4]之中乃求句股之分并。實不正等，更相取與，互有所得。故曰"半其一矩"[5]。其術，句股各自乘，三三如九，四四一十六，并為弦自乘之實二十五。減句於弦，為股之實一十六。減股於弦，為句之實九。環而共盤，得成三、四、五。

[2] This is the text as given by the three ancient editions on the basis of which *The Gnomon of the Zhou* can be edited: the Southern Song edition, printed in 1213 by Bao Huanzhi 鮑澣之), the edition included in the *Grand encyclopedia of the reign period Yongle* 永樂大典 (Li Jimin 李繼閔 1993a, 37, n. 1), and the edition printed by Hu Zhenheng 胡震亨 in the *Bice huihan* 祕冊彙函 collection in 1603 (Guo Shuchun 郭書春 and Liu Dun 劉鈍 2001, 68, n. 9, 10). The edition of the Collection *Wuyingdian juzhen ban* 武英殿聚珍版, edited by Dai Zhen on the basis of the Hu Zhenheng edition, which he modified with reference to the *Yongle dadian* (see the *Tiyao* added to the publication), gives the text as: "既方其外，半之一矩", a suggestion adopted by Qian Baocong in his edition. Li Jimin 李繼閔 1993a, 37, n. 1, considers the former to conform to the original. Guo Shuchun 郭書春 and Liu Dun 劉鈍 2001, 68, n. 9, also holds this view. However, these publications are punctuated in different ways. I follow here Li Jimin. Guo Shuchun 郭書春 and Liu Dun 劉鈍 2001, 33, use the following punctuation: "既方之外，半其一矩".

[3] This is the text as given by the Southern Song edition, the edition printed by Hu Zhenheng, as well as the edition of the Collection *Wuyingdian juzhen ban*. Li Jimin (1993a, 37, n. 1) suggests that Dai Zhen modified the text of *The Gnomon of the Zhou* to make it conform to the quotation made by the commentator here. Li Jimin solves the problem of the divergence between the main text and that quoted by the commentator, by punctuating the commentary in a new way. I follow him on this point too. Guo Shuchun and Liu Dun (2001, 68, n. 11) mention the divergence but keep the text as it is found in all the ancient editions in both places and adopt here the following punctuation (Guo Shuchun and Liu Dun 2001, 33): "故曰"既方其外"。或并...".

[4] This is the text as given by the Southern Song edition, the edition included in the *Grand encyclopedia of the reign period Yongle* (Li Jimin 1993a, 37, n. 3) and the edition printed by Hu Zhenheng (Guo Shuchun and Liu Dun 2001, 68, n. 12). The edition of the Collection *Wuyingdian juzhen ban* adds one character: "以求弦實實之中乃求...". Qian Baocong (1963, 16, n. 2) adopts this suggestion. Li Jimin (1993a, 37, n. 3) considers that the ancient editions conform to the original text. Guo Shuchun and Liu Dun (2001, 68, n. 12) also hold this view. However, these publications are punctuated in different ways. I follow here Li Jimin. Guo Shuchun and Liu Dun (2001, 33) use the following punctuation: "以求弦實，之中乃求...".

[5] This is the text as given by the Southern Song edition, the edition included in the *Grand encyclopedia of the reign period Yongle* and the edition printed by Hu Zhenheng (Guo Shuchun and Liu Dun 2001, 68, n. 10). The edition of the Collection *Wuyingdian juzhen ban* modifies it into: "半之一矩", a point of view adopted by Qian Baocong 1963, 16, n. 3. Li Jimin (1993a, 37, n. 4) considers that the ancient editions conform to the original text. Guo Shuchun and Liu Dun (2001, 68, n. 12) also hold this view.

盤讀如盤桓之盤。言取其[6]并減之積，環、屈而共盤之謂[7]。開方除之，得[8]其一面。故曰"得成三、四、五"也。**兩矩共長二十有五，是謂積矩。** 兩矩者，句、股各自乘之實。共長者，并實之數。將以施於萬事，而此先陳其率也。**故禹之所以治天下者此數之所生也。** [...]

Appendix B

今有戶高多於廣六尺八寸，兩隅相去適一丈。問戶高、廣各幾何。

荅曰：
廣二尺八寸，
高九尺六寸。

術曰：令一丈自乘為實。半相多，令自乘，倍之，減實，半其餘，以開方除之。所得減相多之半，即戶廣；加相多之半，即戶高。 令戶廣為句，高為股，兩隅相去一丈為弦，高多於廣六尺八寸為句股差。按圖為位，弦冪適滿萬寸。倍之，減句股差冪，開方除之，其所得即高廣并數。以差減并而半之，即戶廣；加相多之數，即戶高也。 今此術先求其半。一丈自乘為朱冪四、黃冪一。半差自乘，又倍之，為黃冪四分之二。減實，半其餘，有朱冪二、黃冪四分之一。其於大方者四分之一。故開方除之，得高廣并數半。半并數減差

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[6] This is the text as given by Dai Zhen's edition of the Collection *Wuyingdian juzhen ban* and adopted by Qian Baocong 1963, 16, n. 4. The Southern Song edition and the edition printed by Hu Zhenheng have 之 for 其 (Guo Shuchun and Liu Dun 2001, 68, n. 13). Li Jimin (1993a, 37, n. 5), Guo Shuchun and Liu Dun (2001, 34), and Ch'en Liang-ts'o 陳良佐 (1993a, 7, n. 8) all adopt the latter in their editions. However, Guo Shuchun and Liu Dun 2001, 68, n. 12, give the former as a possible option. This is the option I consider best.

[7] This is the text given by the Southern Song edition and the edition printed by Hu Zhenheng. The latter character *wei* is not found in Dai Zhen's edition of the Collection *Wuyingdian juzhen ban*. Qian Baocong (1963, 17, n. 5) adopts the latter text in his edition. Li Jimin (1993a, 38, n. 1) and Guo Shuchun and Liu Dun (2001, 34) both adopt the former option in their edition, even though they do not agree on punctuation. Here, I follow the punctuation of Guo Shuchun and Liu Dun. Note that Guo Shuchun and Liu Dun (2001, 68, n. 14) give the latter as a possible option.

[8] This character is omitted in the Southern Song edition (Li Jimin 1993a 38, n. 2) and in the edition printed by Hu Zhenheng. Dai Zhen restores it in his edition for the Collection *Wuyingdian juzhen ban*. Qian Baocong (1963, 17, n. 6) adopts this emendation, an option also followed by Li Jimin 1993a, which I find preferable. Guo Shuchun and Liu Dun (2001, 69, n. 15) consider both options possible and follow the Southern Song edition (Guo Shuchun and Liu Dun 2001, 34).

半，得廣；加，得戶高。 又，按此圖冪，句股相并冪而加其差冪亦成[9]弦冪。為積，蓋先見其弦，然後知其句與股。今適等，自乘，亦各為方，合為弦冪。令半相多而自乘，倍之，又半并自乘，倍之，亦合為弦冪。而差數無者，此各自乘之，而與相乘數，各為門實。及股長句短，同原而分流焉。

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[9] Following an idea put forward by Li Jimin (1993b, 495–6) without however adopting his overall restoration of the sentence here, I suggest that the character "減" contained in the ancient editions here has been wrongly copied in place of the similar character "成".