

# STRUCTURAL ELEMENTS IN THE KING WEN SEQUENCE OF HEXAGRAMS

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ORACLE PAPERS No. 1

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EDITOR: *STEVE MOORE*

## *Introduction to the series:*

Some three years after the demise of *The Oracle* as a regular journal, it may be wondered why I've chosen to return to the field, and in hard-copy format (rather than web-publishing). Simply, the answers are that I continue to be interested in research and writing on the *Yijing*, and that I enjoy small-press publishing, although I no longer have the time or energy to produce a regular, subscription-based journal. Besides, I suffer from the peculiar and old-fashioned belief that preparing a paper in a final form for publication is more likely to concentrate the mind than preparing it for web-publication, where it is possible to make a continued stream of revisions; and that reading a paper copy is far more pleasurable than reading from a screen. The series will be open to contributions from other authors apart from myself. Potential contributors are invited to get in touch at the address below. SM

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## *Structural Elements in the King Wen Sequence of Hexagrams.*

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# STRUCTURAL ELEMENTS IN THE KING WEN SEQUENCE OF HEXAGRAMS

Steve Moore<sup>1</sup>

## THE HOLY GRAIL OF *YIJING* STUDIES

The apparently inexplicable structure of the 'King Wen'

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<sup>1</sup>This paper returns to some of the work on the 'King Wen' sequence of hexagrams of the *Zhouyi* (i.e., that part of the *Yijing* consisting only of the hexagrams and line texts, excluding the 'Ten Wings' commentaries) that I first published as an appendix to *The Trigrams of Han* [Moore 1989, pp.188-198], a book I now regard as being in need of considerable revision, in the light of new material that has either come into my hands or been published in the years since it first appeared. My intention here is to re-present some of that work in a more considered form while omitting some of the more inconclusive and technical speculations about a possible 'original' order preceding the current 'King Wen' sequence (for which those interested are referred to the original publication); and also to look at some of the historical implications arising from that original work. At the same time, I intend to examine some of the assumptions underlying previous attempts to explain the 'King Wen' sequence. Ultimately, I can offer no 'key' to understanding the overall construction of the entire sequence (i.e., that provides a testable method of predicting the way the hexagrams should be ordered); however, I can offer some evidence to suggest that certain structural aspects of the sequence are constructed in a demonstrably logical fashion.

I am grateful to Edward Hacker, Stephen Karcher, S J Marshall and Andreas Schöter, for reading early drafts of this paper and offering invaluable comments and advice; ultimately, however, the responsibility for everything presented here is my own.

sequence of the hexagrams (the order in which they appear in the 'Confucian classic' version of the *Yijing* in common use today) has proven an irresistible challenge to many during the last century, particularly in the western world<sup>2</sup>. At first sight there appears to be no logic in the structure (certainly none as explicit as in the Song dynasty 'Fu Xi' order attributed to Shao Yong), and the one commentary that has come down to us, purporting to 'explain' the sequence (the *Xugua zhuan*), has the appearance of being a *post facto* production in which rather 'forced' interpretations are offered for a sequence the explanation of which may well have been largely forgotten by the time of its composition.

All attempts to explain the sequence rest, of course, on an assumption: that there is some coherent form of logic, structure or purpose to the ordering of the hexagrams, and that it may still be possible to discover or recover that structure. Such an assumption may be questionable, though without making it there is little point to the inquiry. However, it may *not* be possible to make a full recovery of any supposed underlying order, and we may only be able to uncover partial or speculative solutions at best.

In a great number of cases, there is also another assumption, which is that the order of hexagrams that has come down to us is precisely the same as that cre-

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<sup>2</sup>A summary of previous work on the subject, to 1993, may be found in Hacker 1993 [pp.101-122], while individual works may be found by consulting the Index to Hacker, Moore & Pattee 2002, under 'Textual Sequence (Received Order) of Hexagrams'. It has also been a popular subject for discussion on the internet, with a number of websites offering 'solutions' to the problem, of widely variable quality.



ated and intended by the original composers of the sequence; *i.e.*, that the order has not been corrupted or altered during the centuries since it was first formulated<sup>3</sup>. This assumption is virtually impossible to prove, particularly in the absence of archaeological evidence of an extremely early date; to show that the order has *not* been changed would require proving a negative. On the other hand, there is some evidence that possibly suggests there *is* corruption or alteration to the original order, and we shall return to this below.

A number of attempts at explanation have been based on applying mathematics to the problem, though these have frequently used such comparatively modern 'tools' as binary arithmetic, set theory, various forms of algebra, and even sine-wave graphs, none of which are at all likely to have been known to the ancient Chinese who composed the order; it is hardly surprising, therefore, that such attempts generally fail to convince. Logically, one would suppose that any mathematical or numerical basis for the sequence would have to depend upon some form of mathematical knowledge and/or numerical speculation that can be shown to have been known to the ancients, rather than on techniques of analysis invented or discovered long after the sequence was established<sup>4</sup>. Again, such interpretations depend on

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<sup>3</sup>By 'corrupted' I intend to imply that the order has been changed in ignorance of the original design; by 'altered', that the order has been deliberately changed, perhaps in the light of a new interpretational emphasis or usage. If the ordering *has* been changed, however, then once again we lack the primary evidence that would allow us to decide whether corruption or alteration has taken place.

<sup>4</sup>*Yijing* studies, especially at their more popular and naïve end, are particularly prone to fall into fallacy in such areas. To take a single

an assumption: that the sequence *is* constructed solely on mathematical principles; and, again, I would suggest that this is a questionable assumption, perhaps deriving from the fact that the hexagrams are numbered in Western translations (which they are not in traditional Chinese editions), or from a false analogy with the 'Fu Xi' order, which can be used to demonstrate a numerical sequence in binary arithmetic (even though there is no evidence to show that binary arithmetic was known at the time of its composition and the actual principles of construction appear to derive from a purely traditional process of bifurcation and 'stacking' using yin and yang lines which requires no mathematical knowledge at all<sup>5</sup>).

Others, such as Whincup 1987 and Palmer, Ramsay & Zhao 1995 have sought to explain the sequence purely in terms of the content of the text, seeking to show that the ordering of the hexagram texts reflects historical events occurring at the time when the Shang

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example, the fact that the genetic code *can* be mapped on to the 64 hexagrams has occasionally led the unwary into thinking this indicates that the ancient Chinese had a working knowledge of DNA structures (see, *inter alia*, Tchen 1983). A similar fallacy here would be to convince oneself that one had 'explained' the King Wen sequence using modern mathematical techniques, and conclude from this that the ancient Chinese must, therefore have been in possession of those same mathematical techniques, millennia ago, in order to construct the sequence.

<sup>5</sup>These days, the process is regarded as 'intrinsically mathematical' (as Andreas Schöter has pointed out to me), and is known as a 'binary tree'. My point, however, is that the process can be carried out without any knowledge of mathematics, or any consciousness that one is performing a mathematical act; it is logically unnecessary to suppose that the creator of the Fu Xi sequence had any knowledge of binary mathematics.

dynasty was overthrown by the Zhou King Wu, son of the putative author, King Wen. Again, others have looked at the recurrence of particular words and/or phrases at particular line-positions in the hexagrams in the hope that this may show suggestions of deliberate design. Generally, one has to say that these various attempts have convinced few people beyond the authors of the original ideas. Nonetheless, these attempts at explanation may not, necessarily, be exclusive; it's possible that any 'ultimate' explanation of the King Wen sequence may include elements of several of these approaches.

Currently, the leading scholar of the King Wen sequence is probably Scott Davis [Davis 1998]; he is certainly the most interesting and sophisticated. In brief, Davis attempts a holistic and anthropological approach by combining both structural and textual approaches in his work, pointing out a number of interesting local symmetries in the arrangement of the hexagrams at certain points in the sequence, while also proposing a structure to the text which is based on the decades of a human life and the various ritual procedures associated with passing through those life-stages. Thus, to give a single example, he points out that men were expected to marry from the age of 30 (or upon entering their 31<sup>st</sup> year, as the Chinese would think of it), and the texts of hexagrams 31 and 32 contain strong references to marriage. There is a major assumption underlying Davis's work, which he himself makes explicit (and, indeed, his work is intended to demonstrate the correctness of this assumption): that the *Zhouyi*, as a whole, was composed as a single entity: *i.e.*, that the text attached to the hexa-

grams, and the ordering of the hexagrams, came into being at the same time, and as part of the same process. As Davis' work is still ongoing, and part of a larger project to show 'design' in a number of other early Chinese works besides the *Yi* (such as the *Laozi* and the *Zuo-zhuan*), it is, perhaps, too early to judge whether he is likely to make a convincing case here.

### CONTEXT: ALTERNATIVE SEQUENCES

Before moving on to the main presentation of the material here, it may be as well to remind ourselves that the King Wen sequence did not exist in isolation—at an early date there were other ways of ordering the *Zhouyi* hexagrams—and that the use of hexagrams was not solely restricted to the *Zhouyi*.

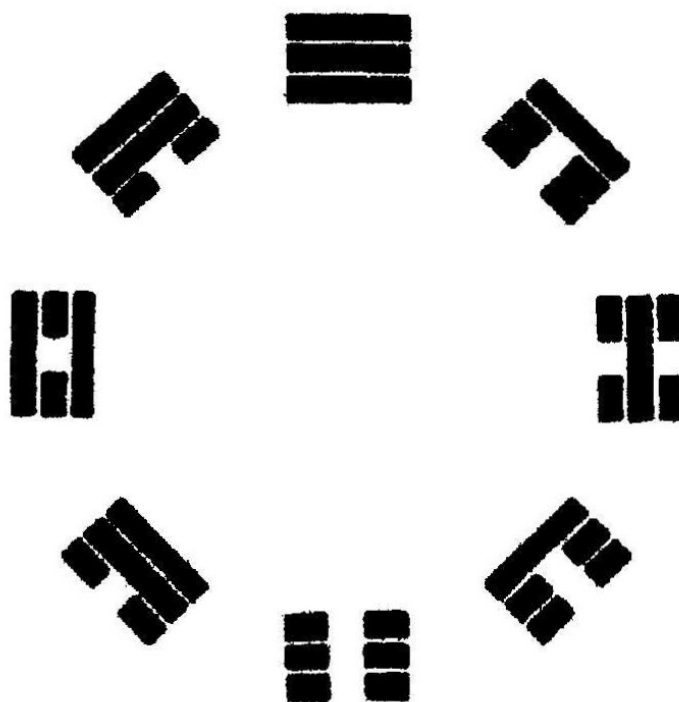
Shao Yong's 'Fu Xi' order of the hexagrams, being a Song dynasty production, is too late to concern us here; besides, it was never intended to order the actual text of the *Zhouyi*, and the notion of ordering the text in this fashion (and in particular that such a textual-ordering has priority to the King Wen sequence) is a 20<sup>th</sup> century invention [Moore 2005]. It is relevant to mention it here, however, for it represents a similarity of approach to those of Jing Fang and the unknown author of the Mawangdui arrangement, discussed below, in that it orders the hexagrams according to logical structures contained within the linear figures themselves, rather than the texts. This was obviously a common, and enduring, method of approaching the *Yijing* structure.

Moving backward in time, we may mention the 'Eight House' arrangement of Jing Fang (fl. 1<sup>st</sup> century BCE) [Mesker 2002]. This arranges the hexagrams by



groups of eight, in a sequence depending mainly on the changing of an individual line from one hexagram to the next. This is a purely structural ordering, which divorces the hexagrams from any recognisable ordering of the attached *Zhouyi* texts.

The arrangement of the hexagrams in the Mawangdui silk manuscript of the *Yijing*, composed some time prior to 168 BCE, is based on two variant orderings of the trigrams by their familial aspects (e.g., 'eldest son', 'youngest daughter', etc.) [Moore 1989, pp.185-187]. These orderings appear to derive from two different ways of 'reading' the eight trigrams in an uncommon circular arrangement which, lacking a better name, I previously dubbed 'The World of the Elements' [Moore 1989, pp.110-119]. This arrangement is shown in Figure 1.



**Figure 1: The Elemental Trigrams**



The hexagrams are arranged in groups of eight. In each group the upper trigram remains the same throughout, and these upper trigrams are ordered, through the eight groups, by reading clockwise round the circular trigram arrangement. The lower trigrams in each of these groups are ordered by taking the trigrams of the same circular sequence in opposite pairs. The *Yijing* texts in the Mawangdui manuscript are attached to the hexagrams according to this order. It is quite obvious, however, that the Mawangdui manuscript does not represent an 'original' order of the hexagrams. Despite minor differences in wording, the texts of the Mawangdui and 'standard' editions are essentially similar, which means that the texts of such obvious pairs of hexagrams as 11 & 12, 41 & 42, 63 & 64 are largely unaltered. As the individual hexagrams in these pairs share similar phrases in certain of the line-texts, which are arranged in symmetrically opposite line-positions from one hexagram to the next, it would appear that the texts of the two hexagrams in each pair were composed together and constructed to match with the specific pair of hexagrams. We may thus conjecture that, whenever the text of the *Yi* was formulated, it was written with a paired-hexagram structure in mind. If such is the case, it is thus more logical to suppose that an order based on such pairs must be primary, and that they have simply been split apart in the Mawangdui manuscript as part of a later, and variant, ordering process [Shaughnessy 1994, pp.53-54]. As has long been acknowledged, the invertible hexagram pairs appear to be basic to any 'original' ordering of the *Yi*, and it is upon these 'building blocks' that the exposition below will be based. It is possible

that the divergence of *Yijing* commentary traditions into *Xiangshu* and *Yili* during the later Warring States and Early Han period may be reflected in orderings such as those of Jing Fang and the Mawangdui manuscript, which would seem to be very much in the *Xiangshu* tradition of 'image and number'. The *Yili* tradition, concentrating as it did on moral interpretations based primarily on the text of the *Zhouyi*, had little time for matters such as sequencing. That the *Yili* tradition ultimately became dominant may have contributed to the lack of surviving material explaining the King Wen sequence.

Even within the 'classical' tradition of *Yi* exegesis (that is, within the commentary material known as the 'Ten Wings'), the King Wen sequence is not always followed. The text of the commentary known as the *Zaguan zhuan* (usually translated as the 'Miscellaneous Notes' and generally dated to the 3<sup>rd</sup> or 2<sup>nd</sup> centuries BCE [Shaughnessy 1993, p.221]) is frequently split up in Western translations of the *Yijing*, with the relevant passages placed under the individual hexagrams to which they refer. However, the text was originally composed (and is usually presented, in traditional Chinese editions) as a single unit of rhyming verse. When looked at it in this form [Legge 1963], we see that the comments on 56 of the 64 hexagrams are presented in 28 pairs; however, these pairs are not presented in an order which bears any relation whatever to the King Wen sequence, and the final 8 hexagrams discussed are offered individually, rather than paired, in a curiously jumbled order. Indeed, the entire commentary appears to be curiously jumbled, and the main reason for mentioning this here is to show that the King Wen sequence may not, in antiquity, have

been held quite so sacrosanct as may first appear; not even in the Ten Wings.

Finally in this section, mention should be made of the *Lianshan* and *Guizang*<sup>6</sup>, which were long thought to be variant versions of the *Yi* [Moore 1989, pp.31-32]; indeed, the *Lianshan* has been referred to as the 'Book of Changes of the Xia Dynasty', the *Guizang* as the 'Book of Changes of the Shang'. Until recently, very little was known about either, though the *Lianshan* was said to have begun with the hexagram *Gen* (52 in the King Wen order), the *Guizang* with *Kun* (2 in King Wen).

However, in 1993 a Qin-period tomb was excavated at Wangjiatai in Hubei province, which included a collection of disordered bamboo slips appearing to contain a large portion of the text of the *Guizang* [Cook 1998; Shaughnessy 2002]. From this we can infer that each text of the *Guizang* was headed by one of the hexagrams, though the text that follows is quite different from the *Yi*, and appears to contain no texts for the individual lines of the hexagrams, just an overall judgement or 'divination story'. The bamboo slips having been scattered, it is, of course, impossible to recover the order of the hexagrams here; equally, it is impossible to tell whether the hexagrams were ordered in pairs or individually. However, it is plain that the *Guizang* represents a separate divinatory tradition to that of the *Yi*; and from this, one might conjecture that the *Lianshan* was also a separate text, rather than a variant.

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<sup>6</sup>There seems to be considerable confusion as to whether this title should be transliterated as *Guizang* or *Guicang*. Both spellings occur commonly in the English-language literature.



If the *Lianshan* and *Guizang* are *not* versions of the *Yi*, it may be wondered why they are mentioned here. The point is simply to show that the hexagrams were not exclusively related to the text of the *Yi*, nor were they exclusively presented, in archaic times, in the King Wen order. The hexagrams may well have originated as part of the *Yi* system, but at an early stage it was seen that they could also be used to key the material in quite different texts<sup>7</sup>. In effect, the hexagrams achieved an independent usage, at an early date, which divorced them from their original texts and contexts. Given this independent usage, it's perhaps not surprising that manipulation of the hexagrams, independently of their supposedly original textual context, became commonplace. At precisely what historical period this occurred remains open to question, of course.

## ELEMENTS OF STRUCTURE

As mentioned above, I will make no attempt here to of-

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<sup>7</sup>An alternative proposition, given the phrases quoted above, which tie the *Lianshan* and *Guizang* to the Xia and Shang dynasties respectively, would be that the hexagrams originated with one of these. In the absence of definitive evidence, the question must remain moot. However, as the *Yi* has individual texts attached to the lines of the hexagrams (which the *Guizang* apparently does not), and as hexagram-pairs such as 41, 42 and 63, 64 seem to indicate that the pairs were put together at the same time as the *Yi* text, it seems to this author more likely that the hexagram figures originated with the *Zhouyi* as a complex, fully-formed system, and were then applied to the simpler *Guizang*, or to both that and the *Lianshan*, rather than that a simpler system originating with the *Guizang* was made more complex and applied to the *Yi*. My reasoning is, perhaps, more intuitive than evidential, and should be regarded as a speculative, temporary position, in the absence of definitive proof.

fer a comprehensive 'key' to understanding the King Wen sequence in its entirety. Instead, I will seek to demonstrate, empirically, and attempting to keep to a minimum the number of assumptions, that there is evidence for certain elements of structure in the order of the hexagrams which is based on numerical and cosmological speculation; and then examine the implications thrown up by those ordering elements, in historical terms.

One aspect of the King Wen sequence that seems to receive less attention than others (particularly by those seeking a mathematical explanation for the order) is the division of the *Yijing* into two separate halves. Recently I helped put forward a hypothesis to explain this [Hacker & Moore 2003]. This is based on a diagram appearing in the book *Zhouyi Qimeng Yizhuan* by Hu Yigui (b.1247 CE). Very briefly stated, the argument goes like this. Of the 64 hexagrams, 56 of them form 28 invertible pairs; the remaining eight hexagrams (in the King Wen order, 1, 2, 27, 28, 29, 30, 61 & 62) are non-invertible, and appear as oppositional pairs. The invertible pairs can be represented in a condensed form, where one figure represents both hexagrams in the pair, depending on which way up it is. Thus, hexagrams 3 and 4 are the same figure looked at first 'upright' and then 'inverted'. All the possible hexagrams of the *Yi* can thus be represented by using 36 hexagrams: the 8 oppositional hexagrams, plus 28 hexagrams representing the invertible pairs. Hu Yigui's diagram is reproduced in figure 2. The diagram reads from right to left, beginning with *Qian* at the top right corner and, taking into account the condensation of the pairs, the hexagrams run in the order of the King Wen sequence.



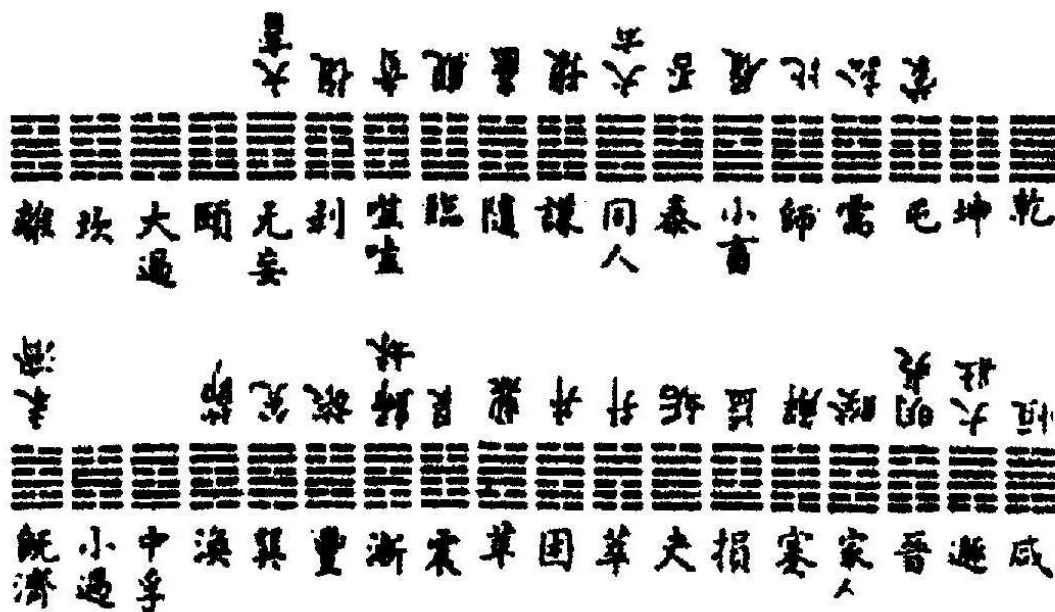


Figure 2: Hu Yigui's diagram.

The 36 hexagrams are here represented as two rows of 18, and when the sequence of hexagrams is divided exactly in half like this, it will be seen that the first row ends with hexagram 30 (in the King Wen sequence), while the second row begins with hexagram 31. This corresponds exactly with the division of the book that we have now: Hu Yigui's construction divides the series of hexagram figures into two equal halves; while the corresponding division of the text in the book gives us 'unequal halves' of 30 and 34 hexagrams each.

It should be pointed out that this remains a hypothesis. There is a considerable space of time between Hu Yigui's diagram (13<sup>th</sup> century CE) and our earliest evidence for the King Wen sequence and its division, which is found in the Ten Wings commentary known as the *Xugua zhuan* or 'Sequence of the Hexagrams', believed to date from the Later Han period, 1<sup>st</sup> or 2<sup>nd</sup> centuries CE [Shaughnessy 1993, p.221]; again, there is a

considerable temporal gap between the *Xugua* and the putative date of composition of the *Zhouyi* text (as well as between the *Xugua* and the other commentaries in the Ten Wings, which Shaughnessy dates to the 3<sup>rd</sup> or 2<sup>nd</sup> centuries BCE). However, if the hypothesis has any worth it *may* indicate the *type* of thinking prevalent behind both the unequal division of the book and the arrangement of the King Wen sequence: from which we might infer that we are more likely to find a solution to the latter in a structure based on the hexagram figures themselves and their manipulation rather than, for example, on a mathematical algorithm. The material about other forms of sequencing, presented in the previous section, may be taken as corroborative (if circumstantial) evidence for such a proposition.

The elements of structure in the King Wen sequence that I wish to discuss here are based on similar aspects of the hexagrams. We know from the *Dazhuan* commentary that odd numbers are attributed to Heaven (yang) and even numbers to Earth (yin) [Wilhelm/Baynes 1968, p.308], and it is the numbering of the 32 pairs of hexagrams that interests us here. Pair One (hexagrams 1 & 2) consists of the opposite hexagrams, *Qian* and *Kun*; shared between the two hexagrams there are, in all, 6 yang and 6 yin lines<sup>8</sup>. Pair Two (hexagrams

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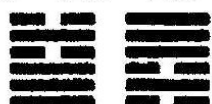
<sup>8</sup>I use the terms 'yang lines' and 'yin lines' as a matter of convenience for 'unbroken' and 'broken' lines respectively. 'Yang' and 'yin' are not used as philosophical terms in the text of the *Zhouyi*, and there is no reason to suppose that the original creators of the *Yi* envisaged the unbroken and broken lines as representing yang and yin. However, it would appear from the following argument that whoever was responsible for placing the pairs of hexagrams in their current positions *would* have been analysing the hexagrams in terms

3 & 4) is rather more interesting: in both hexagrams there are four yin lines and two yang lines; in this pair, yin lines preponderate, and the Pair Position (Two) is also yin.



### **Pair Two: hexagrams 3 & 4**

Pair Three is a yang Pair Position, and in hexagrams 5 and 6 we find four yang lines and two yin lines; again, we have a preponderance of yang lines in the hexagrams, and a yang Pair Position.



### **Pair Three: hexagrams 5 & 6**

Of the 32 pairs of hexagrams in the *Yi*, four pairs are oppositional (like hexagrams 1 and 2), with the result that in each pair there are six yang and six yin lines; the distribution here is 'even'. Similarly, there are 10 pairs where each hexagram contains three yang and three yin lines, which (though invertible, rather than oppositional) can also be taken as 'even'. We thus have 14 pairs which can be designated 'even pairs'; the remaining 18 pairs all show a preponderance of either yin or yang lines. Of these 18 pairs, 16 are placed in 'correct' Pair Positions: *i.e.*, when yin lines preponderate in the hexagrams, the Pair Position is even; when yang lines preponderate the Pair Position is odd. To have 16 out of

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of the yang or yin nature of the lines they contain, and it is thus a matter of convenience to refer to the lines in these terms here. I will return to the historical consequences that can be drawn from such a mode of analysis in the final section of this paper.

18 possible pairs thus corresponding to their 'correct positions' would seem to indicate that the positioning is rather more than coincidental. Whatever other factors may be involved in ordering the King Wen sequence, this Pair Positioning would seem to indicate that one element of the composition concerned itself with placing appropriate hexagram-pairs in numerically correct yin/yang Pair Positions.

### **CORRUPTION AND AN 'ORIGINAL' ORDER?**

The apparently 'incorrect pairs' are hexagrams 43 & 44, each of which has five yang lines, but which are placed at the yin Pair Position Twenty-two; and hexagrams 45 & 46, each with four yin lines, but which are placed at the yang Pair Position Twenty-Three. Why these pairs are 'wrongly' placed, according to this hypothesis, is far from clear; however, the fact that they *are* may suggest the possibility than an 'original order' (where *all* the pairs would, presumably, be correctly placed) preceded the King Wen sequence, and may have either been consciously changed, or unconsciously corrupted. I reiterate that this 'Pair misplacement' is only *suggestive* of alteration or corruption, rather than proof of the same; however, at present I can conjecture no other reason for their being so misplaced.

Taking all the above material together, one might gain the impression that the ordering of the hexagrams in the *Yi* remained fluid (or, at least, subject to variation) until a comparatively late date; perhaps even until the time the work was acknowledged as a 'Confucian Classic' in 136 BCE [Moore 1989, p.36]. Nonetheless, it would appear that any 'original' ordering of the hexa-



grams would have to be based on the invertible or oppositional pairing system; as pointed out above, hexagrams such as 41 & 42, or 63 & 64, with their shared line-texts, symmetrically positioned, indicate (to a certain extent, anyway) that, within the pairs themselves, at least, the line-texts were composed at the same time as the hexagrams, and with regard to their linear structures. These Pairs would thus seem to be the basic 'building blocks' of which the King Wen sequence is built. Whether these 32 pairs were originally placed in the positions they have today is a moot point; the 'erroneous' positioning (in yin-yang terms) of Pairs 22 and 23, mentioned above, would seem to indicate the possibility that they were not.

If we were looking for an 'original' order of the hexagrams, still using the same basic 'building blocks' of the Pairs, a clue might be sought in the position of the oppositional, rather than the invertible, pairs of hexagrams (1 & 2, 27 & 28, 29 & 30, 61 & 62). In the current King Wen sequence, these fall at Pair Positions One, Fifteen, Sixteen and Thirty-one. These Pair Positions are very suggestive; after the first Pair, the remainder are one Pair removed from symmetry, at the ends and centre of the sequence. And symmetry is something the ancient Chinese were known to be very fond of.

We might therefore conjecture (and I emphasize that this *is* conjecture) that originally these pairs may have been positioned thus: hexagrams 1 & 2 at Pair Position One; 27 & 28 at Position Sixteen; 29 & 30 at Position Seventeen; 61 & 62 at Position Thirty-two. Being all 'even' pairs, such a repositioning of these particular hexagrams would not be affected by yin-yang concerns.



This would give us the possibility, if required, of dividing the book into two equal-length 'halves', the first opening with embodiments of yang and yin (1 & 2), the second with similar yang and yin hexagrams, 29 & 30 representing water and fire respectively (the yin and yang elements being reversed by comparison with the first pair, which again gives a pleasing symmetry)<sup>9</sup>. Each 'half' of the book would also conclude with similar pairs: the pair of hexagrams 27 & 28 being very similar in structural construction to the pair 61 & 62<sup>10</sup>.

We might conjecture, then, that at some point, for some reason, it was decided that the sequence would

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<sup>9</sup>If it was thought necessary to make any such division of the book into 'halves' in such a putative 'original' order. The positioning of the oppositional pairs (especially when 'corrected' to their more symmetrical positions, as suggested here) makes it appear that such a division would be relatively easy, logical and tempting; but there is no actual evidence to show that a putative 'original' order *was* divided into halves; nor does there seem to be any reason why the order *should* be divided into halves. It may well be that, because the current King Wen order is divided into curiously uneven 'halves', there is a temptation to think of any preceding order *also* being divided into halves, which is not necessarily the case. I am grateful to S J Marshall for bringing this point to my attention.

<sup>10</sup>As one early reader of this paper arrived at the conclusion that by positing an 'original, symmetrical' order of hexagrams before the current King Wen sequence, I was somehow overturning the hypothesis explaining the unequal division of the current sequence presented in Hacker and Moore 2003, it is probably worth pointing out that this is not the case. Rather I suggest a putative 'original' order different to that of the King Wen sequence, and organised according to a particular set of principles; this would then have been followed by a 'revised' King Wen sequence, with a different structure and a different set of organising principles. The two proposals are not exclusive.

be better ended with what are now hexagrams 63 & 64, perhaps because their integration of yang and yin lines is so structurally opposite from the yang and yin separation of hexagrams 1 & 2. If hexagrams 63 & 64 were originally in what would later become the first half of the book, their transposition to the end of the second half would result in all the oppositional Pairs, after the moved pair, 'slipping back' one Pair Position to their current places. Being an 'even' pair, with three yin and three yang lines in each place, this transposition may have been carried out without greatly affecting the yin-yang positioning of large sequences of the King Wen order<sup>11</sup>. One is tempted to suggest that this process occurred at the same time as the unequal division of the text represented by Hu Yigui's diagram, mentioned above; but again this is, simply, conjecture. And, as I discovered in my first attempt to present this material [Moore 1989, pp.188-198], there are too many variables to be taken into account to make any attempt at reconstructing an 'original order' a viable proposition.

For the moment, then, it seems safe to say only this much on this aspect: that the 'incorrect' positioning of the hexagram pairs 43 & 44 and 45 & 46 *may* suggest that an 'original' order of the hexagrams has been either deliberately changed or unconsciously corrupted; and that the position of the 'oppositional' pairs *may* suggest

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<sup>11</sup>Nonetheless, it should be pointed out that, obviously, moving only *one* pair (in this case hexagrams 63 & 64) from its original position is probably insufficient to achieve such a result; one suspects that at least one other pair would have to be moved as well. Even so, such a revision of the ordering may well have required further and more complex manipulations than this.

that any such 'original' order depended more on notions of symmetry than the present order.

However, while the *possibility* of alteration or corruption exists, solutions to the King Wen sequence (using either internal textual material or mathematical/structural features) which are based on assumptions that the order we have today is the original one must remain open to question; as most attempts to find a mathematical algorithm for the sequence rely on just such an assumption, they would seem to be particularly undermined.

### HISTORICAL IMPLICATIONS

One aspect of this yin/yang Pair Positioning that I failed to develop when I first published this material relates to the dating of the *Yi*. According to the current view, the *text* of the *Zhouyi* was produced in the Western Zhou dynasty, with the text reaching its final form in the latter part of the 9<sup>th</sup> century BCE [Shaughnessy 1993, p.219]. However, the 'technology' of the yin/yang Pair Positioning (*i.e.*, the use of 'yin' and 'yang' as philosophical terms, rather than simply as designations for the shady and sunny sides of a hill, and the attribution of yin and yang values to even and odd numbers), is generally thought to be the invention of either Zou Yan (c.350-270 BCE) or his followers in the 'Yin-Yang', 'Naturalist' or 'Cosmological' school of philosophy [Moore 1989, pp.38-39; Needham 1956, pp.232-244]<sup>12</sup>. Indeed, the

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<sup>12</sup>If, indeed, any such 'philosophical school' existed. This has been questioned by Sivin 1995; however, in order to make his argument, Sivin may be defining the terms 'philosophy' and 'school' rather more tightly than is strictly necessary for our purposes here. One

earliest surviving evidence we have for such speculations is in the *Dazhuan* commentary to the *Yi*, currently dated to the 3<sup>rd</sup> or 2<sup>nd</sup> centuries BCE; and the general consensus would appear to be that the 'yin-yang technology' referred to earlier in this paragraph had not appeared prior to the 4<sup>th</sup> century BCE, at the earliest [Graham, 1986, p.70]. We thus appear to have a considerable temporal gap between the final recension of the text (9<sup>th</sup> century BCE) and the 'philosophical technology' used in the sequence (4<sup>th</sup>-3<sup>rd</sup> centuries BCE).

This, of course, is rather problematical for any assumption that the text was written coevally with the construction of the hexagram sequence. Two possibilities immediately suggest themselves. The first is that the text and sequence are not coeval, and made their individual appearances, some five centuries apart, at the periods indicated by the current dating; though the placing of the hexagrams and their texts *in pairs* may well be coeval with the writing of the text. The second is that the currently-held view of the dating is wrong, and that the 'philosophical technology' usually attributed to Zou Yan and his followers actually appeared much earlier than previously thought. Unless any decisive proof, one way or the other, can be discovered, there seems no way to decide between these possibilities; I therefore content myself, for the moment, with pointing out the anomaly.

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would, perhaps, concede that Zou and his inheritors were not a 'philosophical school' in the same way that we tend to think of the Confucians or Legalists, and may have had more in common with the *fangshi* or esotericists who came to prominence in the Han dynasty (on whom see DeWoskin 1983). Nonetheless, it is the *time* that such ideas achieved prominence that interests us here, rather than whether they originated from a 'proper' philosophical school.



It would seem to me, however, that any attempt to explain the King Wen sequence (using whatever 'key' might be proposed), needs to address this problem with the dating. Only *after* such problems are confronted (if, indeed, they are *capable* of resolution) can any meaningful attempt to elucidate the structure of the King Wen sequence be made.

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