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## GRAPHIC MODULATION IN THE ANCIENT CHINESE WRITING SYSTEM<sup>1</sup>

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### ABSTRACT

This paper studies a particular formational process in the ancient Chinese writing system known as *bianti* 變體 'graphic modulation', by means of which cognate characters (not cognate words) are created. Graphic pairs such as *zuo* 左 [𠂇] 'left' - *you* 右 [ナ] 'right', and *shang* 上 [凵] 'above' - *xia* 下 [冫] 'below' in their ancient forms are classical examples of this kind of graphical branching (through a reversing process). In the case of *ji* 即 [卽] 'immediate' (tone 2) and *ji* 既 [既] 'already' (tone 4), a similar mechanism is found in their graphic formation. However, in most cases, these graphic pairs are not phonologically cognate terms.

The approach in this paper is mainly inspired by Klima & Bellugi (1979) and Yau (1987, 1990), who have both observed modulation processes in the lexical branching of deaf people's sign languages which have essential features in common with Chinese characters in their ancient forms. The two media are visual, gestural and often iconic. By drawing a parallel between this graphic phenomenon in Chinese and observations made by specialists in other linguistic areas, a case has been made for the modulation mechanism as a universal device for lexical creation on the representation level.

### SUBJECT KEYWORDS

Ancient Chinese characters, graphic modulation, lexical branching, cognate characters, gestural signs.

## 1. THE *BIANTI* IN ANCIENT CHINESE WRITING

All active writing systems undergo changes in the course of time, and this is particularly true with a writing of pictographic origin. Part of the data in the present paper correspond to what Yang Shuda (1943) labelled as *bianti*(*zi*) 變體 (字), literally graphs obtained by modifying an existent character. Yang provided some twenty odd *bianti* in *xiaozhuan* 小篆 'small seal script'<sup>2</sup> from the *Shuowen jiezi* 說文解字, the only source of his data, and classified them into different groups without any substantial analyses or arguments.<sup>3</sup> Half a century later, Qiu Xigui (1988: 139) took interest in this graphic phenomenon and proposed that *biantizi* 變體字 were in general obtained either "by the addition or subtraction of strokes (subtraction being more common) and by the alteration of direction" (translation by Mattos & Norman, 2000: 204), a working criterion similar to the one offered by Yang.<sup>4</sup> Almost at the same time, Zhang Yachu (1989) also devoted an article to this graphic phenomenon which he called *bianxing zaozi* 變形造字 "creation of characters by means of graphic modification". Though I basically agree with Yang, Qiu and Zhang on the two formational processes, the theoretical framework I adopt for this study leads to a different analysis of this graphic phenomenon.<sup>5</sup>

## 2. FOR AN ENLARGED AND BETTER DEFINED *BIANTI* CORPUS

Despite the fact that I adopt the Chinese term *bianti* used by Yang and Qiu, the range of my data goes beyond the types of their examples as well as those of Zhang (1989), and the criteria for my choice will be illustrated by examples in the discussion that follows. The initial idea of this study is to seek the kind of graphic modulation in ancient Chinese writing that underlies graphical branching of semantically related terms, the *bianti* according to my criteria. These items of *bianti* resulting in such a branching are in fact "cognate characters", but in most cases they do not represent cognate words. The graphic modulation is the overall mechanism responsible for the formation of the *bianti*, whereas the formational processes, such as the addition or subtraction of strokes, or the alteration of direction of existent characters, are only its technical manifestations (see examples given later in this section). Furthermore, what is important is to show that such a graphic creation procedure is not limited to the *bianti* phenomenon in Chinese but is also observable in other linguistic modalities, a new perspective on the subject which I share with Yau Shun-chiu as proposed in a series of articles (1987, 1990, 1992).<sup>6</sup>

In classifying the characters in Chinese writing according to their structure, Qiu (1988) distinguished three major categories, namely the *biaoyizi* 表意字 'semantographs,' the *xingshengzi* 形聲字 'phonographs' and the *jiajiezi* 假借字 'loan-graphs'. Under the 'semantographs', *biaoyizi* 表意字, Qiu proposed sub-categories, namely, the *chouxianzi* 抽象字 'abstract graphs,' the *xiangwuzi* 象物字 'pictorial graphs,' the *zhishizi* 指示字 'deictic graphs,' the *xiangwuzi shi de xiangshizi* 象物字式的象事字 'quasi-pictorial graphs,' the *huiyizi* 會意字 'syssemantographs' (*sic*) and lastly the *biantizi* 變體字 'altered graphs.'<sup>17</sup> Such a classification implies an exclusion of all the *zhishizi* 指示字 from his *biantizi* list, even though he considers that the two sub-categories are of the same semantico-graphic nature, saying that

"There is no real purpose served in haggling over to which particular category a given semantograph should be classified." (translation by Mattos & Norman, 2000: 208)<sup>8</sup>

In connection with this remark, it is interesting to quote the case of *gan* 甘 [𠂔] ]<sup>9w</sup> 'bitter sweet' as compared with *kou* 口 [凵] ]<sup>9w</sup> 'mouth' given by Yu Xingwu (1979: 454) where he deals with items created by means of an additional stroke marking its difference from the graphic base, and calling these graphic creations *fu hua yin sheng zhishizi* 附劃因聲指事字. Although in this article Yu did not intend to discuss *bianti*, yet from my viewpoint, this example *gan* 甘 'bitter sweet' surely is a *bianti* because its modulation clearly involves some semantic motivation.<sup>9</sup>

I myself consider that nothing *a priori* should prevent *zhishizi* 指事字 (or 指示字) 'deictic graphs' from being treated as *bianti*, they rather should be accepted as such if they meet the intrinsic requirements. In fact, characters traditionally classified as 'deictic graphs' are more likely to get involved in graphic modulation processes that lead to a *bianti* transformation. Presumably, it is because of his different approach to the 'deictic graphs' that Qiu did not consider *zuo* 左 [𠂔] ]<sup>9w</sup> 'left' - *you* 右 [𠂔] ]<sup>9w</sup> 'right,' and *shang* 上 [凵] ]<sup>9w</sup> 'above' - *xia* 下 [凵] ]<sup>9w</sup> 'below' in their ancient forms as *bianti*, even though these two antonymous pairs are typical products of a reversing process. Qiu preferred classifying them under 'quasi-pictorial graphs' for *zuo* 左 [𠂔] ]<sup>9w</sup> 'left' - *you* 右 [𠂔] ]<sup>9w</sup> 'right,' and 'abstract graphs' for *shang* 上 [凵] ]<sup>9w</sup> 'above' - *xia* 下 [凵] ]<sup>9w</sup>

'below.' (See also further arguments below)

Unfortunately, Qiu (1988) did not discuss *mu* 母 'mother' because it is actually a typical case of *biantizi* even according to his criteria. The ancient variant graphs of *mu* 母 'mother' are either formed by adding two additional dots to *nü* 女 [𡥉]<sup>jéw</sup>, giving [𡥉]<sup>jéw</sup>, or by an extra stroke on top, giving [𡥉]<sup>jéw</sup>.<sup>10</sup> It is significant to note that in the JGW of the late Shang period, *nü* 女 [𡥉]<sup>jéw</sup> 'woman, female' is very often used in the sense of *mu* 母 'mother,' but not vice versa.<sup>11</sup> It is due to its higher semantic flexibility and frequency of occurrence in usage (80% for *nü* 女 [𡥉]<sup>jéw</sup> against 20% for 母 [𡥉]<sup>jéw</sup>), that there is more likelihood for *nü* 女 [𡥉]<sup>jéw</sup> to give rise to 母 [𡥉]<sup>jéw</sup> 'mother.'

Other examples of this kind are not difficult to find, for instance: (i) *ben* 本 [木]<sup>jéw</sup> 'root, origin', *mo* 末 [末]<sup>jéw</sup> 'tip (of a plant)' and *zhu* 朱 [朱]<sup>jéw</sup> 'red' are all derived from *mu* 木 [木]<sup>jéw</sup> 'tree'; (ii) *ren* 刃 [刃]<sup>kz</sup> 'blade' from *dao* 刀 [刀]<sup>kz</sup> 'knife'; (iii) *chi* 齒 [齒]<sup>jéw</sup> 'teeth' from *kou* 口 [口]<sup>jéw</sup> 'mouth'; and (iv) *cun* 寸 [寸]<sup>zè</sup> 'inch' from *you* 右 [右]<sup>jéw</sup> 'right (hand).'<sup>12</sup>

In all these cases, my argument for their derivational trend at the graphic level is based on a general observation: items representing the whole are most likely to be the source of origin of those that stand for the parts.<sup>13</sup> Yet none of these examples in my corpus is to be found in the lists of Yang (1943), Qiu (1988), Zhang Yachu (1989) and Zhang Yujin (1999). I thus come to a conclusion that the difference between the choice for our respective *bianti* corpora boils down to a question of different objectives in our respective research. Contrary to Qiu and Zhang (1999), I am not interested in classifying the characters, instead, I am in search of a mechanism of graphic creation. In the course of identifying *biantizi*, I ignore both the traditional *liushu* classifications and the graphic derivational relationship between items under consideration,<sup>14</sup> but stick to the principal criterion, namely their semantico-graphic relationship, together with some other graphic characteristics. Such an identification process has the merit of revealing the nature of this *bianti* phenomenon, the linguistic mechanism behind it, the ultimate interest of the entire study.

Before going further, I have to clarify the notion of "semantic relationship" in classifying characters as *bianti*. It refers to the kind of semantic relatedness at the categorial level, different from what is required in justifying cognate words in phonology. For example, the semantic relationship between the pair of *bianti* *nü* 女 [𡥉]<sup>jéw</sup> 'woman, female' and *mu* 母 'mother' involves human gender; *ren* 刃 [刃]<sup>kz</sup> 'blade' and *dao* 刀 [刀]<sup>kz</sup> 'knife' are related because of

having reference to the same object; *zuo* 左 [𠂔]<sup>jg<sup>w</sup></sup> 'left' and *you* 右 [𠂔]<sup>jg<sup>w</sup></sup> 'right,' or *shang* 上 [𠂔]<sup>jg<sup>w</sup></sup> 'above' and *xia* 下 [𠂔]<sup>jg<sup>w</sup></sup> 'below' are related within the category of directionality.

The discussion to follow will be essentially based on my own data to elaborate the points just made. The lack of hard evidence justifying the derivation of a character from a semantico-graphic cognate form, such as the ancient forms of *zuo* 左 [𠂔]<sup>jg<sup>w</sup></sup> 'left' - *you* 右 [𠂔]<sup>jg<sup>w</sup></sup> 'right' or *shang* 上 [𠂔]<sup>jg<sup>w</sup></sup> 'above' - *xia* 下 [𠂔]<sup>jg<sup>w</sup></sup> 'below' mentioned earlier, should not constitute an argument for their exclusion as *biantizi*, especially when dealing with archaic pictographs where information of this kind is rare if non-existent. The acceptance of these two pairs as *bianti* should be based on the modulation, a reversing process which they are subjected to and not on a chronological derivation relationship where no direct information is available.<sup>15</sup> On the other hand, it does happen that there are cases where the order of appearance might be less problematic, as for example the pair *yi* 一 [一]<sup>jg<sup>w</sup></sup> 'one' and *shi* 十 [十]<sup>jg<sup>w</sup></sup> 'ten', quoted in Zhang (1989: 339). Despite the absence of documented evidence, it is nevertheless reasonable to presume that *shi* 十 [十]<sup>jg<sup>w</sup></sup> 'ten' was the result of the verticalization of *yi* 一 [一]<sup>jg<sup>w</sup></sup> 'one'.

In order to limit the amount of data to be analyzed, I have to exclude for tactical reasons some *bianti* if their modulation relationship is not semantically motivated. Take for instance the current forms of the pair *wang* 王 [王]<sup>jg<sup>w</sup></sup>; [王]<sup>jg<sup>w</sup></sup>; [王]<sup>jg<sup>w</sup></sup> 'king' and *yu* 玉 [玉]<sup>jg<sup>w</sup></sup> 'jade'. In their early forms, these two characters were graphically much more clearly distinguished than they are now. But in bronze inscriptions of the late Shang, the graphic distinction between them had become much less obvious: [王]<sup>jg<sup>w</sup></sup> for *wang* 王 and [王]<sup>jg<sup>w</sup></sup> for *yu* 玉. This explains why during the Warring States period there were different attempts to reinforce their distinctness: (1) by adding two dots to *yu* 'jade' along the right side of the vertical stroke, or with a little upward curve on both sides of the vertical line under the second horizontal stroke; (2) with only one additional dot on the bottom line to the right of the vertical stroke, as witnessed in bamboo slip writing [王]<sup>z<sup>s</sup></sup> (Wangshan), [王]<sup>z<sup>s</sup></sup> (Baoshan), [王]<sup>z<sup>s</sup></sup> (Leigudun). However these attempts were later ignored in the official seal style, [王]<sup>kz</sup>, which only retained the bronze inscription form. It was finally in modern as well as in current writing that the second differentiation just described above was adopted.<sup>16</sup> This pair *wang* 王 'king' and *yu* 玉 'jade' is not included in my corpus, partly for lack of semantic motivation in the relationship of their graphic modulation, and

partly because they are different from the beginning. It is for a similar reason that I put aside the case of *ping* 乒 and *pang* 乓, which is now best known to the general public as a translation for the 'pingpong,' a loan word of English origin. However, *pingpang* 乒乓 first appears as onomatopoeia, that is, imitating noises during a fight in the *Shuo Yue Quan Zhuan* 《說岳全傳》 (*The Full Story of Yue Fei*, chapter 62) by Qian Cai 錢彩 of Qing dynasty (c. 1700 AD). There is no semantic factor underlying the creation of the two onomatopoeic syllables since their graphic representations are derived by deleting respectively the right and the left short slanting strokes at the bottom of the character *bing* 兵 'soldier.' The character *bing* 兵 'soldier' is chosen as the root form because its pronunciation has an initial and a final consonant in common with *ping* 乒 and *pang* 乓, and the whole procedure is of pure phono-graphic motivation, as explained by Qiu.<sup>17</sup>

There are also cases which pose thorny questions. The ancient form of the character *qiu* 裘 [𠂔]<sup>jew</sup> 'fur coat' is coined by adding four short slanting strokes to *yi* 衣 [衤]<sup>jew</sup> 'clothes.' One may ask where lies the quantitative limit in Qiu's working criterion of 'additional points or strokes.' In my view, *qiu* 裘 'fur coat' is a rather borderline case. In my analysis of cases like *qiu* 裘, I apply the following restriction: if the additional element is not an independent graph, the character thus modified should be accepted as a *bianti*.<sup>18</sup>

The additional element in *qiu* 裘 [𠂔]<sup>jew</sup> 'fur coat,' even though it has as many as four strokes, is not recognized as an independent graph. The four slanting strokes in *qiu* 裘 serve only as an adjunct of the fur image. To drive home this point, I would like to quote two more examples from my corpus:

(1) The archaic character for *yue* 曰 'to speak' [曰]<sup>jew</sup> is accepted as a *bianti* because the short stroke added to *kou* 口 [凵]<sup>jew</sup> does not make up an independent graph.

(2) *Zheng* 正 [𠄎; 𠄎]<sup>jew</sup> 'right (in front)' is a *bianti* because I interpret the horizontal stroke (form given in the *Shuowen*) or the little circle or the slightly irregular quadrilateral figure above the component *zhi* 止 [止]<sup>jew</sup> '\*foot; to walk' in JGW to only serve as an indicator of direction, since they are not semantically recognized as independent graphs. On the contrary, a character such as *er* 二 'two' should not be classified as a *bianti* derived from *yi* 一 'one' because *er* 二 is composed of two *yi* 一 'one', that is, its additional stroke on top is an independent form with an established lexical meaning, just as explained in the *Shuowen*: *ou yi ye* 偶一也 'a couple of ones.'<sup>19</sup>

Furthermore, *biantizi* can also occur, though not frequently, within compound characters, for example, *ji* 即 [𠄎] <sup>jēw</sup> 'immediate; \*[to go to eat]' and *ji* 既 [𠄎] <sup>jēw</sup> \*'to finish; already' as in *dong fang ji bai* 東方既白 'the East is white,' i.e. 'it already dawns in the East.' The form of *ji* 即, represents a kneeling human body without its mouth, approaching the pot (ready for a meal), hence its meaning 'to approach; immediate,' as in *ji wei* 即位 'to ascend the throne'. Based on the three variants of the character *ji* 既 in JGW as given in Yao & Xiao (1992), I obtain the following percentages for their respective occurrences: (1) [𠄎] <sup>jēw</sup> the kneeling human figure with its mouth turned away from the pot is the most frequent form (77.9%); (2) [𠄎] <sup>jēw</sup> both the back and the mouth of the kneeling figure are turned away from the pot (15.4%); (3) [𠄎] <sup>jēw</sup> the kneeling figure turns its back while its mouth remains facing the pot (6.7%). In contrast with the figure for 'immediate' [𠄎] <sup>jēw</sup>, the ideo-pictograph here implies that the meal is over, hence the meaning of 'already.'<sup>20</sup> In order to visualize the graphic modulation underlying their formation, it is necessary to take into account all the entire pictographic images of the two characters.

There are also cases where the differentiating features between *bianti* are too obscure or too subtle to detect, even for the paleographers. Here are some examples from oracle-bone inscriptions. At the beginning, the pair *nü* 女 [𠄎] <sup>jēw</sup> 'woman' and *nu* 奴 [𠄎] <sup>jēw</sup> 'slave' is differentiated by a shift in the position of the hands, from the front to the back of the body. This subtlety was spotted only fairly late by the paleographic master Yu Xingwu (1962). As for the graphic difference between *ru* 如 [𠄎] <sup>jēw</sup> \*'to follow,' and *xun* 訊 [𠄎] <sup>jēw</sup> 'to question,' with *nü* 女 [𠄎] <sup>jēw</sup> 'woman' as a component of the former, but with *nu* 奴 [𠄎] <sup>jēw</sup> 'slave' for the latter, it is so subtle that it still poses problems in their identification (cf. *Jiaguwen bian*, 1992: 477 or Xu, 1989: 1315; for a better analysis of these characters, see also Li, 1991: t. 12, 3659). A different kind of graphic subtlety is also found in *gui* 鬼 [𠄎] <sup>jēw</sup> 'ghost' and in the pair *xiong* 兄 [𠄎] <sup>jēw</sup> 'elder brother' and *zhu* 祝 [𠄎] <sup>jēw</sup> 'to pray.' The latter two ancient graphs were mistaken as variants in JGW, while their correct readings were only proposed in the eighties.<sup>21</sup>

Among these subtle and not yet fully deciphered graphs just mentioned, there is the case of *jian* 見 [𠄎] <sup>jēw</sup> 'to see; to spy on,' which turns out to be a genuine *bianti*. In this ancient graph, a modulation process was applied to the 'legs' component in the lower part of the figure in the graph. With the 'legs' component in a standing posture, it signifies 'to see; to inspect,' but when the



contour of the 'legs' component is modulated to designate a kneeling posture [𠂔]<sup>igw</sup>, the meaning of the character changes to signify \*'to attend a royal audience' or \*'to offer.'

These graphic creations, however, probably proved to be too sophisticated for a writing system which was becoming more and more a means of mass communication. In the case of *jian* 見, a modifier was later used to carry the connotation 'royal', giving, for example, *jin jian* 覲見 'to attend a royal audience'. In general, subtle cases of *bianti* of this kind are later rendered more explicit in one way or another, or condemned because they are too idiosyncratic or too peculiar to stand the minimum test of time, such as *dan* 旦 'dawn' and its semantically and graphically related form *hun* 昏 'sunset', created by reversing the character *dan* 旦.<sup>22</sup> This graph *hun* 昏 also failed to challenge the standard form *hun* 昏 [昏]<sup>igw</sup> and soon became obsolete.

### 3. MODULATION - A MECHANISM FOR LEXICAL BRANCHING IN LANGUAGES OF DIFFERENT MODALITIES

The approach in this paper is mainly inspired by Klima & Bellugi (1979) and Yau (1992), who have both observed modulation processes in the lexical branching of deaf people's sign languages. The principal reason for following their research perspective in the present study is due to my conviction that ancient Chinese pictographs and sign languages have some essential features in common. The two media are visual, gestural and often iconic. I would like to quote here one of the many gestural creations observed by Yau (1992) to illustrate what this scholar meant by 'modulation'.

The sign 'government' created by Mr. Kwok Guai-wing (1917 -), a Chinese deaf person in Southern China, is derived from its basic form 'salute'.<sup>23</sup> The sign 'government' is performed by allowing the hand of an ordinary saluting gesture to drop abruptly and slightly to the front. According to Yau (1990), it is by modulating the movement parameter of the base sign together with its resulting positional changes that this lexical branching in gesture is achieved.

Yau (1987) also draws a parallel between gestural modulations and the mechanism behind the creation of cognate words by tonal alternation in spoken Chinese today, including the classical case of *hao* 好 'good' in tone 3 versus *hao* 好 'to like' in tone 4.<sup>24</sup> A. G. Haudricourt (1954) argued that the distinction between two items within a pair such as *hao* 好 'good' (tone 3) and *hao* 好 'to like' (tone 4) was due to the presence or the absence of the suffix -s in archaic

Chinese. Though his thesis implies that the distinction was once of a syllabic nature, this has been preserved as a tonal alternation. Examples of this kind of cognate word by tonal alternation are fairly abundant in Chinese dialects. For example Cantonese is rich in this kind of lexical formation.<sup>25</sup>

It is interesting to compare these tonal alternations in Chinese to the shift of stress in some English words which result in a change of their parts of speech: *'record vs re'cord*, *'present vs pre'sent*, *'export vs ex'port*, *'increase vs in'crease*, *'torment vs tor'ment*, *'contrast vs con'trast*, etc. (in all these cases, the accent falls on the first syllable when used as nouns but on the second or the last as verbs). J. L. Packard (1998: 2) probably has a similar idea in mind when he writes:

"At the earliest stages of the Chinese language for which we have a written record, words appear to have consisted mainly of one syllable, with each syllable generally corresponding to one Chinese character and one morpheme. At that time, related words are thought to have been derivable by changing the consonant, vowel or tone of a base word. This would be like in English considering the verb 'teethe' to be derived from the noun 'teeth' by changing the consonant ([tiq] to [tid]), the verb 'bleed' to be derived from the noun 'blood' by changing the vowel ([blud] to [blid]), or the verb 'record' [recórd] to be derived from the noun 'record' [récord] by changing the tone (here, stress placement) of the word."

I hope that this discussion helps to clarify some important points in understanding the nature of the *bianti* phenomenon and to subsequently provide some coherent criteria for their identification in Chinese writing in its various stages. I also hope that by drawing a parallel between this graphic phenomenon and observations made by specialists in other linguistic areas, a case has been made for the modulation mechanism as a universal device for lexical creation on the representation level.

NOTES

1. My gratitude first goes to Prof. Yau Shun-chiu for his fruitful discussions during the preparation of this paper at different stages. I would also like to thank Prof. Hilary Chappell, La Trobe University, Australia, for her comments and not least for kindly checking and polishing the English of the text. My thanks also go to the anonymous reviewer's detailed comments that led to important revisions in this final version.

2. Hereafter graphs quoted from different periods are indicated by abbreviations in superscripts and their correspondent readings are: jgw for *jiaguwen*, the oracle-bone inscriptions of 13<sup>th</sup> - 11<sup>th</sup> century BC; jw for *jinwen*, the bronze inscriptions of 11<sup>th</sup> - 5<sup>th</sup> century BC; zg for *Zhanguo wenzi* of the Warring States, 5<sup>th</sup> - 3<sup>rd</sup> century BC; xz for *xiaozhuan*, a graphic style introduced around 3<sup>rd</sup> century BC.

3. However Yang never used *bianti* independently but always in connection with some terms from the so-called 'six-principles theory.' The majority of Yang's examples, belongs to the group of *bianti xiangxing* 變體象形 'the modified forms of pictographs' for which Yang (1988: 81) gave the following explanation: "a *bianti xiangxing* is obtained either by changing the entire position or slightly modifying certain strokes of a pictograph." Yang gave two examples for illustration: the graph [𠂔]<sup>xz</sup>, *he* 禾 'cereal,' obtained by modifying [木]<sup>xz</sup>, *mu* 木 'tree,' and [縣]<sup>xz</sup>, *xian* 縣 'district,' obtained by turning [首]<sup>xz</sup>, *shou* 首 'head,' upside down. His other two groups are *bianti zhishi* 變體指事 'the modified forms of deictics' such as the graph [幻]<sup>xz</sup>, *huan* 幻 \*'mutual deceiving or suspicion' obtained also by turning upside down the character [予]<sup>xz</sup>, *yu* 予 \*'to offer insistingly or mutually/at the same time') and *bianti huiyi* 變體會意 'the modified forms of ideographs or sysemantograph (the term used by Mattos & Norman 2000),' such as *wan* 丸 [丸]<sup>xz</sup> \*'an oblique and rotating round-form object,' obtained by the reflection of *ze* 仄 [仄]<sup>xz</sup> 'oblique.' Thus we can see that Yang did not systematically take into account in his examples the change of meaning in the course of the graphic modulation. The asterisk \* indicates that the quoted meanings is now obsolete.

4. See footnote 3.

As a follow-up of Qiu's discussion (1988), Zhang Yujin (1999) evokes indirectly the subject which I am treating here. Among the four processes in Chinese character creation he argues for, there is *biaoyifa* 表義法 which is responsible for the group of *bianti biaoyizi* 變體表義字. The majority of his examples in this group of *bianti* corresponds to those of mine.

5. I remain fairly critical regarding Zhang Yachu's article because among the ten examples discussed in his paper, many of them turn out to be questionable. I understand that his objective was to exploit this process of graphic creation to drive home his viewpoints. Unfortunately, the interpretation of his own data is problematic. For example, in order to justify his interpretation of *bi* 匕 [𠄎]<sup>igw</sup> as depicting a man in a running posture, he suggested that this graph is the result of the reduction of *bi* 比 [𠄎]<sup>igw</sup>, which according to him, was an image of two men in a running competition. The origin of this character *bi* 匕 [𠄎]<sup>igw</sup> is highly controversial, and his personal analysis lacks justification. Moreover, each of the two identical components in *bi* 比 [𠄎]<sup>igw</sup> can function as an independent character, as in *bi geng* 匕庚 [𠄎 庚]<sup>igw</sup> (妣庚) 'Mother Geng', and by my definition this pair cannot be accepted as *bianti* in the present study.

6. The term 'modulation', as indicated in my paper, is borrowed from sign language (SL) studies as used by Klima & Bellugi (1979). The two joint authors, however, do not offer a definition, nor is there an entry for 'modulation' in *The Encyclopedia of Language and Linguistics* edited by R. E. Asher (1994). To my knowledge, the only succinct definition on 'modulation' available is proposed by Baker & Cokely (1980) in connection with gestural signs in SL: "A general term that refers to a change in the form of a sign that changes or adds to the meaning of that sign." In turn, when I use the term 'modulation' in my graphic studies, I am aware that there will be a further metaphorical drift in the course of its application to Chinese paleography. Given that the original use of the term 'modulation' goes back to natural science, and in particular to engineering, Prof. Yau Shun-chiu took the trouble to consult a professor in engineering about its usage. Here is the reply: "We in engineering tend to use the word (modulation) to mean putting a pattern A on top of another pattern B, both possibly time varying. As an example, if a pond surface is originally flat (pattern B) and a breeze comes by, we may say that the surface is modulated by a series of ripples (pattern A). In engineering, the two patterns may be more complicated, deliberately created and hence meaningful. A technical way can usually be found to isolate the modulating (A) pattern from the combined (A + B) pattern in order to better identify its individual meaning. Hope the explanation makes sense to linguists or literary writers. Relatively speaking, I would say that in your example (Yau's), the pair of characters *gan* 甘 [𠄎]<sup>igw</sup> 'bitter sweet' and *kou* 口 [𠄎]<sup>igw</sup> 'mouth', perhaps the element inside the mouth in 甘 [𠄎]<sup>igw</sup> is used to modulate the base element *kou* 口 [𠄎]<sup>igw</sup> 'mouth' to give

the meaning of 'bitter sweet'". (personal communication) I think this brief remark supports the adaptation of the term to gestural linguistics.

7. Qiu preferred the term *zhishi* 指示 to Xu Shen's *zhishi* 指事. Though both terms in Chinese are translated by 'deictic graphs,' Qiu's examples do not include *shang* 上 'above' and *xia* 下 'below,' the two classical items given in the *Shuowen jiezi* as *zhishi* 指事.

8. Yang's opinion on this point is rather unclear. He did not include any well-known classical examples of *zhishi* 指事 under *bianti zhishi* 變體指事, a term he created.

Chen et al. (1988: 32) made the following remark on *bianlizi* 變例字, an alternative term for *biantizi*: "(*bianlizi*) refer to characters that are beyond the proper coverage of the *liushu* classification." However, they considered reversions (turning upside down, *daowen* 倒文, or left-right reversal, *fanwen* 反文) and subtraction of strokes, *shengwen* 省文, but not additional strokes, *zengbihua* 增筆畫, as the only means to produce *bianti*. Their idea about *biantizi* therefore does not fully agree with that of Qiu's.

9. Since *bianti* is not the subject matter of his article, it is therefore normal that many of his examples should not find places in my corpus, mainly for lack of semantic links between the related items, notably in the cases of *shi* 氏 'name' and *di* 氐 'foundation' or *ren* 人 [人]<sup>igw</sup> 'man' and *qian* 千 [千]<sup>igw</sup> 'thousand'. In another article, Yu (1979: 435) gave the example of *qiang* 羌 [羊]<sup>igw</sup> with the horns of a sheep worn by a human being. I think that cases of this type can be considered as *bianti* providing that the pictographic elements, in the present case the horns, do not constitute an independent graphic form.

10. There is a yet rarer variant which is in fact formed by combining the two additional features in [𠂇]<sup>igw</sup> and [𠂈]<sup>igw</sup>, giving [𠂉]<sup>igw</sup>.

11. In Yao & Xiao (1992: t.1, 168), out of 204 occurrences of *nü* 女 [女]<sup>igw</sup> 'woman, female' in JGW, 92, i.e. 44%, are interpreted as 母 'mother.' But such a replacement, the other way round, is only possible, but extremely rare, with [𠂇]<sup>igw</sup> 'mother.' Out of 73 occurrences of [𠂇]<sup>igw</sup>, 3 cases, i.e. 4%, are interpreted as *nü* 女 'woman, female.'

According to Qiu (1988: 226), the negative *wu* 毋 dates from the Warring States period. This graph formation is of the same nature as *ping* 兵 - *pang* 兵, see footnote 17.

12. According to the *Shuowen jiezi*, the extra stroke that renders *mu* 木 [木]<sup>igw</sup> 'tree' into *zhu* 朱 [朱]<sup>igw</sup> indicates the red core of a tree.

Zhang Yujin (1999: 46-47) does not deal with the characters *ben* 本, *mo* 末, *zhu* 朱 or *yi* 亦 as *bianti*. Instead, he discusses *biantibiaoyi zi* 變體表義字 such as the case of *cha* 茶 'tea,' formed by means of deleting the short horizontal stroke in the middle of the character *tu* 荼 'a bitter edible plant'. He considers the common taste of 'bitterness' of the tea leaves and *tu* 荼 serves as the semantic link for accepting the two items as *bianti*. I share his viewpoint on the semantic relationship between these two characters and consider *cha* 茶 as the *bianti* of *tu* 荼.

13. Apparent exceptions are not difficult to find, for instance *wu* 烏 'crow' in current writing can be considered as resulting from the deletion of a short stroke in *niao* 鳥 'bird.' However in terms of semantic content, *wu* 烏 'crow' is part of the generic term *niao* 鳥 'bird.'

14. Qiu (1988: 139) probably had the derivational requirement in mind when he said that this kind of graph is "few in number."

15. Qiu considered *jin* 今 [A]<sup>je<sup>w</sup></sup> 'today' as a *bianti* obtained through a reversion of *yue* 曰 [E]<sup>je<sup>w</sup></sup> 'to say'. Despite the arguments he offered for a semantic link between the two, I nevertheless maintain my reservations about this pair. I am very reluctant to accept that the flat bottom part of *yue* 曰 [E]<sup>je<sup>w</sup></sup> 'to say' was reversed to become pointed in *jin* 今 [A]<sup>je<sup>w</sup></sup> 'today' without involving other modification processes. I disagree with his argument that the change from a flat form to a pointed form is due to writing convenience: if it is more convenient to write a pointed form, why is *yue* 曰 [E]<sup>je<sup>w</sup></sup> written with a flat bottom shape to begin with? I do not think that such a calligraphic convenience can be explained away by a positional difference, that is, being easier to write a pointed graphic component than a flat one on top of a character. Consequently, the change in the shape of the graphic component in question has to be explained by further modulations, if ever Qiu sought to defend his analysis.

16. The dot will be present only when the radical *yu* 玉 'jade' is located at the bottom of a compound character as in *xi* 璽 'seal,' or *bi* 璧 'round piece of jade with hole in the middle'.

17. For Qiu's viewpoint, see the section 'graphs altered in shape to indicate sound' in Qiu (1988: 107) where he explains that "the shapes of existing graphs have been altered at times to create new ones so as to indicate that the sound of the latter is close to the sound of the former. We term graphs created in this way 'graphs altered in shape to indicate sound,' as occurred in the case of '兵' *bing* which was altered and became '乒乓' *pingpang* 'ping pong'." (translation by

Mattos & Norman, 2000: 169)

18. Similarly, certain pairs like *yuan* 元 'primary' - *wu* 兀 'high and flat', *bu* 不 'negative marker' - *pi* 丕 'great, grand', as found in the *Shuowen*, are not considered as *bianti* in this paper because there is no semantic link between these pairs. Likewise, it is difficult to establish a semantic link between 大 'big, large' and 天 'top' as used during the Eastern Han period, and I cannot accept them as having a *bianti* relationship.

On the other hand I consider *shi* 史 and *li* 吏 as *bianti*. According to Yu Xingwu (1979: 446; 1996: 2961), 史 [𠂔] and 吏 [𠂔] JGW are graphically and semantically related. The presence or absence of the short stroke on top of these two characters is the result of a graphical change which occurred after the Shang period, and later the horizontal stroke in *li* 吏 functions only as a distinctive feature in contrast with *shi* 史 and has nothing to do with the independent and meaningful graph *yi* 一 'one'.

I do not consider pairs of characters such as *ming* 命 - *ling* 令, *na* 那 'that' - *na* 哪 'which', *zi* 自 'self' - *zan* 咱 'first person plural, inclusive' as *bianti* because the distinctive component *kou* 口 'mouth' is an independent graph, even though the items within these pairs were once semantically related.

I would like to take this opportunity to thank once again the anonymous reviewer who has raised questions on the cases mentioned in this long note. I would also like to reiterate here the reason why I make use of "independent graph" as an eliminating criterion in the selection of *bianti* pairs. A great number of characters in Chinese writing are created by means of adding a radical or *bushou* to a phonetico-semantic base as in the case of *na* 那 'that' and *na* 哪 'which'. Without this eliminating criterion, the notion *bianti* would be so distorted that there will be no means of filtering a long series of characters having nothing to do with the mechanism of graphic modulation.

19. I do not include in my data those graphs that establish their *bianti* relationship through an additional radical. Take for example 'water' in the case of *yu* 魚 [魚]<sup>JEW</sup> 'fish' and *yu* 漁 [魚]<sup>JEW</sup> 'to fish' for three reasons. First, a radical is originally an independent item, having its individual graphic form; second, the position of a radical in a character is more or less predictable, whereas the place or the stroke of a character to be modified in order to obtain a *bianti* is basically unpredictable; and third, because there are too many characters having their derivational relationship due to an addition of radical, therefore if we include them all, there will be an undesirable shift of focus in the study, allowing them

'steal the show.'

20. I thank Prof. William H. Baxter of University of Michigan who has kindly checked the phonological reconstructions of several words mentioned in this study. He points out to me that there is no phonological relationship between *ji* 即 'immediate' and *ji* 既 'to finish; already'. However, the absence of a phonological link does not block the acceptance of these two characters as graphic *bianti*. In my opinion, the formation of these characters involves a graphic modulation, and there is also a semantic link between the two contrastive but related aspects they signify. It has to be noted that *bianti* characters do not necessarily imply that they represent cognate words, and in fact, in most cases they are not cognate words at all. It is only on the grounds of a purely semantico-graphic relationship that I also consider the pair *chi* 𠂇 - *chu* 𠂇 as *bianti*. Phonologically, this pair is controversial: Prof. Baxter thinks that "that each is part of the two-syllable word" (personal communication), Yan Xuequn (1979) regarded them as cognate, while Wang Li's reconstructions (1987: 110) - *chi* 𠂇 \*thiek; *chu* 𠂇 \*thiok -, also invite such an interpretation. But my acceptance of this pair as *bianti* is primarily based on semantico-graphic considerations, entirely independent of the phonological reconstructions of these two words.

21. Because these two cases are not semantically motivated, I prefer to present them here in a note form. When the character *gui* 鬼 represents 'ghost, nightmare,' its 'legs' are always kneeling, but the 'legs' would change to a standing posture when it is used to represent a tribal name (see Fowler, 1989: 14). After that tribe disappeared or changed its name, the graph with 'legs' in standing posture was dropped consequently from the oracle-bone inscriptions, and only the form with kneeling posture remained. Careless reading also results in treating the pair *zhu* 祝 and *xiong* 兕 as variants in the same manner. It was only Zhang (1982: 175) who first pointed out this difference; see also Yao (1983: 104).

22. Wu Renchen 吳任臣, an author of the Qing period, gave this variant in his *Zihui bu* 字彙補.

23. See Yau (1987: 218; 1990: 272; 1992: 326). Yau's principal informants are all deaf adults who were born deaf and had not been sent to schools for the deaf, and they were ignorant of their national sign languages. Among his deaf informants, the most prolific ones are: Martha Pettikwi (1926-1980), an Amerindian woman in Weymontachie, Quebec Province in Canada, Kwok Guai-



wing (born in 1917) and his elder sister Tong Li (born in 1912) of Huangpo near Guangzhou. To simplify, Yau often refers to them as "isolated deaf people."

24. Other Mandarin examples in Yau's list are: *jia* 家 (tone 1) 'family' and *jia* 嫁 (tone 4) 'to marry a man'; *zhong* 中, which is nominal when pronounced in tone 1, signifying 'middle' but a verb 'to hit the center' in tone 4; *shu* 數 (tone 3) means 'to count' but 'numeral' in tone 4.

25. In Cantonese a "super high tone" is exploited to differentiate the use of a word as noun from its usage as a verb. For example, *bo* 煲 'pot' (yin ping), and *bo* 煲 'to cook with a pot' (super high yin ping). There is still a rare remnant phenomenon in Cantonese where a verb with a tone other than yin shang, can express what may be called a 'perfect tense' when changed to the yin shang tone with the help of the sentence particle *la* (yin qu), for example, *sik* 食 'to eat' (yang ru), and *sik* 食 (shang ru) *la* 了 (yin qu) 'already eaten' (similar to *chi guo le* 吃過了 in Mandarin), but *sik* 食 'to eat' (yang ru) followed by the same sentence particle *la* 了 (yin qu) will only mean 'ready to eat' (similar to *zheng yao chi* 正要吃 in Mandarin). (Examples here are provided by Prof. Yau who is a Cantonese native speaker. Other examples can be found in Li Rong & Bai Wanru, 1998).

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#### 漢文字體系的形態變換機制

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漢語書寫系統裡有所謂“變體字”。像“左”[𠂇] - “右”[ナ]、“上”[上] - “下”[下]等變體字彙，從字形角度看，其實是一種并列的同源字體，把其一的字形顛倒過來而構成的。此中像“即”[即] - “既”[既]，也是通過類同的字形的變換而形成的。然而，這類“變體字”在大多數的情況下，在音韻上並沒有親屬關係。

Klima-Bellugi (1979) 和游順釗 (1987, 1990) 的聾人手語變體的觀察，

對古漢字變體的研究很有啟發性。這是因為手語和古漢字都同屬於視覺和手勢動作的範疇，並常帶有象形性質的傾向。故本文的分析是以這幾位學者的著述作為理論基礎，通過對漢字裡這個特殊的形體現象和在別的語言領域裡的平衡觀察，論證“變體”在表達層次上為詞彙創造的一個遍性手段。

關鍵詞

古漢字，變體，詞彙衍生，同源字體，聾人手語