

A Cognitive Approach to Character Formation in the Oracle Bone Script

Sami Honkasalo
samihonkasalo@gmail.com

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Abstract

This paper attempts to apply the cognitive linguistic framework in explaining character formation in the oracle bone script, the oldest extant form of the Chinese script. The oracle bone script was used in Bronze Age China to write the Shāng Chinese language for divinatory purposes. It is shown that together with the previously known mechanisms of icono-pictography and the rebus principle, cognitive mechanisms such as metonymy and synecdoche played a significant role in the character formation of the oracle bone script. Furthermore, it is argued that all the aforesaid mechanisms can be explained by means of the reference point construction.

1. Introduction

In this brief paper, it is argued that applying a cognitive approach to the study of writing systems can bring new meaningful insights about the formation of ancient writing. Taking the oracle bone script of the Shāng (商) dynasty as the target of study, I show that metonymy and synecdoche played a significant role in the formation of the Chinese characters¹. Together with metonymy and synecdoche, icono-pictography and the rebus principle are also examined, since these four outwardly distinct mechanisms can be explained as different manifestations of the underlying reference point construction. Certainly, phonetic elements too played a decisive role in character formation, but examining them at the same time with the cognitive mechanisms would require a study of much wider scope. Hence, they are not dealt with in this brief paper.

The publication of *Metaphors we Live by* by George Lakoff and Mark Johnson in 1980 permanently altered our interpretation of linguistics, changing many theoretical assumptions that had hitherto been taken for granted. It was shown that metaphor and other cognitive mechanisms that had been considered mere figures of speech to be used as rhetoric devices in poetic or figurative language, actually play a decisive role in our daily existence. By virtue of structuring our conceptual system, these cognitive mechanisms pervade our everyday lives and are therefore

¹ This study is based on the results of my corpus analysis of the oracle bone script. In the original corpus analysis, the analyzed oracle bone inscriptions were selected from *Jiǎgǔwén xuǎnzhù* (甲骨文選注) by LI Pù (李圃) and *Hàn-Yīng duìzhào jiǎgǔwén jīnyì lèijiǎn* (汉英对照甲骨文今译类检) compiled by Liú Zhìjī (刘志基).

indispensable, not simply a peripheral rhetorical device. Consequently, together with development in cognitive research, cognitive linguists have steadily widened the application range of this new framework. In fact, some cognitive linguists have claimed that the cognitive mechanisms of metaphor and metonymy apply even to grammar itself².

Looking against this background, one cannot but wonder why the cognitive approach has not yet been sufficiently applied to the study of writing systems. Undoubtedly, the creation of a writing system constitutes a cognitive feat par excellence. Ergo, studying the formation of writing systems from the viewpoint of cognitive linguistics should reveal how the human cognition solves some of the complex problems that arise in the creation of writing. This paper shows that in addition to icono-pictography and the rebus principle that have received attention in previous studies, metonymy and synecdoche make up two powerful tools that ancient people had at their disposal when they endeavored to express their spoken language in written form.

2. A brief sketch of the Shāng Chinese language and the oracle bone script

The Shāng Chinese language is the oldest Sino-Tibetan language with written records. As the conventional term Old Chinese (Shàngǔ Hànyǔ 上古漢語) is used slightly inconsistently in the literature, this paper adopts the term Shāng Chinese language to make it clear that we are dealing with the language of the Shāng dynasty only³.

Shāng Chinese is clearly related to the language of the following Zhōu (周) dynasty. However, despite significant advances in research, the grammar of Shāng Chinese language remains still by and large incompletely understood. As the oracle inscriptions are relatively short and highly formulaic in nature, we cannot fully reconstruct the grammar nor the lexicon of spoken Shāng Chinese based solely on the written materials. In Chinese, there exist tentative grammatical descriptions of Shāng Chinese, but no proper grammar of the language exists in English.

From the very beginning of the oracle bone records, the script had the capacity to fully render the Shāng Chinese language into a written form. Therefore, it is clear that the oracle bone script was not a mere mnemonic device in the category of proto-writing, but deserves to be called true writing on par with other well-known ancient writing systems. Just by looking at the physical shape of the characters, it can be seen that the script has attained a high level of development. In fact, due to the highly elaborate level of the script, it might have had a less developed predecessor, which has unfortunately not survived.

Based on the existing inscriptions, the number of differing oracle bone characters is said to be around four or five thousand. However, which of the characters consist of a single unit, i.e. a

² For an illustrative study of cognitive mechanisms in grammar, please refer to Panther, Claus-Uwe et al. (2009).

³ For example, Baxter (1992) uses the term Old Chinese to refer to the language of the early and middle Zhōu dynasty whereas some other scholars apply it to cover the whole period from Shāng to Hàn dynasty in the history of the Chinese language.

grapheme, is still open to debate in many cases. Also, because only a little more than one thousand characters have been deciphered with a relatively high level of certainty, there is a lack of consensus concerning what word of the language many of the characters represent, thus making the linguistic and philological research obviously more difficult.

Divination played a central role in the Shāng society. As Wilkinson (2000:389-406) points out, plastronomy (divination using turtle shells) and scapulimancy (divination using shoulder blades) have been widely present in China since Neolithic times. Oracle bone divination clearly belongs to this historical continuum of divinatory practices. However, in contrast to previous practices, the divinations are actually inscribed on the turtle shells and animal shoulder blades, thus providing us invaluable information about the society, politics and religion during Shāng dynasty. Most of the records originate from Yīn (殷), the ancient Shāng capital of the royal house close to the modern city of Ānyáng (安陽) situated in northeast-central China.

3. Definitions

This chapter briefly defines the main concepts used in addressing the problem of character formation, viz. cognitive mechanisms, metaphor, metonymy, synecdoche, icono-pictography and the rebus principle.

In this paper, the term cognitive mechanisms refers to the fundamental mechanisms of the mind that structure our everyday perception. These kind of mechanisms arise from a deeper cognitive level than language itself and include metaphor, metonymy and synecdoche as pivotal members. Of these, metaphor has perhaps received most focus in cognitive linguistics. As Lakoff and Johnson put it, the essence of metaphor is understanding and experiencing one kind of thing in terms of another⁴. Unlike in spoken language, however, any decisive proof for pervasiveness of metaphor in the formation process of the oracle bone characters was not found in this study. Needless to say, the current absence of evidence for metaphor's role doesn't equal evidence of absence and further research about the subject is deemed necessary.

Metonymy is a cognitive mechanism based on physical or conceived contiguity. An entity is used to refer to another entity, which is somehow contiguous or associated to it. For example, in a sentence "*The White House announced sanctions against Libya.*", the White House is used metonymically to refer to the president of the United States and his advisors. Examining our everyday language, it is no exaggeration to say that metonymy stands behind most of our everyday language expressions in one form or another.

Synecdoche is a cognitive mechanism in which a part of an entity is used to refer to the whole entity (*pars pro toto*) or the whole entity is used to refer to a part of it (*totum pro parte*). For

⁴ Lakoff, George and Johnson, Mark (1980:5)

example, using America to refer to United States of America, one country of the continent, constitutes a *totum pro parte* metonymy. Some linguists consider synecdoche a subcategory of metonymy, but for the sake of lucidity it is treated as a separate category here.

In this paper, the term *icono-pictography* refers to a process in which a simplified picture of the referent is used for creating a character for the referent word. For example, when creating a new hypothetical writing system for English, we could draw a picture of a cow to be used as a sign for this word. When the link between the sign and the referent becomes firmly established, the sign can be called a pictograph. Also, it goes without saying that abstract referents cannot be expressed with this process, thereby seriously limiting its scope.

The rebus principle means that an existing symbol of the writing system is borrowed to write a homophonous or near homophonous word. For example, a picture of an eye could be used to write the personal pronoun 'I' in English, as these words are homonyms.

5. Lexical classes and cognitive mechanisms

In this chapter, it is explained how the character formation mechanisms advocated in this paper actually work in the oracle bone script. Several examples from different lexical classes are given, widely illustrating the function of the cognitive mechanisms. I have divided the lexical classes of Shāng Chinese into nouns, numerals, pronouns, particles, adverbs and verbs⁵. The category of verbs includes a subcategory of stative verbs that are semantically close to prototypical adjectives. Naturally, as our understanding of the Shāng Chinese grammar increases, we might have to fine-tune the categorical division above.

The reason for the lexical class based approach lies in the fact in character formation, there seems to be a tendency of certain processes to be favored for certain lexical classes. Roughly speaking, concrete content words such as concrete nouns tend to favor the icono-pictographic process and function words the rebus principle. Verbs that are somewhat in between the two in terms of abstractness were found to have a high number of characters formed using the metonymic process. Also, synecdoche has a role in character formation for some words describing natural phenomena.

5.1 Character formation in concrete common nouns

The theory that the Chinese characters originated from pictographs has become widely established⁶. The characters that I categorize as pictographs were used in writing animal names, such as elephant and deer, names for body parts etc. Emerging from simplified depictions of their objects, they come closest to the idea of ideogram in the oracle bone writing. However, by virtue of being highly conventionalized, they have to be learned as units of the writing system and more often than not as

⁵ In determining the lexical classes, I have used Kryukov (1980) and Yáng (2003) for reference, but it should be noted that the categorization in this paper differs somewhat from these two.

⁶ De Francis (1984:78)

the example of ‘dog’ in the table below reveals, their referent cannot be figured out without prior knowledge of the script. After the picture has become established as a sign in the writing system, namely after it has been firmly linked to a word in the spoken language, speaking of an ideogram loses its meaning, since the basic assumption of the ideogrammic hypothesis requires the character to be able to convey meaning independently of language. Consequently, in the following example tables, ‘Meaning’ should be taken as the meaning of the word the character refers to, not as the meaning of the character itself since the Chinese characters themselves are devoid of any meaning.

Table 1. Characters for concrete nouns

Oracle bone character				
Modern character	象	鹿	犬	頭
Meaning	Elephant	Deer	Dog	Head

5.2 Character formation in nouns expressing occupation

Among characters for nouns expressing occupation, examples of metonymy can be found. Many of these metonymies take the form tool – user, i.e. a symbolic or typical tool of a profession is used to refer to the practitioner of that profession. A parallel phenomenon exists in many spoken languages. For instance, in a sentence such as “*The gun we hired wanted fifty grand.*”, the tool (a gun) is used for expressing the user of the tool (a hit man)⁷. Furthermore, agents and instruments take the same suffix in many languages of the world. The words ‘buyer’ (one who buys) and ‘plunger’ (a tool) exemplify this phenomenon in English. Clearly, a connection exists between the agent and the instrument; this connection is utilized metonymically in character formation of the oracle bone script.

Table 2. Characters for abstract nouns expressing occupation

Oracle bone character				
Modern character	王	巫	工	射
Explanation	An ax used to express royal authority or a crown	A shamanic tool	A chisel	A bow with an arrow
Meaning	King	Shaman	Carpenter	Archer

5.3 Character formation in nouns referring to natural phenomena

The ancient people were clearly aware of patterns existing in nature. For example, an entity conceived as a forest can be thought of as a pattern of trees and rain as a pattern of falling raindrops.

⁷ Example from Lakoff, George & Johnson, Mark (1980:38)

Some characters used for writing words referring to natural phenomena were created using a pars pro toto synecdochic character formation process. In other words, a perceived pattern in nature is depicted using usually three members since the entity in its totality cannot be graphically described.

Table 3. Synecdochic characters in the field of natural phenomena

Oracle bone character				
Modern character	星	山	火	雨
Explanation	Tree stars	Three mountains	Three flames	Falling raindrops
Meaning	Star	Mountain	Fire	Rain

5.4 Character formation in numerals

Body parts, notably fingers, can be used to assist counting, a common habit of indigenous people even today. This is further illustrated by the fact that in some languages, words for certain numerals come from the corresponding body parts used in counting. In the oracle bone numerical system, the characters for numbers from 1 to 4 designate human fingers or less likely a mark on a tally stick. In either cases, the character formation receives a metonymic explanation: instance—abstract idea. Thus an abstract concept of number is understood through the more physical, which is easier to conceptualize and to deal with. This is in accordance with the Lakovian claim that we understand the abstract through the nonabstract.

Table 4. Characters used for writing the numerals from 1 to 4

Oracle bone character				
Modern character	一	二	三	四
Explanation	One finger	Two fingers	Three fingers	Four fingers
Meaning	1	2	3	4

Interestingly, the characters used for numbers from five to nine are formed by a different mechanism, namely the rebus principle. Unfortunately we have no firmly established theories explaining what their forms actually depict, but all major scholars agree that the characters are created by the rebus principle. A probable explanation for applying the rebus principle lies in the fact that although it is relatively easy to indicate small numbers metonymically, marking high numbers the same way would cause unnecessary burden for the writer and reader of the text. Therefore, an altogether different mechanism must be applied. Since icono-pictography, metonymy and synecdoche are inapplicable, the rebus principle remains the only logical answer. Actually, characters for higher numbers, such as hundred or thousand, are also thought to have been formed using the rebus principle.

Table 5. Characters used for writing the numerals from 5 to 9

Oracle bone character					
Modern character	五	六	七	八	九
Explanation	Origin unclear	Origin unclear	Origin unclear	Origin unclear	Arm with an elbow or a fishing hook
Meaning	5	6	7	8	9

5.3 Character formation in pronouns, particles, adverbs and proper nouns

The lexical classes of pronouns, particles, adverbs and proper nouns consist of rather abstract words. To solve the problem how to create a character for this kind of words, people had to make use of the rebus principle as all other mechanisms are unable to give a usable solution. To illustrate the point, it is thought that the preposition ‘from’ and the word for ‘nose’ shared the same pronunciation in Shāng Chinese. A nose can be drawn easily, but an abstract preposition cannot. Hence, the character for ‘nose’ was adopted to write the preposition ‘from’.

Table 6. Characters used to write abstract words in the categories of pronoun, adverb, particle and proper noun

Oracle bone character				
Modern character	我	亦	自	出
Explanation	A saw or a weapon	Two strokes under the armpits of a human figure	A Nose	A foot getting out from something
Meaning	1SG personal pronoun 'I'	Also, too	From	Personal name
Lexical class	Pronoun	Adverb	Particle: preposition	Proper noun

5.4 Character formation in verbs

Perhaps the most interesting subset of characters in the oracle bone script is that of the verbs. Metonymy constitutes a central mechanism in the formation of characters used for verbs. Fascinatingly, semantic roles appear in the verb character metonymies. For example, in the character for the verb ‘drink’, a human figure is drinking from a vessel. Thus, both the agent and instrument are used metonymically to represent the act of drinking. In a similar vein, the character for the verb ‘see’ depicts a human figure with an exaggerated eye. This figure represents the experiencer and the exaggerated eye the instrument, namely the body part most related to the sensory impression of seeing. By the combination of these two, the character for the verb ‘see’ is created. Again it can be seen that we tend to conceptualize the nonphysical in terms of the physical, especially our own body.

In the oracle bone inscriptions words that behave like adjectives are scarce. Besides, the applied formation mechanism in the character of many these words remains relatively unclear and shall be omitted here.

Table 7. Examples of characters for verbs

Oracle bone character					
Modern character	卯	飲	獲	見	步
Explanation	Depiction of a divided object	A human figure drinking from a vessel	A hand reaching out for a bird	A human figure with an exaggerated eye	Two feet
Meaning	To divide	To drink	To hunt	To see	To go, walk
Metonymy type	Result—action	Agent and instrument—action	Agent and patient—action	Experiencer and instrument—action	Related body part—action

6. Formation of the oracle bone script and the reference point construction

This chapter concentrates on a major argument of this paper stating that all the aforementioned character formation methods, namely metonymy, synecdoche, icono-pictography and the rebus principle, can be explained as substantiations of the reference point construction ubiquitous in our cognition. In other words, even though all these mechanisms appear outwardly different, at a deeper level they are manifestations of one single mechanism essential to our linguistic and extra-linguistic cognition.

Langacker (1999:171-202) introduced the reference point construction to cognitive linguistics. In the construction explained at the figure below, C stands for conceptualizer. In the case of the oracle bone script, it can be thought of as the hypothetical person who is trying to create a new necessary character in order to express a word of the spoken language in a written form. He uses something as a reference point (R) to gain access to the target referent (T). In order to succeed in this mental operation, the target and the reference point must share the same domain (D). The arrows in the figure represent a mental path. In other words, the essence of the reference point construction lies in the conceptualizer gaining access to a target referent through a separate, but closely connected entity, without which the access would have been difficult to achieve.

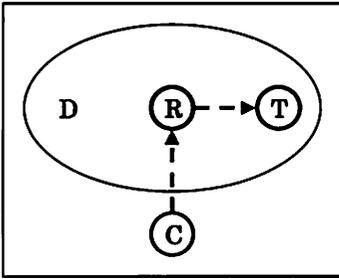


Figure 1. The reference point construction based on Langacker (1999)

In the case of icono-pictography, a simplified iconic picture of the target is chosen as the reference point to gain access to the target. For example, a picture of an elephant was chosen as the character for the word ‘elephant’ in the oracle bone script. Therefore, it can be said that the relationship between the reference point and the target stems from iconicity in icono-pictography. This has its limitations, since many target referents cannot be expressed in graphical form due to their abstract nature.

If the target cannot be accessed by means of icono-pictography a character may be created synecdochically based on pattern recognition. A picture of three stars, for instance, is chosen to act as the reference point in creating a character for the word ‘star’ in the spoken language. These stars represent the myriads of stars in the night sky. Here it should be noted that the Chinese language, both contemporary and historical, doesn’t make any grammatical distinction between singular and plural. Hence a word like *xīng* (星) ‘star’ refers not to a single instance of a star, but rather to the uncountable concept of ‘star’ without reference to number. Also, as we have seen, the application range of synecdoche is relatively narrow and mostly limited to natural phenomena.

Expressing words that are more abstract, but still somehow fathomable in physical terms, metonymy may be applied. To write a word such as ‘to divide’, a picture of a concrete divided object is drawn and taken as the reference point. The picture of this physical object provides an access to the more abstract concept of the verb by means of a result – action metonymy. There are two major differences between metonymy in spoken language and metonymy in the formation of the oracle bone script. First, semantic roles, such as the agent, may graphically appear in the metonymic mechanism utilized in the oracle bone script. Second, since linearity restricts the spoken language, the reference points have to be simple enough to be useful. In two-dimensional writing there is no such restriction. Therefore, the reference point may have several elements to make it clearer, as many of the characters in Table 7 exemplify.

Despite the aforementioned mechanisms, some words of the spoken language still remain outside the scope of written expression. The rebus principle solves this problem. A character used for a word that possesses the same or similar pronunciation to the target is chosen as the reference point.

Clearly, some of the rebus principle characters such as 𠄎 in table 6 are used both in the original and the new function. However, in many cases when the rebus principle is applied, a character to be borrowed does not yet exist and is created for the new purpose. I propose a general rule about the function of the rebus principle in the oracle bone script stating that to express an abstract target referent by means of the rebus principle, a picture of homophonous more physical entity is chosen as the reference point, regardless of whether the character exists in the writing system or not. Therefore, the reference point must always be more concrete than the target.

Even though the cognitive mechanisms play a role of paramount importance in the character formation phase of the oracle bone script, they lie dormant when using the script. Obviously, this paper doesn't claim that the Shāng people thought of an ax representing metonymically the king when they came across the character used for the word 'king'. Most likely, they just treated the character as a conventional symbol. The cognitive mechanisms are active only in the creative phase of the writing system requiring ingenuity to represent the words of the spoken language in the best way possible.

7. Conclusions

In this study, a cognitive approach was applied in studying character formation of the oracle bone script. Clearly, metonymy and synecdoche played a significant role in the formation of characters. Also, together with icono-pictography and the rebus principle, these cognitive mechanisms are manifestations of the underlying reference point construction.

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甲骨文字における認知的なメカニズム

ホンカサロ サミ

キーワード：甲骨文字、メトニミー、シネクドキ、参照点構造

要旨

本研究では、現代漢字の現存最古の祖先である甲骨文字を研究対象に、甲骨文字の成立を認知言語学の観点から考察する。甲骨文字とは、殷代の中国で主に占トの記述に用いられていた文字体系であり、その成り立ちにおいては既知の象形と仮借というメカニズムの以外に、メトニミーとシネクドキというメカニズムが働いていたと主張する。また、以上の四つの認知的なメカニズムは参照点構造で説明することを試みる。

(ホンカサロ・サミ)