Analysis of Dongba Pictographs and Its Application to Pictogram Design

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Abstract

I present my research developing new pictogram design methods based on the formative methods of Dongba pictographs, for the purpose of developing understandable, systematic and interesting pictograms. I studied and analyzed the formative methods of Dongba pictographs and extracted a set of new pictogram design methods. To test the feasibility of the proposed pictogram design methods, I designed some pictograms for Traditional Chinese Medicine through each method and administered a questionnaire to test the readability of these pictograms.

Key words: Pictogram design; Design method; Dongba pictographs

INTRODUCTION

Communication through pictograms becomes essential in our daily life as the world becomes more and more a "global village". When, for instance, many people come together and must move quickly and safely within confined spaces, or must find their way in unfamiliar locations—or when a person needs to understand instructions written on medicine bottles—pictograms become essential. The importance of pictograms worldwide cannot be overrated.

However, after investigating some pictogram designs appearing in our surroundings, I find that sereval unsatisfying issues still remained unsolved. (a) Complicated meanings are difficult to convey through pictograms. (b) Existing pictogram design style are monotonous and generally used inflexible images. (c) Many pictogram designs lack logicality and systematicity.

In order to solve the above problems in pictogram design, I focus on ancient Asian characters, especially the Dongba pictographs. I have studied and analyzed the formative methods of these characters, turning them into design methods in order to develop more understandable, systematic and interesting pictograms.

Ancient script began with pictograms, which communicated through drawing the forms of the concepts they represented (Ota, 1993). The hieroglyphs of ancient Egypt, the oracle bone script of ancient China and Dongba pictographs were similar in this respect. I believe that the formative methods of these hieroglyphs would be beneficial resources for modern pictogram design. In comparison with the hieroglyphs of ancient Egypt and ancient China, Dongba pictographs maintain the high level of characteristic and abundant expressive force in conveying complicated meaning. As the only unique pictographs still in use today, their vivid appearances has drawn growing attentions in the modern work.

For the application of the pictogram design, I chose pictograms for Traditional Chinese Medicine as the focus of this research.

Traditional Chinese Medicine aims to prevent, diagnose, and treat diseases. It mainly consists of natural and processed medicines, namely those made from herbal, animal, mineral, and some chemical and biological substances. To date, China has cultivated more than 8,000 kinds of herbal medicines, 600 of which are commonly used. This makes China the country with the largest number of herbal medicines in the world. These medicines not only meet the demands of the domestic population, but also are exported to 80 countries and regions where they are consumed at high rates.

Today, Traditional Chinese Medicine is still widely used in China, and many people prefer to order their medicines directly, rather than going to the hospital to fill their prescriptions. However, the treatment effect of the Traditional Chinese Medicine and diseases are commonly detailed in traditional Chinese characters and grammar, which is difficult for the modern Chinese person— including those who study the Chinese characters— to understand. Therefore, I aimed to design a series of pictograms that will help users, both Chinese and foreigners, to quickly understand the effects, usages, attentions of Traditional Chinese medicine.

In this paper, I present my research developing new pictogram design methods based on the formative methods of Dongba pictographs. The feasibility of these pictogram design methods was tested through application to Traditional Chinese Medicine (TCM). TCM pictograms were made to represent an apparatus, a position of the body or symptom, or a person's action. The Dongba pictographs' abundant representations of shape and action, will be beneficial for pictogram communication in this domain.

1. FORMATIVE METHODS OF DONGBA PICTOGRAPHS

The Dongba, Tomba or Tompa script is a pictographic writing system used by the "Dongba" (Bon priests) of the Naxi people. The Dongba pictographs were developed by the Naxi ethnic group in southwest China about 3,000 years ago. In the Naxi language, this script is called "wood record, stone records" (Cook). Together with the syllabic Geba script and the Latin alphabet, it forms a component of the Naxi script. It is considered the only unique pictograph language extant in the world today. The formative methods of the Dongba pictographs can be summed up as follow (Zheng, 2005; Wang, 1996).

1. 1 Hieroglyph

The Dongba characters were developed through the drawing of plants, animals and other objects found in nature, using hieroglyphs as the base. Simplified strokes were used to present ordinary objects, such as [glyph] (cloth) and [glyph] (vehicle).

1. 2 Transformation

Transformation is a method of producing new characters by transforming the shape of old ones. The old and new characters are then related in terms of meaning and pronunciation. For instance, [glyph] (broken tree) is produced from breaking the shape of [glyph] (tree).

1. 3 Simple Indicatives

Characters of this sort use geometric forms to illustrate abstract concepts such as quantity, state or action. For example, [glyph] (separate) shows its meaning by illustrating two circles divided by two curves.

1. 4 Adding Abstract Symbols on Hieroglyphs

Characters in this category are composed by adding abstract symbols, such as dots and lines, on existing characters. For instance, [glyph] (dread) shows its meaning by adding several trembling lines on the character [glyph] (shock).

1. 5 Compound Indicatives

In Compound Indicative pictographs, several characters are combined to indicate a new meaning. For instance, [glyph] (sleep) is represented by depicting a man lying on a bed, with trembling line near his mouth to indicate snoring.

1. 6 Phono-semantic Compound

Phono-semantic Compound creates a new character by linking together a character with a related meaning (the semantic element) and another character (the phonetic element) to indicate its pronunciation. For example, the character [glyph] (village, pronounced *be*) is formed by combining [glyph] (room) which indicate meaning and [glyph] (pronounced *be*) which indicate pronunciation.

2. PICTOGRAM DESIGN METHODS BASED ON DONGBA PICTOGRAPHS

2.1 Pictographic Representation

Pictographic representation is the basis of hieroglyphic writing. The Dongba pictographs have a strong picturesque character, and most of them depict physical object. In addition, though Dongba pictographs are progressively simplified and stylized over the course of their development, the picturesque characteristic was not weakened greatly, as is the case for the Chinese characters. Because of their visual characteristics, the Dongba pictographs are perspicuous and easy to understand. Moreover, the vivid appearance of the Dongba pictographs has aroused the interest of modern people who are tired of mechanical forms surrounding them.

Realistic and direct style is commonly used in pictogram design. Thus, the Dongba pictographs become a valuable source to study.

2.1.1 Depicting the Image of an Object Directly

Depicting the figures of the objects using concise lines is the most common method. The Dongba pictographs are typical in this respect, depicting many objects through their outlines, such as [glyph] (tree), [glyph] (leaf).

Some Dongba characters can be retained without change for their graphical nature and fairly realistic style. I designed a pictogram of "man" by depicting the image of a person with concise lines based on the Dongba pictograph [glyph] (man).

2.1.2 Transforming from the Existing Images

Transforming is a characteristic method often used in the formation of Dongba characters. By transforming the shapes of existing pictographs, many new characters

were produced. Furthermore, since the new characters are related in meaning to the original ones, they are easily interpreted. The methods of transforming often used in Dongba pictographs are listed below.

a) Extending: 大 (I) represents a man pointing towards himself. It is formed by extending the arm of 夫(man).

b) Distorting: (whirlwind) is represented by distorting the shape of ☰(wind).

c) Direction-changing: the meaning of is "food"; turning it upside-down makes (lack of food).

d) Cutting and simplifying: (eclipse) is a new character produced by cutting some part of (sun).

e) Part-enlarging: (body) is transformed from 夫 (man) by enlarging the body part of the character in particular. (fat) emphasis the body much more.

These methods can easily be used in modern pictogram design. For instance, I designed pictograms for "General Weakness" by transforming the pictogram of "Man" .

2.1.3 Representing an Object with the Help of Correlative Objects

Some objects are difficult to depict or easily confused when represented alone. Thus, when creating pictograms for these objects, related objects such as surroundings, attachments and contents should be represented together. Hence, the Dongba character (brow) is represented with the help of (eye).

This method is also helpful in modern pictogram design, as illustrated in our pictograph for "Corn" . Since the shape of the corn could easily be confusing when represented alone, I presented it with the help of a foot.

2.2 Abstract Representation

It is obvious that the opportunity for concrete representation is limited. For example, bodiless substances and abstract concepts are difficult to depict using concrete graphics. Thus, the ancient people attempted to use abstract symbols to form new characters.

2.2.1 Using Abstract Symbols

Some concepts in Dongba pictographs are represented by geometric forms such as points, lines, and shapes. They are used to represent formless object such as (air) and (wind); to represent abstract concept such as (center) and (middle); to represent activity such as (hang) and (cover); and to represent state such as (high) and (straight)

In modern times, pictograms composed of geometric forms have gradually been added. They have wider applicability and potential and are more compatible with the concepts related to modern life.

Using this method, I designed a series of pictograms concerning "pain". "Pain" is an abstract concept, and there are many types of pain. After designing a basic symbol indicating "pain", I can combine this "pain" symbol with concrete or abstract components to express various types of pain. Thus, I created a symbol with a zigzag line to

symbolize the unpleasant sensation of pain, and then developed several pictograms to represent different kinds of pain based on the "pain" symbol, such as "Throbbing Pain", "Stabbing Pain", and "Intermittent Pain".

2.2.2 Adding Abstract Symbols to Pictographs

This is another effective method widely used in Dongba pictographs to produce new forms. It extends the capacity for expression by adding abstract graphics to concrete shapes. Several types of abstract symbols are frequently used in Dongba pictographs (Cook).

a) Dots: to represent a large quantity: (crowd); to represent powder or granular things: (sand); to represent liquid: (alcohol).

b) Trembling line : to represent shaking or vibration: (shock); to represent a ray or smoke: (rainbow), (hot); to represent a sound from animals or nature: (tweet).

c) Interacting (crossed) lines: to represent talking over or a dispute: (quarrel); to represent attachment or correlation: (companion, spouse) symbolizes a man and a woman hand in hand.

d) Block: blocks like , , represent almost all things that need not be said clearly; in other words, the abstract concept of "something". For instance, (nip) is to nip something with a (pinchers).

As this method combine the advantage of both concrete and abstract graphics, it largely expands the options available for expression.

To put this method into practice, I designed pictograms for "Frequent Urination"(Figure 1) and "Difficult Urination" (Figure 2) by adding lines or dots, to symbolize the large or small quality of the urination, to the figure of a person with an emphasized penis.

Figure 1

**Frequent Urination   Difficult Urination   Bruise
Figure 2   Figure 3**
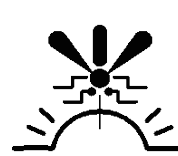
**Figure 4   Figure 5   Figure 6
Constipation   Insect Bite   Stab Wound**

2.3. Combining Meaning-Bearing Components

2.3.1 Graphical Aggregate

Most of the Dongba pictographs with several components belong to this category. The meaning of the new character

always equals simple combination of the components' meanings. An example is the character ⬡🎋, which is composed of the pictographs for 🎋 (sit) and ⬡ (stone). Its meaning, "to lean against a stone", is the combination of the meaning of the two component characters.

Using this method, I designed a pictogram for "Bruise" (Figure 3). The main element is a falling person, with abstract symbols attached to strengthen the dynamic state. The line which symbolizes steps below the person also helps to express the meaning clearer.

2.3.2 Combining Several Components to Represent Complicated Meanings

A picture always conveys much more information than a word. Many Dongba pictographs can represent complicated meaning as if they are sentences, as in 𝕏𝕏 (slaves escaped together). By combining several concrete and abstract components, it is possible to visualize movements, changes, operations and complicated concepts such as situations.

I designed pictograms for "Constipation" (Figure 4), "Insect Bite" (Figure 5) and "Stab Wound" (Figure 6) by combining multiple components to represent complicated meaning. The pictogram "Constipation" represented the complicated concept of "difficult evacuation of dry, hardened feces from the bowels". The pictogram for "Insect Bite" represents the situation of "swelling after being bitten by an insect".

3. QUESTIONNAIRE AND ANALYSIS

3. 1 Practice of the Questionnaire

A questionnaire about the readability of the pictograms I designed for the Traditional Chinese Medicine had been carried out. In total, 225 effective replies were received.

3. 2 Contents of the Questionnaire

The questionnaire was divided into three sections. Anticipants were asked to write the meaning of the unknown pictograms in questionnaire I, to answer if they think the design concepts had been properly represented in questionnaire II, and to select the most suitable design for the same concept in questionnaire III.

3. 3 Results and Analysis

With regard to the readability of the pictograms I designed for the Traditional Chinese Medicine, I got similar results through questionnaire I and questionnaire II. In brief, I learned that those pictograms designed using the methods based on the Dongba pictographs were considered readable by most of the respondents (In questionnaire I, an averge of 77.24% of the respondents gave the correct answers. In questionnaire II, an average of 75.94% of the respondents thought the meanings of the target pictograms were represented clearly).

CONCLUSION

The result of the questionnaire about the readability of the pictograms I designed for Traditional Chinese Medicine show that the new design methods based on the Dongba pictographs are effective for pictogram design. Several other conclusions will also be beneficial to our future research.

a) The methods of pictographic representation were proven to be effective in creating readable pictograms.

b) The most difficult task is to represent abstract meaning using purely abstract forms. However, the method of adding abstract symbols to concrete shapes and systematic representation may result in more readable designs. This is an area for study in our future research.

c) The same meaning can be represented by different pictogram designs. We should explore the suitable design according to the target subjects and circumstance.

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