1. Introduction

Communication through pictographs becomes essential in our daily life nowadays. However, there are still several unsatisfying issues remain unsolved in pictograph design. ① Lots of pictograph designs are short of logicality and systematicess. ② Complicated meaning are difficult to be conveyed by pictograph. ③ Design style of pictograph is monotonous and inflexible images were generally used. Dongba pictographs maintained high level of hieroglyphic character as the only unique existing pictograph being used today while Tangut script is a writing system full of logical and systematic character. We think that design methods based on the formative methods of Dongba pictographs and Tangut script would produce a set of effective design methods with potential applications for pictograph design.

In this paper, we present our research on the new pictograph design methods based on the formative methods of Dongba pictographs and Tangut script and testified their feasibility with pictograph design application on Traditional Chinese Medicine.

2. Formative methods of Dongba pictographs and Tangut script

2.1. Formative methods of Dongba pictographs

The Dongba pictographs were developed by the Naxi ethnic group in southwest China 3,000 years ago. It is considered as the only unique existing pictographs in the world today. The formative methods of the Dongba pictographs can be summed up as: hieroglyph; transformation; simple indicatives; adding abstract symbols on hieroglyphs; compound Indicatives; phono-semantic Compound.

2.2. Formative methods of Tangut Script

The Tangut script was an obsolete logographic writing system, used for writing Tangut language in XiXia Dynasty. Tangut characters can be divided into two classes by their structures: simple and composite. The latter are more numerous. None of the Tangut characters are pictographic. There are many types of composite characters such as associative compounds, interconverting characters and symmetrical characters.

3. New pictograph design methods based on the formative methods of Dongba pictographs and Tangut script

3.1. Pictographic representation

1) Depicting the image of an object directly, such as (tree), (leaf). Pictograph of “man” (Fig1) was also designed by depicting the image of a person with concise lines.

2) Transforming from the existing images. For instance, (I) represent a man pointing towards himself. It is formed by extending the arm of (man). With this method, “general weakness” (Fig2) was designed by transforming the pictograph of “man”.

3) Representing an object with the help of correlative objects. Such as the Dongba character (brow) is represented with the help of (eye).

3.2. Abstract representation

1) Using abstract symbols purely to represent formless objects, abstract concept, etc. such as (wind), (center), (cover), (high).

2) Adding abstract symbols on pictographs. For instance, (shock) shows the state of trembling of a worm by adding trembling lines on it. Pictograph of “frequent urination” (Fig3) was designed by adding lines which symbolize the large quality of the urination on the figure of a people with an emphasized penis.

3.3. Combining meaning-presented components

1) Graphical aggregate is to combine the components’ meanings simply. As is the situation of the character (to lean against a stone), which is composed with the pictographs of (sit) and (stone).

2) Adding new component on the basic one. For instance, (thin) plus radical (tree) makes (thorn); (thin) plus radical (metal) makes (needle). With this method, pictograph of “pregnancy”
(Fig6) was designed by adding a child on the pictograph “empty abdomen” (Fig5).

3) Replacing some components of the character with other components, as the Tangut character ipp (forget) is composed by replacing the left part of ipp (heart) with the right part of ipp (non-existence).

4. Characteristic design methods from the formative methods of Dongba pictographs and Tangut script

4.1 Using combination methods to express meanings

1) Taking advantage of orientation. For instance, ipp (kick) is presented by two people who are lifting up their feet in opposite directions, while ipp (follow) is presented by two people who are walking in the same directions. With the same method, pictographs for “bad appetite” (Fig7) and “good appetite” were designed (Fig8).

2) Taking advantage of size. For instance, the Dongba character ipp (father and son) is composed by ipp (father) and ipp (people, son). ipp is presented in smaller size to indicate his lower status.

3) Taking advantage of the relative position. For instance, ipp (hold in the arm) depicts a woman and a baby in her arms; ipp (give birth to) depict a baby underneath a woman.

4.2 Systematic representation

1) To make meaning group. That is to say, to create similar forms for pictographs with similar meaning or to make pictographs in the same domain containing same components. For instance, Tangut characters with the radical ipp (metal) means that their meanings are related with metal, such as ipp (pan), ipp (saw), ipp (knife) and ipp (tin).

2) To make meaning network. We can first design several basic meaning components and then compose them together. Such as in characters composed with components ipp (mouth) and ipp (water). ipp (mouth) is formed by combining the radicals ipp (mouth) and ipp (human). Putting two mouth radicals together makes ipp (lips). Changing the human radical into water radical makes ipp (spittle); and by inserting the water radical into ipp, ipp (saliva) is created.

With the method of systematic representation, series of pictographs about the diseases in the eye, ear and nose by using the symbols of eye, ear, nose, liquid, mucus, pressure, etc. had been designed.

5. Questionnaire and analysis

A questionnaire about the readability of the pictographs we designed for the Traditional Chinese Medicine had been carried out. The questionnaire was divided into three sections. Anticipants were asked to write the meaning of the unknown pictographs 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.

Table1. Result of the questionnaire II

<table>
<thead>
<tr>
<th>item</th>
<th>Represented clearly</th>
<th>Can not say which</th>
<th>Do not represented clearly</th>
</tr>
</thead>
<tbody>
<tr>
<td>man; woman; child</td>
<td>100%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>pregnancy</td>
<td>100%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>bad appetite; good</td>
<td>100%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>corn</td>
<td>85%</td>
<td>10%</td>
<td>5%</td>
</tr>
<tr>
<td>runny nose; tearing</td>
<td>85%</td>
<td>15%</td>
<td>0%</td>
</tr>
<tr>
<td>lumbago</td>
<td>80%</td>
<td>5%</td>
<td>15%</td>
</tr>
<tr>
<td>bruise</td>
<td>80%</td>
<td>15%</td>
<td>5%</td>
</tr>
<tr>
<td>tinnitus</td>
<td>80%</td>
<td>20%</td>
<td>0%</td>
</tr>
<tr>
<td>high fever</td>
<td>75%</td>
<td>20%</td>
<td>5%</td>
</tr>
<tr>
<td>general weakness</td>
<td>65%</td>
<td>15%</td>
<td>20%</td>
</tr>
<tr>
<td>intoxicated</td>
<td>60%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>insect bite</td>
<td>50%</td>
<td>30%</td>
<td>20%</td>
</tr>
<tr>
<td>medicine for nose; medicine for eye; medicine for ear</td>
<td>50%</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>photophobia</td>
<td>45%</td>
<td>35%</td>
<td>20%</td>
</tr>
<tr>
<td>pain; throbbing pain</td>
<td>10%</td>
<td>40%</td>
<td>50%</td>
</tr>
<tr>
<td>Average</td>
<td>71%</td>
<td>16.7%</td>
<td>12.3%</td>
</tr>
</tbody>
</table>

The result of the questionnaire proved that the pictographs of Traditional Chinese Medicine were considered readable by most of the respondents. According to the evaluation about the pictographs, relationship between the readability and design method of the pictographs had been investigated. The methods of pictographic representation and systematic representation are proved to be effective to create readable pictographs, while representing abstract meaning with abstract form is the most difficult point.

6. Conclusion

Based on the pictograph design application on Traditional Chinese Medicine and the result of the questionnaire, conclusion can be drawn that pictograph design based on Dongba pictographs and Tangut script comprises a set of effective design methods.

On this basis, we can extend these theories to other fields of modern design such as signs, graphics, and information designs. The huge potential of the formative methods of the ancient Asian character is awaiting further development.

References

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