Research on Creative Transformation of Excellent Traditional Chinese Culture: Taking interaction design of traditional handicraft culture translation as an example

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The current mobile apps of traditional handicrafts fail to deeply explore the culture connotation and artistic features of traditional handicrafts, leading to the weakening of the artistic value of all levels of culture contents in the traditional handicrafts design, which is not conducive to the effective transmission of culture contents in the traditional handicrafts. Based on Malinowski's theory of "three factors in culture", this paper proposes to extract typical cultural elements from the material, behavioural and spiritual aspects of traditional handicraft, the different levels by direct translation, continuation of translation and indirect translation method for traditional handicraft class APP interaction interface, interaction design, interactive content to provide design elements, The generalised cultural content is transformed into design symbols with identifying characteristics, which can be applied to the interaction design of traditional handicraft mobile APP. The interaction design strategy is proposed to provide new design ideas and references for the interaction design of traditional handicraft mobile APP.

1. INTRODUCTION

As the materialised remains of folk culture and spiritual culture, Chinese traditional handicraft plays an important role in Chinese history and culture. Domestic scholars have also made corresponding explanations for the fundamental content of the inheritance of Chinese traditional handicrafts. Pan Lusheng believes that traditional crafts are the treasure of design education, and it is necessary to pay attention to inheriting the specific and fundamental contents of traditional crafts such as traditional shapes, subject styles, material tools, and technique (Panlusheng 2018). However, with the rapid development of national economy and technology, some traditional cultural forms representing China's unique cultural values have gradually disappeared from people's view, and many traditional crafts, folk arts and folk skills are on the verge of disappearing, and the living environment is increasingly worry (Liuqiming 2015). The arrival of the mobile Internet era has brought an opportunity for the "activation" of Chinese handicrafts. Traditional handicrafts are diversified through the mobile Internet platform in the form of vivid, real and close to the life (Zhaofeng 2018). By downloading traditional handicraft APP, users can intuitively, vividly and interestingly understand and learn the cultural content of traditional handicraft. Everyone has the opportunity to participate in cultural innovation and inheritance. Mobile Internet platform provides a new cultural communication medium for the inheritance of traditional handicraft in the new era. In respect and reduction, on the basis
of the foundation of culture contents in the traditional handicrafts, how to improve the effectiveness of the traditional handicraft class APP culture contents dissemination, interest and artistic problems worthy to be discussed at the present, let the user feel the traditional handicraft culture content at the same, also can obtain smooth operation experience, and deep cultural connotation.

2. STATUS QUO AND EXISTING PROBLEMS OF TRADITIONAL HANDICRAFT APP

In recent years, a lot to spread traditional handicraft culture as the content and combining with digital media technology in the mobile terminal APP online, covering the cultural education, games, interactive, interest cultivation, and other fields, can make the traditional handicraft culture content in a more well form of the spread of public life scene, and accepted by the public. For example, a series of high-quality apps, such as Daily Palace Museum, Folding Fan and Mortise, are launched on the iOS APP platform, focusing on the inheritance of traditional handicrafts, folk arts and folk skills. For example, the Palace Museum APP introduces the cultural relics in the Palace Museum into the public life through daily presentation, effectively spreading the culture of the Palace Museum. Folding fan APP conveys the production process of folding fans to the public through interactive animation. Mortise and tenon joint of the shapes in the form of a 3d model to display in the app of Mortise and tenon, the user can be 360 degrees to observe the process structure of mortise and tenon joint, the APP is effective to a certain extent, the spread of the culture content of traditional arts and crafts, and interface screen beautifully smooth interaction experience, rich in content and interesting, also become each big APP store recommend high quality APP. It has been well received by the majority of users. At present, the innovative design of traditional handicrafts has quickly become a hot spot in the Internet industry. The use of mobile Internet platform to spread the cultural content of traditional handicrafts have greatly broken the transmission limit. The public can experience the cultural content of traditional handicrafts in more convenient and rich forms, and interact with the characters, stories and scenes in traditional culture.

Representative cases of highly used traditional handicraft apps with existing users in android APP store and iOS APP store were selected and analysed respectively. After investigation, it is found that many traditional handicraft categories only directly transfer the content and elements of traditional handicraft into the interface design, and rarely dig into the cultural connotation and characteristics of design objects, resulting in poor aesthetic quality and separation of function and form in interface design. Especially in the information architecture of interaction, there are tedious and unclear hierarchical problems, which greatly hinder the cognitive learning of users in the process of interaction, resulting in poor cognition and experience of users.

In the face of such situation, how to make use of the mobile Internet platform, realise the more traditional handicraft culture information, accurate, in-depth inheritance and transformation, make its cultural content and expression form unified, traditional handicraft culture content nature vividly into the APP design of each link, so as to achieve the best translation of traditional handicraft culture content, enhance the effectiveness, interest and artistry of cultural information dissemination in traditional handicraft APP, so that users can experience the deep cultural connotation and get smooth operation experience.

3. CULTURAL TRANSLATION OF TRADITIONAL HANDICRAFT IN THE CONTEXT OF MOBILE INTERNET

"Cultural translation" in the context of mobile Internet refers to the process of transmission and dissemination of traditional cultural information through Internet media, which includes the extraction and processing of visual elements such as patterns and patterns in traditional cultural information, the extraction and coding of user behaviour habits, and the sublimation of cultural spirit connotation (Wangjing 2016). The definition of "cultural translation" in this paper refers to the accurate and comprehensive interpretation of cultural information, and the process of information extraction, interpretation, translation, design, expression, reorganization and dissemination. The traditional handicraft culture information associated with the interaction design of mobile APP, make the interaction design as an important tool to translate traditional handicraft culture information, the generalization of the cultural information into design symbol recognition characteristics and applicable to traditional handicraft class APP interaction design, let the user feel the traditional handicraft culture content at the same time, You can also get a smooth operating experience and a deep cultural connotation.

4. CULTURAL TRANSLATION AND CONSTRUCTION ORIENTED TO TRADITIONAL HANDICRAFT

The theory of "three factors in culture" means that culture consists of three levels: the level of utensils, which indicates what kind of tools and utensils are used by the country and society to produce and
This article is based on the concept of cultural translation theory of “three factors in culture”, to inheriting the traditional arts and crafts tradition modelling, artistic features, craft techniques, materials, tools and other specific contents as the goal, respectively from implements, organization layer and spirit layer select a representative traditional handicraft culture elements as target design expression, transfer and application of direct translation, continue, indirect translation method, To achieve systematic interpretation, translation and dissemination of traditional handicraft cultural information (Hexuemei 2018).

Material level translation of traditional handicraft cultural contents based on artifacts layer: Utensils layer represents the dominant visual elements of traditional handicraft, such as patterns, utensils type, colour matching and other features that can convey traditional meaning. The public can understand the aesthetic value of traditional culture material layer superficially through visual language. Behavioural translation of traditional handicraft cultural contents based on the organizational layer: refers to the implicit behavioural elements of traditional handicraft, such as the transfer of traditional techniques, methods, processes and tools, etc., and spiritual translation of traditional handicraft cultural contents based on the spiritual layer: The spiritual level represents the philosophy, history and culture, customs and habits, myths and legends, and humanistic concepts inherited from traditional handicrafts. The spiritual level transmits the cultural connotation of traditional handicrafts to the public. The mapping between the two provides theoretical support for sorting out the translation levels of traditional handicrafts, as shown in Table 1.

The core of the translation of traditional handicraft cultural information is how to translate the representative cultural elements of material layer, behaviour layer and spirit layer into the interaction design of traditional handicraft APP in a real and natural way. The application methods of cultural translation can be divided into direct, continuous and indirect translation methods (Lizhirong 2018). Direct translation is to graphically process the representative and visible content in the material level of traditional handicrafts by simulating the appearance of objects, forming recognizable image symbols, which will be used as the visual carrier of interface design elements. Continuous translation is to express the information that is not highly visualised and requires certain association to be correlated. The production techniques, tools and processes of traditional handicrafts are continuously translated into the situational fit of interactive gestures, animation effects and operational feedback in APP interface. Indirect translation is used to express the strongly suggestive and completely invisible information, such as the philosophical thoughts of traditional handicrafts, religious beliefs, history and humanities, etc., by recessive correlation between invisible content and visual symbols, and then re-creation with objective things as the reference. It integrates its spiritual culture into visual images and indirectly translates the spiritual core of traditional handicrafts through concrete and multi-sensory interactive content. Continuation and indirect translation directly by using the method of traditional arts and crafts representative cultural elements reasonable translation and different levels of applied to traditional handicraft APP interaction interface, interaction design, interactive content, thus its excellent traditional handicraft culture content, the real naturally translated into the interaction design of traditional handicraft APP. The interaction design framework of traditional handicraft APP based on cultural translation is shown in Figure 1.

| Cultural level | Concept definition | Translation of traditional handicraft culture |
|----------------|--------------------|---------------------------------------------|
| Implements layer | What kind of tools does society use to live | It mainly shows the components of dominant visual elements, such as pattern, shape, colour value, colour matching and other material levels |
| Organization layer | How does society organise individuals to interact with production and life | It mainly shows people’s life scenes of production and active labour, such as techniques, methods, processes and tools |
| Spirit layer | Represents the different values, behaviour choices, etc., of each society | It mainly displays the philosophical ideas that have been inherited from traditional culture, such as history, humanity, customs and customs, and religious myths |

Table 1: Translation of traditional handicraft cultural content based on “three factors in culture” in cultural translation
Figure 1: Interaction design framework of traditional handicraft APP based on "Cultural three-factor theory" in cultural translation.

Figure 2: The direct translation of the material aspect of traditional handicraft.
5. INTERACTIVE DESIGN STRATEGY OF TRADITIONAL HANDICRAFT MOBILE APP BASED ON CULTURAL TRANSLATION

Direct translation of the material level of traditional handicraft: The cultural content of the material level of traditional handicraft is mainly composed of some explicit visual elements, such as decorative patterns, styles and forms, colour value matching and text symbols that can convey cultural meaning. When making traditional handicraft material directly translated, first of all, there are a lot from the culture content of extract the symbolic significance of typical cultural elements, to filter out the cultural elements in translation of information extraction and processing, for each of the elements of colour, composition, shape, texture, style and rhythm of abstract and concrete, static or dynamic elements extraction, After extraction, elements with similar characteristics are disassembled, and then graphic design methods such as deconstruction, isomorphism and repetition are used to construct new and identifiable image symbols (Wangweiwei 2018). These recognizable graphic symbols serve as visual vectors for interface design elements such as navigation bars, banners, TAB bars, functional buttons, and background images. In this process, the typical cultural symbols on the material level of traditional handicrafts are correlated with the controls on the APP interactive interface, so that the public can directly understand the aesthetic value on the material level of traditional handicrafts through the image symbols in the interface. The direct translation of the material aspects of traditional handicrafts is shown in Figure 2.

The main content of traditional handicraft behaviour is production technology, production tools and production process. The interaction design of mobile terminals focuses on the possible behavioural operations of users and how the product should cooperate with and respond to user behaviours (Haolibin 2015). At the behavioural level, cultural translation can use guidance and simulation methods to associate and transfer the behavioural habits generated by users in the process of understanding traditional handicrafts and translate them into interactive gestures, animation effects and operational feedback in the APP interface. Combined with the process production situation and the tools needed, observe people’s behaviour and habit of using tools in daily life, transform the design into interface interactive operation and interface feedback, control various professional tools through interactive operation, guide users to complete the whole production process. In interface interaction design, users’ natural behaviour habits and applications are extended and translated to bring users a natural and smooth operation experience. Achieve the purpose of improving product consistency, ease of use and learnability. The continuous translation of traditional handicraft behaviour is shown in Figure 3.

Figure 3: Interactive design of behavioural information of Canton glazed porcelain APP.

Indirect translation of the spirit of traditional handicraft: The main content of the spirit of traditional handicraft is the history and humanities, customs and habits, myths and legends, humanistic ideas and so on, which are usually immaterial, abstract, implicit and introverted. The public needs to feel its spiritual core through experience and association. Indirect translation in traditional handicraft spirit, first to deal with the main content of the traditional craft of spiritual information extraction, choose the most representative and conforms to the culture spirit of traditional handicraft of subjectivity, because of the culture spirit of traditional handicraft is usually representational and hidden, so will non-figurative cultural spirit recessive associated with visual symbols, And objective things as a secondary reference for creation, and then through the use of narrative design to generate interactive scenes, with space, time, light, sound and other sensory experience interaction effects, enhance the public experience into a multi-sensory visual interactive environment, convey the spiritual core of traditional handicrafts. At the same time, the interaction interface and interaction design level also affect the user’s perception and interaction with the spiritual level. The indirect translation of traditional handicraft spirit is shown in Figure 4.
Figure 4: A continuation of the behavioural translation of traditional handicrafts.

Figure 5: Extraction and construction of Canton glazed porcelain visual information.

Figure 6: Interactive interface design on the material level of Canton glazed porcelain APP.
6. DESIGN PRACTICE OF TRADITIONAL HANDICRAFT APP BASED ON CULTURAL TRANSLATION -- TAKING CANTON GLAZED PORCELAIN APP AS AN EXAMPLE

Canton glazed porcelain is a kind of coloured porcelain handicraft with strong Oriental characteristics produced in Guangzhou, China. Its firing technique is the representative of glaze painting, which has important cultural and historical research value. Taking Canton glazed porcelain as an example, based on cultural translation and combined with the design principles of APP, this study proposes the design strategies in the interactive interface, interactive content and interactive design of traditional handicrafts APP and carries out interface interactive design to improve the effectiveness, interest and artistry of cultural information dissemination of traditional handicrafts APP. Improve the user experience of traditional handicraft apps.

Direct translation of Canton Glazed Porcelain APP on material Layer: On the material level of mobile APP, the author studied the characteristics of representative visual elements such as patterns and ornaments, object types, colour value and colour matching on the material level of Canton glazed porcelain through in-depth research and analysis of a large number of objects and pictures. Selecting typical images, sorting, analysis, to select the sample pattern, colour, rhythm, and the composition characteristics of direct extraction, obtain colours, patterns, composition and rhythm elements extraction. Extracted out wide colour porcelain features and fancy design through the deconstruction, isomorphism and design method of repeated design combined with modern elements. It is also applied to interactive controls, label bars, navigation bars, lists, etc., so that the typical image symbols of traditional handicrafts are correlated with the interactive interface controls of APP. The public can directly understand the aesthetic value of traditional handicrafts through the image symbols in the interface (Liuxu 2020). Visual information extraction diagram is shown in Figure 5.

In the design practice of APP at the material level, the representative golden colour and aqua blue colour of Canton glazed porcelain are extracted as the theme colour to establish the overall colour tone of APP. The characteristic patterns and fancy features of Canton glazed porcelain are extracted, and the design is developed with modern elements, which are applied to interactive controls and background decoration. The function keys on the main page are distributed in drawer style, simplified in form, so that the overall style is unified, and the local font highlights the traditional form with vertical version. The main interface mainly displays the artistic features of Canton glazed porcelain, and directly translates the material knowledge content of Canton glazed porcelain, such as modelling styles, patterns and themes, through text information, 3D models and knowledge cards. The physical interface design is shown in Figure 6.

Continuing translation of the behavioural dimension of the Canton glazed porcelain APP: In the behavioural level of mobile APP, it is convenient for users to have a clearer understanding of the firing techniques and tools of Canton glazed porcelain. The author through to the traditional handicraft content, mainly by the skills, tools, procedures and so on in-depth research and analysis. The main content of the process is disassembled, and then the association and simulation are carried out according to the tools required for each step and the user’s cognition and operation habits of the tools, so as to match the corresponding interactive gestures, animation effects and operation feedback. Corresponds to the situation of the production process and the required tools, by understanding the behaviour of the people to use tools in daily life to deduce to interface interaction and interface design of feedback operation, guide the user through the “click”, “sliding”, “drag” and other attempts to operate a variety of professional tools to complete the whole process of Canton enamel porcelain production. Through the continuous translation of APP’s behaviour level, the interactive experience between users and mobile applications is strengthened to bring users a natural and smooth operation experience, so as to achieve the goal of improving product consistency, ease of use and learnability. Behaviour information extraction and construction are shown in Table 2.
### Table 2: Extraction and construction of interactive behaviour information of Canton glazed porcelain.

| The process flow | Drift plans | Choose letal porcelain | Mixed pigment | Coloured drawing or pattern | Pack oven |
|------------------|-------------|------------------------|---------------|-----------------------------|-----------|
| Contents summary | Design the whole composition and complete the preliminary drawing. | Choose glazed enamel, not yellow, not black. Not deformation, can use porcelain clay. | Pour the pigment powder into the bowl, and use the right color to mix the pigment. | (1) Roasting, turning, being hot. The first step of the painting is to prepare. That is, in accordance with the design pattern, the first step is to mix the pigments to the appropriate concentration. | Furnace. Put the large and thick pieces on the bottom of the slab and the small and thin pieces on the top. After entering the kiln, the temperature should be gradually heated, and the temperature in the kiln should be kept uniform to avoid sudden cooling and sudden heating and uneven heating. After 72 hours, the temperature in the kiln will slowly reach 1000°C. When the temperature in the kiln reaches 1000°C, it is necessary to slowly reduce the temperature and let the kiln cool down. After burning, wait for 2 hours before opening the furnace cover. |

| Tools required Place | Tools required Paper, Drawing Brush | Porcelain Pigment Powder | Tracing Baud Color Hammers, Water, Glue, Bamboo Shovel, Vegetable St. Porcelain | Porcelain pigments, Ink, Marker, Stipple, Drawing Brush | Porcelain clay, Porcelain thermocouple |
|----------------------|-----------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Behavioral information extraction | On the paper with the outline brush for composition, complete the first draft of the design. | In many different characteristics of the person, not porcelain, not porcelain in the composition to make | Before the porcelain powder into the bowl, add water and glue, and the mixture is then rinsed, and finally add the appropriate amount of vegetable oil and use bamboo brushes to adjust to a suitable concentration. | According to the design pattern, the ink, pen, and ink strips are used to determine the pattern composition and draw the edges on the porcelain body. The painting brush is dipped into the porcelain body to describe the pattern. After the composition, the color is filled in and the edges are drawn, and the edges are softened finally. | Put the porcelain into the oven, and watch the thermometer to control the temperature. |

| Behavioral information construction | 1. Select the drawing part | 1. Check the characteristic of porcelain body | 1. Select the design pattern | 1. Select the painted porcelain body | 1. Select the painted porcelain body |
|-----------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 2. Trace the design on the paper  | 2. Judge the quality of porcelain body | 2. Select the design pattern | 2. 1. Add water and glue | 2. Add water and glue | 2. Add water and glue |
| 3. Choosing porcelain body        | 3. Choosing porcelain body | 3. Adding water and glue | 3. Add vegetable oil | 3. Add vegetable oil | 3. Add vegetable oil |
| 4. Using bamboo brushes to adjust | 4. Using bamboo brushes to adjust | 4. Using bamboo brushes to adjust | 4. Using bamboo brushes to adjust | 4. Using bamboo brushes to adjust | 4. Using bamboo brushes to adjust |

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**Figure 7:** Interactive interface design of behavioural information of Canton glazed porcelain APP.

**Figure 8:** Interactive interface design of behavioural information of Canton glazed porcelain APP.
In the behavioural design practice of APP, an interactive learning environment is constructed by integrating Canton glazed porcelain firing techniques, tools and process through animation effects, production tools, interactive gestures, operational feedback and sound effects. Users can experience the implicit connotation of Canton glazed porcelain production process through the embodied way of interactive behaviour. The interface design of interactive behaviour information is shown in Figure 7.

Indirect translation on the spiritual Aspect of Canton Glazed Porcelain APP: Canton enamel history origin, is not only the economic and trade exchanges of Chinese and western material entity, also the embodiment of the exchanges between Chinese and western culture spirit image, its historical humanities is the most representative and conforms to the traditional handicraft culture spirit of subjectivity, through choosing Canton enamel porcelain of typical artistic characteristics of each historical periods as well as the exquisite historical background to translate information extraction, The abstract visual representations of the content, and the objective things as a reference for creating again, finally, in the form of story, interest, emotion story building, with sound and light, animation, interactive rendering, strengthen public experience into the feeling, let users through musical background to understand the history of Canton enamel in the plot, Understand the craftsman's spirit that Canton glazed porcelain conveys. In the design practice of APP at the spiritual level, visual presentation of APP interactive content should be strengthened to make it have strong guidance and enhance the sense of integration in public experience. The spiritual connotation of Canton glazed porcelain is indirectly translated through narrative knowledge animation, and the process of historical events is described and demonstrated through each frame of image by using the characteristics of knowledge animation. The effect is realistic, reductive, narratable, temporal and procedural, which effectively reduces the cognitive load of users and enhances the natural interactive experience. Users can understand the artistic characteristics and cultural value of Canton glazed porcelain and the craftsman spirit to be conveyed through the story with vivid emotion. The interface design of cultural information is shown in Figure 8.

In addition, the research also carried out prototype testing, and applied the traditional handicraft APP interaction model and design strategy constructed by cultural translation theory to the APP design practice of Canton glazed porcelain mobile terminal, and gained certain praise in terms of usability. This laid the foundation for further research.

As China increasingly attaches importance to the inheritance and protection of intangible cultural heritage, traditional handicraft APPS, as an important medium for inheritance, play an important role. This study is based on cultural translation theory of "three factors in culture" (Linyifu 2016), put forward from the traditional handicraft material level, behaviour level and spiritual level, methods of extracting typical cultural content elements on different levels by direct translation, continuation of translation and indirect translation method for traditional handicraft class APP interaction interface, interaction design, interactive content to provide design elements (Lizhirong 2018), The interactive design framework of a new traditional handicraft APP is constructed, and Canton glazed porcelain is taken as an example for design practice. It is hoped that this research project can provide an innovative model with practical value for Canton glazed porcelain, which is in the bottleneck of development. The proposed research on the interaction model of mobile APP of traditional handicraft can provide a valuable reference for the inheritance, research and development of traditional handicraft. In this way, the effectiveness, interest and artistry of the cultural information dissemination of traditional handicraft APP can be improved, so that users can experience the cultural content of traditional handicraft and get smooth operation experience and profound cultural connotation, so as to enhance the enthusiasm of people to participate in traditional handicraft and promote the dissemination of Traditional Chinese culture.

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