Analysis of Digital Archives Applied to Value-Added Design in Cultural Products

Chi-Hsien Hsu 1, Po-Hsien Lin 2, and Rungtai Lin 3

1a Graduate School of Creative Industry Design, College of Design, National Taiwan University of Arts, No. 59, Sec. 1, Daguan Rd., Banciao District, New Taipei City 22058, Taiwan

Abstract:

With the development of technology, we see more and more possibilities in the methods of conservation and application for traditional culture. Currently, the content in the data base of digital archives information in Taiwan is quite extensive and versatile. It is necessary to study future applications to add to its value. As cultural innovation industry is the trend of economic development of many countries, the distinctive native cultural features and prosperous digitally archived information of cultural instruments in Taiwan are of great value. This study explored the procedure of value-added design on the basis of “digital archives” transformed into “cultural innovation”. The research includes two phases. In the first phase, we collected theories of product semantics combined with the analysis of culture distinctiveness in order to create the transforming model of cultural product design. In the second phase, we carried out the design and application to review the possibility of digitally archived cultural instruments as applied to the design.

Key words: Digital Archives, Cultural Product, Culture Features

1 INTRODUCTION

As the demands of life increase, the consumer market advances in an era of experience-focus and aesthetic economics. The distinctness of local culture and the structure of innovation-knowledge become the national core competency. Based on science and technology, design innovation through cultural and aesthetic added value has become a competitive advantage of advanced countries. The UNESCO (United Nations Educational, Scientific and Cultural Organization, 2005) thinks the cultural product possesses an economic and cultural nature and becomes a carrier of culture characteristics, values and meaning through the experience of use and keep cultural heritage.

The product attributes of geographic and ethic features are influenced by its essential local cultures and lifestyle. Past manufacturing and technology industries in Taiwan focused on controlling cost, market scale and quality. However, since the latter half of the 20th century, content-based cultural and creative industries have become a highly value-added market because of unique regional cultures and diverse creativity applications. By the transformation and migration abroad of industrial structure we have to endeavor to increase the value and added-value of the product through the design activities of cultural innovation (Ko, Lin, & Lin, 2009).

Recently, Chinese culture has caught the attention of the world not only in the field of design application but also the style of movies. The multi-culture and friendly people in Taiwan have been deemed as our characteristics. The characteristics of traditional culture in Taiwan bring potential application-value in the design field. Regarding the application of cultural innovation, the design is not only to fit consumers’ needs but also to imbed the cultural assets and to show it in an aesthetic way through the product.

Conventional cultural documents are often limited by factors such as difficulties in preservation and sharing. With advancing technology however, digital archives are becoming more developed and common. Current digital archives in Taiwan are increasingly abundant and diverse, and their application and added-values have become noteworthy. This study aimed to examine value-added designs resulting from the transformation of digital archives into cultural creations. Through literature review on digital
archives and creative designs, a transformation model for cultural design product was constructed. Moreover, through actual creation of designs, the effectiveness of the design model was determined, and recommendations for further studies were made.

2 DIGITAL ARCHIVES AND CREATIVE DESIGN

Industries are the driving force behind the development of cultural creativity, and added cultural value can result in innovative value in goods or services. The innovation and application of information technology and the internet have created a new industry in digital content. The Taiwan e-Learning and Digital Archives Program (2008-2012) established the Union Catalog of E-Learning and Digital Archives Program platform to showcase digital media such as digitalized images and audio-video files in the fields of humanities and nature thereby also establishing a rich database of information. Moreover, through international information system that crosses disciplines and organizations, the preservation and innovation of cultural assets and academic research and teaching application can be pursued (National Science Council, 2008).

2.1 Three Cultural Levels

Culture generally refers to styles of human activity and symbolic structures. Moreover, culture has been described as the evolutionary process that involves language, customs, religion, arts, thought and behavior. And, the design and development of cultural products help to improve life quality and the social culture level. Along with technology progress, designing “feeling” into products to present the emotional communication of user experiences became a design trend in the 21st century. From the design point of view, Leong and Clark (2003) even developed a framework for studying cultural objects distinguished by three special levels: the outer ‘tangible’ level, the mid ‘behavioral’ level, and the inner ‘intangible’ level.

Based on previous studies (Leong, & Clark, 2003; Hsu, 2004; Lin, 2007), a framework for studying cultural objects is summarized. As shown in Figure 1, culture can be classified into three layers: (1) Physical or material culture, including food, garments, and transportation related objects, (2) Social or behavioral culture, including human relationships and social organization, and (3) Spiritual or ideal culture, including art and religion. These three culture layers can be fitted into Leong’s three culture levels given above. Since cultural objects can be incorporated into cultural design, three design features can be identified as follows: (1) the inner level containing special content such as stories, emotion, and cultural features, (2) the mid level containing function, operational concerns, usability, and safety, and (3) the outer level dealing with colors, texture, form, decoration, pattern, line quality, and details. In each layer of exploration, this figure can help to focus on the key point when we design a cultural product.

![Fig.1 Three layers and levels of cultural objects and design features (Hsu, 2004; Lin, 2007)](image)

2.2 The Application of Digital Archives

The development of digital technology has affected everyday life and changed conventional learning and research methods. From conceptualization to implementation, digital archives or digital museums have developed rapidly with advances in information technology. Many information technology significant terms have appeared, such as electronic museum, virtual museum and web museum, indicating that museums and archives are digitizing. Without time and space limitations, such digital archives are
available to readers globally. Furthermore, cooperation with schools and community cultural organizations results in value-added information in the digital archives thereby achieving creative learning through their use (Lin, Siao, & Fan, 2006). Through restructuring and innovation, digital archives established by information technology and storage have become the foundation for developing digital content industries.

With increasing diversified applications of digital archives materials, a variety of business models have also emerged. Hsiang, Chen, Chen and Kuo (2005) divided commercial models of digital archive application industries into five categories, namely (1) value-added digital content industry; (2) integrative products; (3) value-added cultural products and cultural innovation industry; (4) added content service for digital products; and (5) digital software technology and service. However, Hsiang, Chen, Cheng and Wei (2004) also pointed out that digital archives cannot be completely and directly adopted, but through the application of cultural characteristics, story themes, anecdotal allusions and even the inspirations of the artist, value-added goods are produced (see Figure 2).

![Fig.2 The application of digital archives in digital content industry (Hsiang, Chen, & Cheng, 2002)](image)

### 2.3 Design Theories Relevant to Cultural Products

Thanks to the improvement of technology, it is easier to implement innovation. In order to satisfy consumers’ demands, the design should be accomplished by the enhancement of investigation of the product and human-product interaction. In the future Industrial Design should concern aesthetics of humanity. Norman (2004) also suggested that a successful design should consider the suitability, practicability and aesthetics of the product in which emotion is the most important factor. The design concept for emotion can be accomplished by the aesthetic value of the product. As a result, the intention of the design gradually focuses on humanity with consideration of the consumers’ feelings when they use the product.

Cultural features are considered to be unique characteristics that can be embedded into a product for both the enhancement of its identity in the global market and individual consumer experience (Handa, 1999; Yair, Tomes, & Press, 1999; Yair, Press, & Tomes, 2001). They could trigger a cultural reflection by consumers through design. In general, the common discussion of cultural applications to the product is the theory of product semantics. For example, Lin and Huang (2002) classify the logic of figurative designs whose forms are based on some reasonable visual connections. It defines visual connections such as metaphor, simile, allegory, metonymy, and analogy borrowed from linguistics, and then systematically analyzes these elaborate relationships between products and the signs. In addition, Butter (1989) suggested that the design process can be seen as somewhat linear with clearly distinguishable phases and suggested eight steps for the systematic generation of semantically relevant design concepts. Based on this literature, an approach was undertaken to integrate the design theories and provide assistance for cultural product design.

A good understanding of the cultural attributes will benefit articulating the context between the culture and product design and therefore accelerate concept development. Based on the cultural product design framework and process of Hsu and Lin (2011), the cultural product is designed using scenario and semantics approaches. And according to literature review and expert opinions, design guidelines are developed based on the research of consumers’ needs, cultural content and design theories. Finally a ten step practical design process divided into four phases was provided to design a cultural product. The four phases are: identification (set a scenario), investigation (tell a story), interaction (write a script), and implementation (design a product) (Hsu, Lin, & Lin 2011).
3 RESEARCH METHOD

We can see the traditional localized culture in our life; the distinctive totem or image intangibly shows up in our life materials. As a result, it is important to understand well the cultural elements and product languages in the field of cultural product design. When we design, we should consider the characteristics in various aspects like tangible materials, traditional custom and spirit. The understanding and analysis will help us to consider the design transformation in order to add the cultural elements into the cultural product. In general, there’s a procedure and model in the development and manufacturing process in each industry. We are wondering if there’s a procedure to apply which can help in the deliberation and transformation during the design process. Lin (2007) taught students to explore the three levels and model of design using the ceramic pot of the Rukai Tribe in Taiwan. In Figure 3, A is the hand bag transformed by the appearance and decoration of the clayware pot which is deemed the transformation of appearance. B is a fruit bowl made of stainless steel transformed by the function and use behavior. C is a hollow candleholder. When we light up the candle, there will be human shadows swaying by the wind like the campfire surrounded by aborigines.

This exploration is to build up the model of the transformation of cultural product design integrating consumers’ expectations and design behavior through Hsu and Lin’s (2011) steps six to ten of the design procedure of cultural products, Lin’s (2007) exploration in regards to cultural products derived from the clayware pot, and Norman’s (2004) three levels of emotional design: visceral, behavioral and reflective level. Having analyzed and synthesized a literature review, we constructed a model for transferring cultural elements into product design. The five implementation steps are: (A) analyzing and selecting the cultural elements; (B) connecting the reasonable relationships between cultural elements and design concepts; (C) selecting the rational concept; (D) developing the concept; (E) completing the design. Steps A, B and C refer to the processes which reciprocally connect the cultural elements and the product. Steps D and E address the rationality and embodiment of the product and maturity of the transformation of the cultural elements (Hsu, Yeh, Lin & Lin, 2012).

When we design a cultural product, we must analyze its property first in order to discover the reasonable connection between cultural elements and the product in each culture. During the design procedure much uncertainty exists which is hard to control by designers. The “design features” and “transformation of design consideration” in Figure 3 help us not only to understand and explore the cultural elements but also to consider the application scope of a cultural product. We will be able to design a product in which there’s cultural transformation of application and product design with cultural elements instead of merely copying the appearance of relics or totem. This model is a reference for designers which can lead logically to an adequate design transformation and expose the cultural elements properly no matter whether the design is transformed from a tangible or intangible culture.

![Fig.3 The transformation model for cultural product design](image-url)
4 DESIGN PRACTICES BY DIGITAL ARCHIVES

Currently, many design ideas arise gradually in the design field compared to the appearance of functional-orientation decades ago. The thought of design trend is not only in the consideration of product’s function and manufacture, but also the focus on cultural heritage and connection, creation of lifestyle, experience of life-taste and the realization of life values. As we are in a period of the prosperous development of cultural innovation industry, the consumer market values the product which contains cultural and aesthetic characteristics.

Through The Transformation Model for Cultural Product Design (Figure 3), the designer endeavors to design experience. As described below, in the actual design, the designer applies Transformational Thinking in Design to the cultural information from digital archives platforms to design different levels of cultural creations and explore the application of value-added designs.

4.1 The Material Application of the Cultural Product

The design of material application is the transfer of cultural elements. We consider the design by the enhancement of color and understanding of totem and application, innovation of the material, extraction of the appearance entirely or partially, enhancement or simplification of the lines, arrangement of tiny aspects, recombination of the structure, etc., (see in Figure 3).

"Gua-Sha" is a traditional Chinese therapy since the Sung Dynasty. The Gua-Sha board is symbolized as a cultural utensil. Through analysis we have found most users of this tool to be females. After consideration of the peony artworks on the big fruit cup made of blue and white porcelain reserved in the Digital Archives held in the National Palace Museum, we also depict it on the Gua-Sha board thus appealing to the elegant taste of females. The peony is the symbol of richness in China. Peony artworks can be applied to active or non-active design with artistic beauty and the use of blue and white porcelain invests classic Asian style into this board. Regarding the shape, the arc is not only elegant but also slim like the female body. The name Ho-Li-Sung was given to this product because of funny assonance of Taiwanese. Consumers will always give knowing smiles when they read the introduction and use it. This board is not only tiny but also friendly to use. The design of peony artworks is popular in literature, painting and clothes and has even become a characteristic culture in China. We can see that this design is derived from the old civilization by adding elements of Chinese culture: to design a product originated from the culture and applied to the life (Figure 4). This design exemplifies the transfer of appearance and was honored by being nominated for the Totem Artworks Revival - 2011 Totem Innovation Award of NPM (National Palace Museum).”

![Fig.4 “Make you happy” Gua-Sha board, design by Chen, H. W., and Tsai, Y. C. (2011)](image)

The concept for the brooch design in Figure 5 originated from the poem “Viewing the Tide in Mid-Autumn” by Northern Song Dynasty poet, Su-Shi, who wrote: “The debut of the full moon heralds the September cold.” The Mid-Autumn Festival, which falls on the 15th day of the 8th lunar month, is one of the three important festivals in Taiwan and also greatly signifies reunion. Therefore the brooch design represents the legend of the rabbit on the moon, and the choice of soft-hued moonstone and white...
Jade visually complements the moon and the rabbit revealing an overall radiance and a touch of longing for reunion with family and friends. This design represented a material transformation and was awarded honorary mention in the 2012 6th Chuying Jewelry Design Competition.

4.2 The Use Behavior Application of the Cultural Product

The design application of use behavior is the transformation of cultural elements. We can explore it by the reservation and extension of the function, the method of operation, the intuition and safety-convenience when in use, the stationary or the track of movement, the structure and assembly, etc., (see in Figure 3).

The design concept in Figure 6 originated from phrases of “The Pipa Tune” of Bai Ju-yi. In the past, people used to put precious article on a jade plate which itself is of high value. We transformed it into a life product as a piggy bank. When we insert different size of coins, the tinkling sound of rolling coins makes us recognize the beautiful wording and aesthetic Pipa sound in this poem. “Pearls dropping on the jade plate” describes the regular tinkling music played by Pipa and the classical melodious sound makes us imagine and think about the ancient times. Consumers not only can feel the fun of the sound “Pearls dropping on the jade plate” but also recall the memory of the pinball machine in childhood.

The visual fun makes users enjoy the use of it because they can see the saving of money and the moving of coins through the transparent material. This product was designed based on the material and experience of use. Consumers will easily feel the aesthetics of Chinese poems in their life and the renewed design innovation for the traditional culture. When we use it, on the other hand, we are also inspired with new recognition of the product. This is the design transformation of use behavior. This design won second place in the Culture and Arts category in the 5th Taiwan e-Learning and Digital Archives Application Competition.

4.3 The Ideology Application of the Cultural Product

The design transformation of ideology is the transformation of cultural elements. We can explore it through cultural characteristics containing special meaning, hearsay legend, the feeling when we use it, the life style, etc., (see in Figure 3).
The calligraphy and literary works such as poetry, Fu, Ci and Qu have a distinctive aroma. The background of artwork “Ying” of Fang Fu-Ming relates to the super moon in 2011. On Saturday, March 19 of 2011, the moon was the closest to the earth since March of 1993. In 2011, earthquake and tsunami disasters also happened in Japan. The design was based on steel by adding the sigh of emotion of the poem “Thinking of You” of Su Shi, the poet of North Sung Dynasty: “People may have sorrow or joy, be near or far apart; the moon may be dim or bright, wax or wane.” The semi-circular support made of steel is like the moon at last quarter. We can see the lunar halo of the full moon through the light. We expect the birds’ chirps and sounds of nature to console us. The wood texture of hickory and the fineness of blue and white porcelain, the equilibrium of elements, vision and structure evoke the throbs of the original concept. It will enrich consumers’ feelings when they use the product as the transformation of ideology (Figure 7). This design is honored to receive the grand prize of the competition of Intermediatheque (IMT). Now it is reserved by the IMT of the University of Tokyo where we can see Taiwanese innovation and artistry in Japan.

Fig.7 “Ying” cabinet, design by Fang, F. M. (2011)

5 CONCLUSIONS AND RECOMMENDATIONS

Globalization brings people convenience in life but their localized culture drives people to look for a prosperous quality in their life and mind-set. In cultural product design and application, development and innovation are critical for creating products that not only pass on cultural assets and demonstrate cultural aesthetics, but are also practical in daily life so that consumers can once again realize the beauty of traditional culture.

The transformation of digital archives into cultural innovations has become a practice in value-added designs and creations so that through analyzing and exploring product presentation, designers can bring out the cultural significance in their product designs and applications. However, during the process, designers often encounter difficulties in obtaining cultural information, and hence establishing digital archives for cultural relics can help fulfill such needs. The results of this study can be used as future reference for designers in their value-added application of digital archives and designing cultural products or products in other domains.

However, the unique ethnic cultures in Taiwan and rich diversity of digital cultural archives are not only of historical significance but are also important assets in the development of cultural and creative industries and therefore their creative applications are worthy of further exploration. More in-depth studies on creative design can be conducted to facilitate more unique depth and substance in the development of Taiwan industries.

REFERENCES


