A Study of Framework and Process Development for Cultural Product Design

Chi-Hsien Hsu[1], Chih-Long Lin[2], and Rungtai Lin[3]

[1] Graduate School of Creative Industry Design, National Taiwan University of Arts,
Ban Ciao City, Taipei County 22058, Taiwan
assah16@gmail.com
[2,3] Crafts and Design Department, National Taiwan University of Arts,
Ban Ciao City, Taipei County 22058, Taiwan
rtlin@ntua.edu.tw

Abstract. The style of product design for a country or a nationality is influenced by its essential traditional cultures and lifestyles. Recently, the importance of studying Taiwanese cultures has been shown repeatedly in several studies in design field. Despite the recognized importance of product design in cultural and creative industries, they lack a systematic approach to it. Therefore, the main purpose of this paper is to build a design framework and process for cultural product design. The approach includes two phases. First, the design framework and process for product development is constituted by the cultural attributive analyses and design concepts table, design principles, literature review and expert opinions. In the second phase, we undertake design practices based on the design framework and process in order to prove the effect.

Keywords: Cultural product, design framework, Taiwan aboriginal culture.

1 Introduction

With the changes of customers' needs and perceptions, the consumer market is evolving simultaneously conducted by customer-orientation and consequentially design processes are much focused on the diversity and cultural features of product specifications. The product attributes of geographic and ethic features are influenced by its essential local cultures and lifestyle. In recent years, the wave of modern Chinese style is seen in different design applications, even in the movie industry. It is obvious that the Chinese culture has caught global attention. The various tribal cultures and passions of the Taiwanese are deemed as well-known characteristics of Taiwan by other countries.

In this age of aesthetic economy, every country focuses on promoting cultural applications as the main step of economic development. For example, the manufacturers of pewter in the UK through its alliances with crafts-based designers, have transformed its learning capabilities in order to add value to its products and create new organizational knowledge [21]. Furthermore, after the recession of the traditional sugar industry, Fiji in the south Pacific has increased the income of tourism to support national economic by holding folk cultural art-festivals [17]. At this point, the field of

design has played an important role in embedding the cultural elements into products and in increasing the cultural value in the global competitive product market. Therefore, designing a product with local features in order to emphasis its cultural value has become a critical issue in the design process [12], [19].

While the cultural and creative industries are the main strategy of global economic development, the influence of cultural features on the products needs to be discussed. However, there is insufficient investigation in this field and lack of a systematic approach for processing it. Therefore, two phases are included in this study. In the first, the design framework and process for product development are formed by the cultural attributive analyses and design concepts table resulting from literature review and expert opinions. In the second phase, design practices are undertaken in order to prove the effectiveness of the proposed design framework and process, and also act as a reference for the following studies.

2   Culture Features and Product Design

In the early 20th century when users thought about "design", "form follows function" often came to mind. Nevertheless, along with technology progress, designing "feeling" into products to present the emotional communication of user experiences became a design trend in the 21st century [6]. Product design in addition to function analysis and market research, also needs to consider the product's meaning and delivery to satisfy user needs. Leong and Clark [9] believe that cultural-based knowledge can provide new ways of thinking and designing which may be able to save us from contemporary ethical dilemmas.

2.1   Three Cultural Levels

Culture generally refers to styles of human activity and the symbolic structures. Moreover, culture has been described as the evolutionary process that involves language, customs, religion, arts, thought and behavior. From the design point of view, Lee [7] proposed a culture structure with multi-layers including 'artifact', 'value', and 'basic assumptions' which identified key design attributes such as 'functional', 'aesthetic', and 'symbolic'. Leong and Clark [9] 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 [4], [9], [12], [13], a framework for studying cultural objects is summarized in Fig. 1. As shown in Fig. 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, surface pattern, line quality, and details.
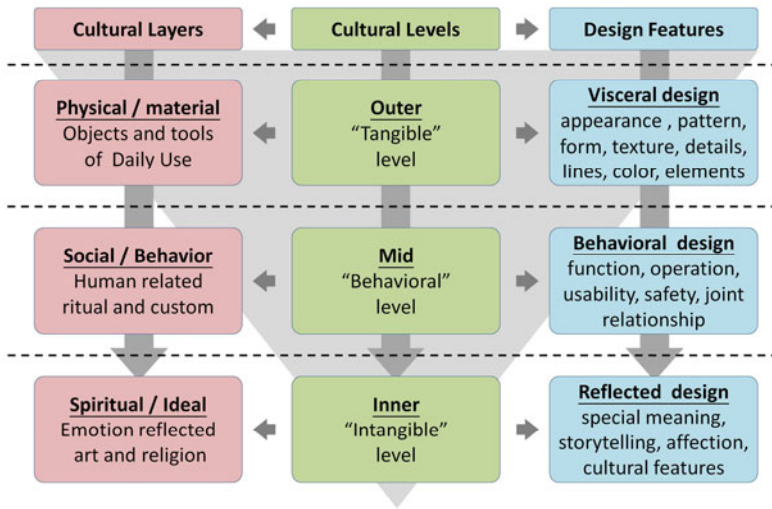
Fig. 1. Three layers and levels of cultural objects and design features (Lin, 2005; 2006)

2.2 Fundamental Cultural Resources of Taiwan

Enhancing the quality and adding extra value to the product is necessary for the improvement of product performance. Taiwan has a strong potential to develop significant cultural products. Three fundamental resources for the development of a culture product in design are as follows: (1) the Taiwan Aboriginal culture, (2) the Chinese Southern Civilization originating roughly four hundred years ago, and (3) the Chinese Antiques civilization, with displays in the National Palace Museum, originating around four thousand years ago [18]. Among these three resources, Taiwan Aboriginal culture indeed has a unique and great inspiration with its primitive arts and craft designs. Therefore, increase the value of investigating Taiwan aboriginal culture.

Taiwan Aborigines have different customs and material cultures from one tribe to the other, due particularly to the geographical environment. For instance, the culture of tribes located near the ocean reflects their fishing based living, while mountain tribe culture develops from a dependence on hunting [8], [16]. However, in general, traditional tribes have self-sufficient societies which are dependent on agriculture, fishing, hunting and animal husbandry. Taiwan aboriginal material culture can be classified into four main aspects: foods, garments, living, and craft [8], [10], [16]. With their beautiful and ancestral visual arts and crafts, Taiwan aboriginal cultures should have great potential for enhancing product design value thus increasing its recognition in the global market. Hsu, Lin, and Chiu [5] have designed a questionnaire on the cognition of consumers toward aboriginal culture in product design. The results of the questionnaire provide guidelines for product design with aboriginal culture features. The conclusions are as follows:
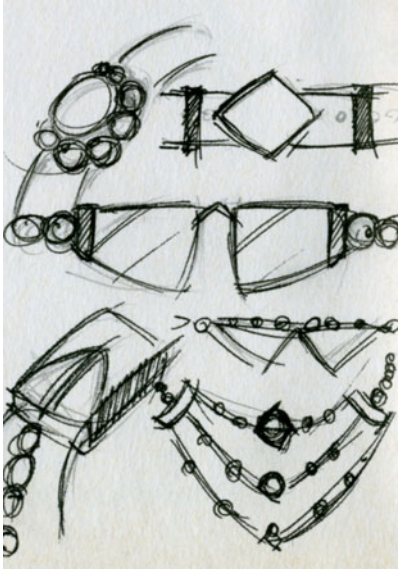
1. Subjects responding to attitudes toward aboriginal culture believe that products with aboriginal culture designs have the potential to promote the positive qualities and extra value in life and increase the value of the product in a competitive market.
2. Subjects responding to the most significant features in aboriginal culture agree that the following in order of significance: ornament, woodcarving, webbing, totem, stone carving, and garment design add a unique style to contemporary product design.
3. Subjects responding to the appropriate types of products in relation to aboriginal culture believe that fashion ornament, package design, furniture, handcrafts, appliances, kitchenware, stationary gifts and lighting fixtures would be enhanced by the unique style and the contemporary design.
4. Subjects responding to the users' demand for aboriginal culture in design place the following in order of significance: special meaning, cultural features, texture, form, storytelling, and color.

2.3   Design Theories Relevant to Cultural Products

More and more modern products are combined with local culture features to improve their identity. The investigation of design method and cultural feature is shown repeatedly in several studies in design field. Despite the recognized importance of product design in cultural and creative industries, they nevertheless lack a systematic approach to it. Therefore, Lin [14] provided four steps to design a cultural product, namely, investigation, interaction, development, and implementation using scenario and story-telling approaches. The scenario is described from the user point of view and may include social background, resource constraints and background information. Central to most scenario based design is a textual description or narrative of a use episode. It may describe a currently occurring use, or a potential use that is being designed.

Cultural features are considered to be unique characteristics that can be embedded into a product both for the enhancement of its identity in the global market and individual consumer experience [2], [20], [21]. They could trigger a cultural reflection of 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 [11] 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 analyses these elaborate relationships between products and the signs. In addition, Butter [1] 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.

Table 1. Example of a cultural attributive analyses and design concepts table

Analysis of Cultural Attributes		Interpretation of Culture	Features of Product	Category of Products
Tribe	Taiwan Aboriginal –Paiwan and Rukai	Wear, status symbol, decorative, arrangement also followed special rules, symmetrical	shading effects, decorative, extension of personal particularity	glasses, sunglasses, watch, furniture
Object	Necklace by Lazurite beads			
Type	Ornament			
Image				
Material	glass beads•shell pieces			
Color	The solid colored beads in orange, yellow, green, white and black. The shell pieces are white.			
Characteristic	They were precious things passed down in the family by chiefs or used in a dowry. The number of beads on the neckwear represented the wealth, social class, position, and gender of the wearer.	Sketch of Design Concept as Metaphor, Analogy. Features of Product: extension of personal particularity, wear, decorative		
Operation	The manifold beads were often used together, such as in multiple-strand ornaments. Single-strand ornaments were worn at the chest or around the neck.			
Pattern	Each type of traditional bead had a different name, sex and associated legend.			
Form grammar	The order of arrangement also followed special rules.			
Form construct	The bottom part features large multi-colored beads, and this is the most precious and unique part of whole item. The two sides are symmetrical and decorated with shell pieces and orange, green and yellow medium- and small-sized beads.			
Formation	This neckwear is a hemp band with five branches to which colored large beads and small single color beads and shells are attached.			
Using scenario	This kind of neckwear would only be worn in the once every five year festival or when a chief married.			
Cultural content	They would be used as wedding gift to the bride when chiefs married. In addition, they were used to treat illness, in fortune telling, and also were believed to bring luck.			
Resource	Lee [8], Lin [10], Liu [16], [22]			

3   Cultural Attributive Analyses and Design Concepts Table

In Taiwan, cultural awareness has caught the attention of the design research society followed by regional and governmental promotions. Hence, Taiwan aboriginal crafts, products, and activities have increasingly been studied in market and academic research. The studies show positive results. The uniqueness of Taiwanese aboriginal culture is valuable and worth incorporating into existing products in daily life via new design.

Most cultural literatures provide extensive descriptions, which were difficult to apply to the product design. Wu, Hsu, and Lin [19] suggested focusing on data collection from the culture in terms of physical, material, customs, ceremonies, and spirituality among the objects. The collected data was then matched to the different items, based on tribe, name of object, type, image, material, color, feature, function, pattern, form grammar, form construct, formation, inner content, cultural significance, and resource. These items covered three levels of cultural characteristics and basic information such as image, tribe, and name. Further combination with the emphases on product semantics, would construct a cultural attributive analyses and design concepts table, which will be useful in design concept of developing [15]. We suggest that this information will serve as a reference for designers during the product design phase. Table 1 shows an example of attributes of cultural features.

4   Design Framework and Process

Culture plays an important role in the field of design, and cultural design will become a key point in design evaluation in the future. Incorporating cultural features into the product design process will become a new design trend in the global market. Apparently, we need a better understanding of cultural communications not only for taking part in the global market, but also for developing local design.

The cultural product design is a process of rethinking or reviewing the cultural features and then redefining them in order to design a new product to fit into society and satisfy consumers through culture and esthetic [3]. Designing new products by adding unique cultural features would not only benefit economic growth, but also promote unique local culture in the global market. Therefore, transforming cultural features into a cultural product becomes a critical issue. In order to facilitate the understanding of the cultural product design process, the design framework and process are proposed for combining consumer attitudes, cultural levels, cultural attributes, transformation, product semantics and design features as shown in Fig. 2.

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, the cultural product is designed using scenario and semantics approaches. In a practical design process four phases are used to design a cultural product, namely: identification (telling a situation), investigation (setting an objective), interaction (writing an analysis), and implementation (designing a product) as shown in Fig. 2. And according to the literature review and expert opinions, design guidelines are developed based on the research of consumers' needs, cultural content and design theories.
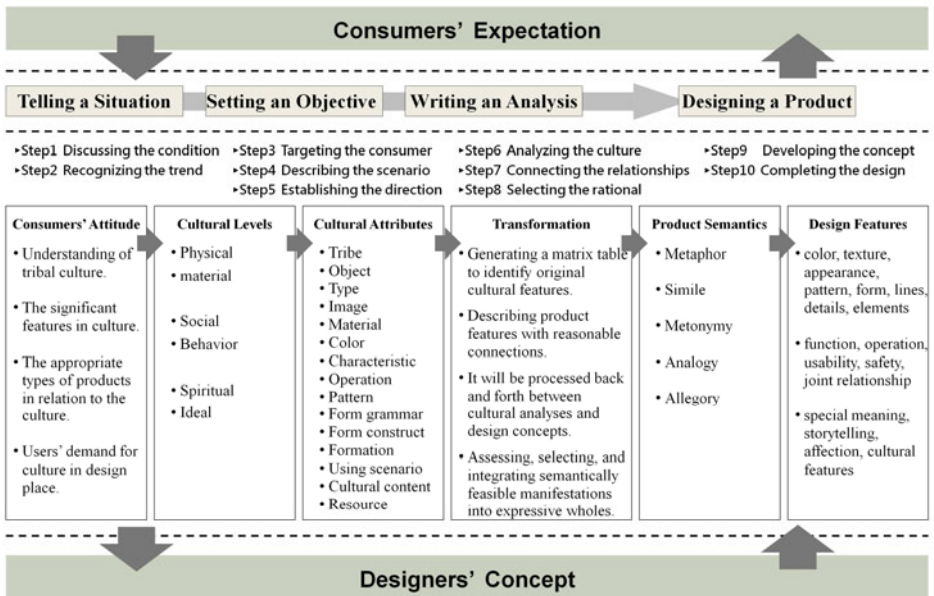
Fig. 2. Design framework and process for cultural products

Ten steps of design procedure would provide designers or students a systematic method to designing a cultural product. The four phases and ten steps of the cultural product design process are further described accordingly as follows:

1. Identification/ telling a situation:
   - (1) Discussing the condition: understanding cultural products through discussions. Designers should have explicit understanding of design aspirations and develop a preliminary prioritized attributes hierarchy.
   - (2) Recognizing the trend: based on the cultural attributes, observe, compare and incorporate related issues such as economic developments, social trends, technological applications, and related existing products into the new product design.

2. Investigation/ setting an objective:
   - (3) Targeting the consumer: make a good observation of customer needs and explore the consumer society in order to define a product image with meaning and style derived from culture features concerns.
   - (4) Describing the scenario: this step allows designers to describe scenarios of users who have a preference for a particular style and identify with the features, meaning, category, and appropriateness of the product.
   - (5) Establishing the direction: this step establishes a design specification, which will identify the goal, function, target group, and limitation of the design. All of these concerns should match attitudes of consumers.

3. Interaction/ writing an analysis:
   - (6) Analyzing the culture: based on cultural layers, generate a matrix table as shown in Table 1 to identify original cultural features including tribe,

object, type, image, material, color, characteristic, operation, pattern, form grammar, form construct, formation, using scenario, cultural content, and resource.

(7) Connecting the relationships: based on reasonable connections such as product semantics, describe product features and develop a product with these cultural attributes. The analysis and synthesis will be processed back and forth between cultural analyses and design concepts as shown in Table 1.

(8) Selecting the rational: assessing, selecting, and integrating semantically feasible manifestations into expressive wholes. In addition, describe the product performance and sketch the preliminary design image.

4. Implementation/ designing a product:

(9) Developing the concept: this step is the concept development and design realization by figurative product semantics (e.g. metaphor, simile, metonymy, analogy, and allegory), in order to transform the cultural meaning into a logically correct cultural product.

(10) Completing the design: examining the details and integrity of the cultural product as product features, supply cultural attributes to transform them reasonably into the product performance.

5   Design Practices

Based on the foregoing study phase, we specifically propose a design framework and process for cultural product design, proving the effectiveness of this systemic approach by the following design examples. The design practices in this study are the result of integration of literature reviews, design concepts from aboriginal culture in Taiwan, and the category of products related to life products. There are many different aboriginal tribes in Taiwan. Each tribe has dissimilarities in their respective features. However, some applications of utensils for daily using are similar, such as among the Paiwan and the Rukai which both use the flagstone to build residences and make furniture. In addition, some aboriginal tribes were using bamboo tubes or dry gourds as containers, the Hakka or Hoklo people in Taiwan also have similar customs. Moreover, these are characteristic features for demonstrating their application in products which could be easy recognized by consumers.

Through the design framework and process for implementing design practices, the material culture chosen was recorded in the cultural attributive analyses and design concepts table (Table 1), and developed the design concept of the products. From the above-mentioned background, we undertook the concept of the detail design and sought out the appropriate presentation of the products. Finally the practices were completed with computer models to simulate the actual product presentation.

As shown in Fig. 3, Lazurite beads of Paiwan were precious items passed down in the family by chiefs or used as wedding gifts. The number of beads on the neckwear represented the wealth, social class, position, and gender of the wearer. The sunglasses using the design practice of analogy revealed the extended personal characteristic and practicability. In addition, the designed concepts shown in Fig. 4 were developed based on the functional container of water, analogizing the function of container into the desk

light. The shape and texture of the concept reveals the natural hard-shell shape of bamboo, and analogized the motion of pulling out the bamboo to the switch. According to the design framework and process, modern products were developed using the culture features as examples to explore the feasibility of the design reference from the cultural features. Therefore, it provides designers a valuable reference for designing successful cultural products.

Fig. 3. Sunglasses, the design concept is from Lazurite beads

Fig. 4. Desk light, the design concept is from bamboo tubes

6 Conclusion

Over time, Taiwan gradually developed its own distinctive culture. The variety and distinction of Taiwan culture offers potential application in the field of design. By enhancing the original meaning and images of cultures and taking advantage of new production technology, Taiwan aboriginal material cultures will have great potential for enhancing product design value thus increasing Taiwan product recognition in the global market. The design framework and process for product development is constructed by the cultural attributive analyses and design concepts table, design principles, literature review and expert opinions. Through the integration of all this information, we provided a different way of thinking about interactive experiences between cultural attributes and product features, notably, the importance of a product with cultural attributes in order to enhance the product's value and satisfy user needs.

The traditional life of aboriginals is original and natural, i.e. the function of material culture is simple. Therefore, the investigation of the consumer's ideal product always results as the objects and tools of daily use. The concepts of design practices follow it as well. However, it's the transformation of material culture into only tangible objectives in which the endeavor of design based on ritual and spiritual customs is still in need.

References

1. Butter, R.: Putting Theory into Practice: An Application of Product Semantics to Transportation Design. Design Issues 5(2), 51–67 (1989)
2. Handa, R.: Against arbitrariness: architectural signification in the age of globalization. Design Studies 20(4), 363–380 (1999)
3. Ho, M.C., Lin, C.H., Liu, Y.C.: Some speculations on developing cultural commodities. Journal of Design 1(1), 1–15 (1996) (in Chinese)
4. Hsu, C.H.: An application and case studies of Taiwanese aboriginal material civilization conferred to cultural product design. Chang Gung University Industrial Design Department, Taoyuan, Taiwan (2004) (in Chinese)

5. Hsu, C.H, Lin, R.T., Chiu, W.K.: A study of Taiwan aboriginal cultural product. In: Innovation & Design Conference, pp. 157–164. National Taipei University of Technology Graduate Institute of Innovation and Design, Taipei, Taiwan (2004) (in Chinese)
6. Ko, Y.Y., Lin, P.H., Lin, R.T.: A Study of Service Innovation Design in Cultural and Creative Industry. Internationalization, Design and Global Development 56(23), 376–385 (2009)
7. Lee, K.P.: Design methods for cross-cultural collaborative design project. In: Redmond, J., Durling, D., De Bono, A. (eds.) Proceedings of Design Research Society International Conference, Paper #135. DRS Futureground, Monash University, Australian (2004)
8. Lee, Y.Y.: Taiwan aboriginal society and culture. Linking Book, Taipei (1982) (in Chinese)
9. Leong, D., Clark, H.: Culture -based knowledge towards new design thinking and practice - A dialogue. Design Issues 19(3), 48–58 (2003)
10. Lin, J.C.: Taiwan aboriginal art: Field study. Art book, Taipei (2002) (in Chinese)
11. Lin, M.H., Huang, C.C.: The logic of the figurative expressions and cognition in design practices. Journal of Design 7(2), 1–21 (2002) (in Chinese)
12. Lin, R.T.: Creative learning model for cross cultural product. Art Appreciation 1(12), 52–59 (2005) (in Chinese)
13. Lin, R.T.: Scenario and story-telling approach in cross cultural design. Art Appreciation 2(5), 4–10 (2006) (in Chinese)
14. Lin, R.T.: Transforming Taiwan aboriginal cultural features into modern product design: A case study of a cross-cultural product design model. International Journal of Design 1(2), 45–53 (2007)
15. Lin, R.T., Hsu, C.H.: Design with aboriginal flavors. Design 120, 88–89 (2004) (in Chinese)
16. Liu, C.W.: Taiwan aboriginal culture art. Lion publisher, Taipei (1979) (in Chinese)
17. Peng, H.H.: Expectation of Taiwanese Renaissance - conference content of cultural and creative forum. Fountain of Creativity 22, 6–33 (2009) (in Chinese)
18. Wang, M.H.: Reviewed the educational policies for 40 years of National Taiwan Institute of Arts. Art Appreciation 57, 59–72 (1995) (in Chinese)
19. Wu, T.Y., Hsu, C.H., Lin, R.T.: The study of Taiwan aboriginal culture on product design. In: Redmond, J., Durling, D., De Bono, A. (eds.) Proceedings of Design Research Society International Conference, Paper #238. DRS Futureground, Monash University, Australia (2004)
20. Yair, K., Tomes, A., Press, M.: Design through marking: Crafts knowledge as facilitator to collaborative new product development. Design Studies 20(6), 495–515 (1999)
21. Yair, K., Press, M., Tomes, A.: Crafting competitive advantage: Crafts knowledge as a strategic resource. Design Studies 22(4), 377–394 (2001)
22. Digital Taiwan - Culture & Nature, http://culture.teldap.tw/culture/