Chapter 3

DESIGNING “FRIENDSHIP” INTO MODERN PRODUCTS

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ABSTRACT

“Culture” plays an important role in the design field, and “cross cultural design” will be a key design evaluation point in the future. Designing “culture” into modern product will be a design trend in the global market. Even though we made a lot of efforts to understand Human-Computer Interaction (HCI). Along with the scientific research and development, we know a great deal about how to make successful interaction between human and computer. Recently, the interaction design has switched the focus from the usability and cognitive ergonomics to the affective and interactive experience of users. “User-Friendliness” is essential in those products with embedded information technologies, and designing “friendship” into products will become a design trend in interactive design. Therefore, this chapter focuses on the analysis of cultural meaning, operational interface, and the scenario in which the cultural object is used. First, this chapter established a cultural product design model to provide designers with a valuable reference for designing a successful cross-cultural product. Then, we proposed a general framework for cultural product experience that applies to mental model of designer and user that can be experienced in Human-Culture Interaction. Finally, based on the interactive experience of user with the aboriginal cultural object – Linnak, a modern product from Linnak, was proposed to demonstrate how to design “friendship” into a successful product by the framework of human-culture interaction.

Keywords: Friendship, Interaction Design, User Experience, Cross Cultural Product Design, Cultural Difference.

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1. INTRODUCTION

In the global market - local design era, connections between culture and design have become increasingly close. For design, cultural value-adding creates the core of product value. It’s the same for culture; design can be the motivation for pushing cultural development forward. Designing local features into products appears to be more and more important in the global market where products are losing their identity because of similarities in function and form. Cultural features then are considered unique characteristics to embed into a product both for the enhancement of its identity in the global market and for the fulfillment of the individual consumer’s experiences (Handa, 1999; Yair, Press, & Tomes, 2001; Yair, Tomes, & Press, 1999). The increasing emphasis on localized cultural development in Taiwan demonstrates an ambition to promote the Taiwanese style in the global economic market. For example, aboriginal music from the Bunun tribe played at the 1996 Olympic Games brought that form of music to the global arena. Additionally, the Oscar-winning movie director Ang Lee have promoted recognition of Taiwanese culture at the international level (Hsu, 2004; Cheng, 2005). Using local features in design fields as a strategy to create product identity in the global market, the designer has noted the importance of associating products with cultural features in order to enhance product value. At this point, the field of Industrial Design has played an important role in embedding cultural elements into products and in increasing cultural value in the global competitive product market. Therefore, designing a product with local features to emphasize its cultural value has become a critical issue in the design process (Wu, Hsu, & Lin, 2004; Lin, 2005).

Obviously, the growth of interest in human-computer interaction (HCI) over the past decades has been extraordinary, and it is one of the most rapidly developing subjects in the field of computer science and human factors. HCI became a fascinating research subject and is now recognized as a vital component of successful computer applications (Faiola, 2007; Preece et al., 1994). Over the past several decades, researchers had made great efforts to understand HCI. Based on scientific research and development, we know a great deal about creating successful human-computer interaction. The influence of HCI science in interaction design is evident in product design and development, especially for information technology products. Moreover, the multidisciplinary development of HCI has advanced many research and design models. In designing products with embedded information technologies, the role of HCI is a basic, fundamental consideration. As such, the challenge exists of regarding the development of mature HCI research and its impact on design and investigating what dimensions beyond HCI will be exploited in transforming our lives at home and at work (Faiola, 2007; Robert, 2001; Schein, 1999).

Interaction design has switched focus from usability and cognitive ergonomics to the affective and interactive experience of users. Culture plays an important role in products with embedded information technologies, and designing culture into products will become a design trend in interactive design. Beyond HCI then, we need a better understanding of Human-Culture Interaction not just for taking part in the cultural context, but also for developing the interactive experience of users. With technical advances, HCI has also advanced phenomenally over the last ten years (Preece et al., 1994). In addition, HCI has extended our understanding of the interaction with information technology products and the practical use in the design and evaluation of daily used products. The concept is supported by Shneiderman
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(2002) who noted that we are now in the second transformation of computing, in which the shift from machine-centered automation to user-centered services and tools, is enabling users to be more creative. The HCI design process asserts that the architecture of system and interface components should be directed by a holistic understanding of “use and user needs through a process of intelligent and conscious design” (Kapor, 1996; Edgar & Sedgwick, 1999).

Norman (2004) argued that affect and emotion are not as well understood as cognition, but are both considered part of the information processing system with different functions and operating parameters. Therefore, the author proposed a general framework for cultural product experience that could be applied to the mental model of designer and user and the Human-Culture Interaction. Then, based on the interactive experience of users with the aboriginal cultural object, the Linnak (a twin drinking cup), a modern Linnak was proposed to demonstrate how to design a successful cultural product using the human-culture interaction framework. The intended purpose of this chapter is to provide a framework for examining the way designers interact across cultures and the interactive experience of users in the design process. The framework of cross cultural product design model proposed and discussed in this chapter can be of value for designers because it can help to design ‘friendship’ into modern products, and provide designers with a valuable reference for designing a successful cross-cultural product. Results presented herein create an interface for examining the way designers communicate across cultures as well as the interwoven experience of design and culture in the design process.

2. CULTURAL DESIGN FEATURES AND MODEL

Culture has been called "the way of life for an entire society" (Ho, Lin, & Liu, 1996; Leong & Clark, 2003). It generally refers to patterns of human activity and the symbolic structures that give such activity significance. Different definitions of "culture" reflect different theoretical bases for understanding, or criteria for evaluating human activities. Based on linguistic, anthropological, and sociological studies, culture has been described as something that deals with the result of the evolutionary process in human civilization, which involves language, custom, religion, arts, thought and behavior.

Culture plays an important role in the design field, and cross-cultural design will be a key design evaluation point in the future. Designing culture into products will be a design trend in the global market. The importance of studying culture is shown repeatedly in several studies in all areas of technology design (Ho, Lin, & Liu, 1996; Lin, 2005). Obviously, we need a better understanding of cross-cultural communications for the global market and local design. While cross-cultural issues become important for product design in the global economy, the intersection of design and culture becomes a key issue making both local design and global market worthy of further in-depth study.
2.1. Three Cultural Levels

From the design point of view, Lee (2004) 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 (2003) 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 (Chang & Wu, 2007; Desmet & Hekkert;2007; Lee, 2004; Leong & Clark, 2003; Moalosi, Popovic, & Hudson, 2004; Wu, Hsu, & Lin, 2004;), a framework for studying cultural objects is summarized in Figure 1 (Lin, 2005, 2006, 2007). 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, surface pattern, line quality, and details.

2.2. Cultural Design Features

Taking Taiwan aboriginal culture as an example, Figure 2 illustrates the application of the three levels of a “Pottery-pot” from the Paiwan Tribe for the design of a cultural product.
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(Lin, 2005). The three levels of the cultural object can be mapped into three levels of design features: visceral design, behavioral design and reflective design (Norman, 2004). Visceral design concerns the appearance of a cultural object and transforms its form, textures, and pattern into a new product. The visceral design feature becomes important where appearance matters and first impressions are formed. The behavioral design level concerns the use, function, performance and usability of a cultural object. The behavioral design feature is the key to a product’s usefulness. Reflective design concerns feeling, emotion, and cognition of a cultural object. The reflective design feature is the most vulnerable to variability through culture, experience, education, and individual differences.

2.3. Cultural Product Design Model

Cultural product design is a process of rethinking or reviewing cultural features and then redefining them in order to design a new product to fit into society and satisfy consumers through culture and esthetics (Ho et al., 1996). Using cultural features to add extra value to a product not only benefits economic growth, but also promotes unique local culture in the global market. Therefore, because transferring cultural features into a cultural product becomes a critical issue, a framework was proposed for combining culture levels, layers and design features as shown in Figure 3 to facilitate understanding cultural product design (Lin, 2006).

Figure 2. Three levels of a cultural product and its design features (Lin, 2007)
2.3.1. Three phases of the cultural design model

The cultural product design model in Figure 3 consists of three main phases: conceptual model, research method, and design process. The conceptual model focuses on how to extract cultural features from cultural objects and then transfer these features to the design model. The design model is composed of three phases: identification (extract cultural features from original cultural objects), translation (transfer them to design information and design elements) and implementation to finally design a cultural product. The research method is described as follows:

- **Phase 1 / Identification phase**: The cultural features are identified from original cultural objects including the outer level of colors, texture, and pattern, the mid level of function, usability, and safety, and the inner level of emotion, cultural meaning, and stories. The designer uses the scientific method and other methods of inquiry and hence is able to obtain, evaluate, and utilize design information from the cultural objects.

- **Phase 2 / Translation phase**: A translation phase translates the design information to design knowledge within a chosen cultural object. The designer achieves some depth and experience of practice in these design features and at the same time is able to relate this design knowledge to design problems in modern society. This produces an appreciation for the interaction between culture, technology, and society.
• **Phase 3 / Implementation phase:** The implementation phase expresses the design knowledge associated with the cultural features, the meaning of culture, an aesthetic sensibility, and the flexibility to adapt to various designs. At this time, the designer gains knowledge of cultural objects and an understanding of the spectrum of culture and value related to the cultural object. The designer combines this knowledge with his strong sense of design to deal with design issues and to employ all of the cultural features in designing a cultural product.

### 2.3.2. Four steps of the cultural design process

Based on the cultural product design model, the cultural product is designed using scenario and story-telling approaches. In a practical design process, four steps are used to design a cultural product, namely, investigation (set a scenario), interaction (tell a story), development (write a script), and implementation (design a product) as shown in Figure 4. The four steps of the cultural product design process are described as follows:

• **Step 1 / Investigation / set a scenario:** The first step is to find the key cultural features from the original cultural object and to set a scenario to fit the three levels: outer ‘tangible’ level, mid ‘behavioral’ level, inner ‘intangible’ level. Based on the cultural features, the scenario should consider the overall environment such as economic issues, social culture, and technology applications. This step seeks to analyze the cultural features in order to determine the key cultural features to represent the product.

![Figure 4. The cultural product design process](image-url)
- **Step 2 / Interaction / tell a story:** Based on the previous scenario, this step focuses on a user-based observation to explore the social cultural environment in order to define a product with cultural meaning and style derived from the original cultural object. Therefore, some interactions should be explored in this step, including interaction between culture and technology, dialogue between users and designers, and understanding the user’s needs and cultural environment. According to the interaction, a user-centered approach is used to describe the user need and the features of the product by story-telling.

- **Step 3 / Development / write a script:** This step is the concept development and design realization. The purpose of this step is to develop idea sketches in text and pictograph form based on the developed scenario and story. During this step, the scenario and story might require modification in order to transform the cultural meaning into a logically correct cultural product. This step provides a means to confirm or clarify the reason why a consumer needs the product and how to design the product to fulfill the users’ needs.

- **Step 4 / Implementation / design a product:** This step deals with previously identified cultural features and the context of the cultural products. At this point, all cultural features should be listed in a matrix which will help designers check the cultural features in the design process. In addition, the designer needs to evaluate the product features, product meaning, and the appropriateness of the product. The designer may make changes to the prototype based on results from the evaluation, and implement the prototype and conduct further evaluations.

2.4. An Example of Cultural Product Design from the Tao Culture

The Tao people are a Taiwan aboriginal people native to the tiny outlying Orchid Island. The Tao people are traditionally good at making canoes. The Pinban boat shown in Figure 5 is a symbol of their tribe. The Tao people live by fishing and usually bring the holy dagger with them while fishing. Figure 5 shows the final cultural product designed from the Tao’s Pinban boat and holy dagger. Based on the four steps of the cultural design process, the scenario is that Tao people ride in their Pinban boat with their holy dagger to protect them and sail to the ocean for fishing. Based on this scenario, the Pinban boat was transformed into a modern bag and the holy dagger into a knife-like modern alarm. In modern society, one can imagine a woman holding the modern bag and bringing the modern alarm to protect her while walking down the street, matching the previous scenario of Tao people fishing with their Pinban boat and holy dagger.

3. DESIGNING “CULTURE” INTO MODERN PRODUCTS

Taiwan is a multi-culture blend of traditional Chinese with significant East Asian influences including Japanese and such Western influences as American, Spanish and Dutch.
Over time, Taiwan has gradually developed its own distinct culture, mostly from a variation of Chinese culture of Southern China. Of course, the Taiwanese aboriginals also have their own distinct cultures (Chang, 2006; Taiwan aborigine’s art studio, 2006). Each tribe of the Taiwan aboriginal people has a unique culture and style that can be identified simply from its sculptures, textile fabrics, weaving, leather craft, and pottery. Furthermore, a tribe can be identified through the applied functions of architectures, daily life objects, tools, ceremonial equipment, weapons, and decorations. Upon investigation of the equipment and tools of 14 Taiwan aboriginal tribes, the Linnak from the Paiwan tribe displays a remarkable usefulness as a cultural resource. The unique shape of the Linnak expresses its cultural meaning, usability, and beauty. Therefore, the Linnak was used as an example to demonstrate its cultural features in product design application.

3.1. Cultural Levels and Design Features of the Linnak

The Linnak, a twin cup, is a very typical object in Paiwan culture. In the Paiwan language, “Linnak” represents the value of connection to Paiwan traditional culture. The Linnak is carved from one piece of wood and usually has two cups with one handle on each side as shown in Figure 6. In those old days, Taiwan aboriginal people often drank rice wine and considered it a holy event. The Linnak represents their drinking culture and the meaning of drinking. In ancient times they developed a variety of drinking containers, each of which had meaning as associated with a special event. For example, a one cup Linnak could be used only in special events by the chief of Paiwan tribe; two-cup or three-cup versions as shown in Figure 7 were normally used in wedding or festival ceremonies to enhance the close relationship of drinkers and to increase warm feelings.

There are social meanings, ergonomic concerns and functional achievements associated with the Linnak. To provide an ideal drinking cup at a wedding, both the social and operational interfaces of the Linnak need to be well-designed. The design features of the Linnak have been identified with three levels of cultural features as given below.

Figure 5. The cultural product from the Pinban boat and holy dagger
3.1.1. The design features from the outer level of the linnak

The design features derived from the outer level of the Linnak deal with material, colors, form, texture, surface pattern, decoration, and details. The physical dimensions include the total length of the Linnak from 43cm to 91cm and the pitch between the two cups from 29cm to 42cm as shown in Figure 8. The pitch and the distance between the centers of the two cups symbolize their close relationship and have particular standards and specifications for different situations (Cheng, 2005; Chen, 1961; Liu, 1982). These dimensions indicate the way in which this object is used and also denote an invisible space between two people. From a usability point of view, the diamond shape cup illustrates that an angular mouth is used for ease of drinking wine. Furthermore, the drinking process emphasizes the meaning of “working together” and “sharing with each other” (Wu, Cheng, & Lin, 2005). Figure 9 shows the different patterns and totems on handles that may represent a personal style or character depending on the different elements carved on the surface (Wu et al., 2005). The analysis of different handles could provide the designer with an idea of how to transfer the Linnak’s usability into modern product design.

3.1.2. The design features from the mid-level of the linnak

The mid-level focuses on consumer behavior and the scenarios in which people would use the Linnak on different occasions. It is noted that people from different cultures use different types of containers to drink wine in different ways, representing different cultural meanings. Within these cultures, they may share some differences and similarities in either the hard part of handle design or soft part of cultural meaning. The handle design and the pitch between the two cups are the crucial elements for the cultural meaning of the Linnak. From the usability point of view, the Linnak is a special container for drinking wine used in the traditional tribal wedding ceremony and requires two people to manipulate the object smoothly for the drinking task. Therefore, the design features on the middle level of the Linnak should be focused on how to operate it smoothly based on ergonomics.
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Figure 8. The physical dimensions (outer level) of the Linnak

Figure 9. The handles (outer-level) of the Linnak

After reviewing the literature and studying the drinking situation, two kinds of drinking situations were found to be most common with the aborigine twin cup. When it is used in special situations (e.g. wedding ceremony), the couple or the intimacy will be as shown in Figure 10. Such a close face-to-face mode shows an intimate relationship. When the twin cups are used in the normal situation, people drink the wine together to demonstrate their friendship, and the drinking situation will be shoulder-to-shoulder as shown in Figure 11.
Figure 10. Drinking face-to-face in the close relationship

Figure 11. Drinking shoulder-to-shoulder in the normal situation

Figure 12. The simulation of different drinking situations
Using anthropometric data in design involves art as well as science. However, in the use of such data for designing daily-life products, there are generally two aspects to consider: determine what anthropometric design principle should be applied, and how to achieve the anthropometric considerations in the most cost-effective manner (Lin & Kreifeldt, 2001). When applying anthropometric data, three anthropometric design principles must be taken into consideration: extreme individuals, an adjustable range, and the average. Based on these principles, recommendations of ergonomic dimensions for the ideal twin cup were proposed. For example, using the average size twin cups for imitated relationships, the results showed that their heads would not touch each other, while they were drinking. In this situation, they would not feel uncomfortable on the body, but on the shoulder. Figure 12 shows the simulation of drinking postures under different situations.

3.1.3. The design features from the inner-level of the linnak

The inner-level contains special content such as stories, emotion, and cultural features, and focuses on the symbolic meaning of the Linnak. In general, the Inner-level interface of the Linnak is derived from the symbolic decorations shown in Figures 13 and 14. The inner level of the Linnak’s cultural meaning is illustrated by the embossed decoration such as figures, heads, and long-hooded pit viper and deer patterns. For instance, the long-hooded pit viper pattern carved on the Linnak symbolizes that their ancients were of nobility and should be respected, and that it also implies a hierarchical society in the Paiwan tribe. The long-hooded pit viper also represents the glory, spirit and honor of a person’s status (Liu, 1982; Liou, 1979; Lee, 2000). The pattern of the long-hooded pit viper can be used only on objects which belong to the chief of a Paiwan tribe. These patterns and figures of the ancients that display the symbolic meaning could be used as design elements and transferred into modern product design.

The Linnak contributes to a warm and sharing spirit during a festival or ceremony. However, the Linnak may have a different emphasis in its spiritual meaning depending on the container’s features and the context in which it is used, such as sharing with friends, or drinking for pleasure. Taking Figure 13 as an example, the nature-related patterns seem to tell a story about the relationship between Paiwan ancestors and the respect shown for nature and environment (Wu et al., 2005). It is very important to study Taiwan aboriginal totem art in order to understand their culture because of their lack of written language. The totems appearing on textiles and sculptures can illustrate the culture itself (Chen, 1961; Lee, 2000; Lin, 2002; Lee, 1997). The design features of the inner-level of the Linnak address the symbolic meaning of the patterns.

Figure 13. The decorations (inner-level) of the Linnak
3.2. A Case Study of Transforming the Linnak into Modern Product Design

With their beautiful and primitive visual arts and crafts, Taiwan’s aboriginal cultures should have great potential to enhance design value and be recognized in the global market. Evidence shows that the prospect of Taiwan’s local cultures will undoubtedly become crucial cultural elements in future design applications. The application of cultural features is a powerful and meaningful approach to product design. Consumers nowadays require a design that is not only functional and ergonomic but also able to stimulate emotional pleasure. Therefore, a holistic approach to design has to understand both the hard and soft contents of the Linnak as in this study. However, because the contemporary consumer market may need a new form of the Linnak suitable for a modern environment, a transformation of the Linnak is necessary. Based on the cultural product design model (Figure 3), the Linnak demonstrates that cultural features are valuable elements for a product to emphasize its value or meaning. The following are examples illustrating how to transform the “Linnak” into contemporary designs for the current consumer market.

3.2.1. Our gloves from the outer level of the linnak

The idea based on the Linnak of sharing and working together is valuable for enhancing usage in our daily life. In the cultural context, the twin-cup can enhance a social interactive environment such as a festival, wedding ceremony, restaurant, and even in the kitchen where the use of the twin-cup can seem to emphasize emotion sharing, relationship building, and pleasure. Based on the cultural meaning of working together, our glove set as shown in Figure 15 was designed to demonstrate a couple’s close relationship. The wife or the husband could use the middle one or the separate one to work individually, or the couple could show their close relationship by using the middle one to share with each other.

3.2.2. Our cups from the middle level of linnak

During the wedding ceremony, two people must hold the handles of the Linnak at the same time and manipulate it with good coordination in order to drink wine smoothly. In this case, the handle plays an important role as an invisible space to imply the relationship between two people. For example, a shorter pitch represents a closer relationship. Based on the cultural meaning of the Linnak, our cup set in Figure 16 was designed to show the close relationship between a mother and a child by emphasizing the handles. From the usability point of view, the small cup with two handles was designed for a child learning how to use...
the cup to drink water easily and the big cup with one handle was designed for the mother. When the two cups are not in use, the cups connected by the handles symbolize the close relationship between mother and child.

3.2.3. Our pots form the inner level of linnak

In the inner-level of the Linnak, humanity is the key factor in the design of symbolic patterns to show the harmony between human and nature. Figure 17 shows two small pots connected together. One pot is for cultivating a plant and the other for pouring (drinking) water. The main idea came from the inner meaning of the Linnak for respecting nature. The design both symbolizes and fosters a close relationship between humans and plants by encouraging the drinker to share water with them. Furthermore, this application of new material and technology can bring a creative form to enhance the traditional cultural value in modern society.

Figure 15. Our gloves -- designed from the outer-level of the Linnak

Figure 16. Our cups for mother and child -- designed from the mid-level of the Linnak
3.3. Cultural Product Design Model – Our Cup for Lovers

In Lin’s case study of the Linnak (Lin, 2007), the usage behavior and meaning of “sharing with each other” was identified after its appearance, usability, and cultural meaning were studied. The “Eternity”, a modern twin-cup shown in Figure 18, was proposed to show the culture meaning of “sharing with each other” from the original cultural object – the Linnak. The “Eternity” is a symmetrical pair of cups connected together inversely to show the close relationship of the drinkers as a couple. This design won the gold award at the “2006 5th Bombay Sapphire Designer Glass Competition Taiwan,” and was chosen to enter the global competition that takes place in each April in Milan Italy during the Salone del Mobile, the world’s biggest design fair.

The “Eternity” was designed as an interactive modern product to be used in a night club. In the scenario shown in Figure 19 (Lin, 2007), a man wanting to develop a relationship with a lady, treats her with wine in the drinking cup. The design concept constituted the communication between man and woman and the drinking behavior became the mid-level relation. In the inner level of the Linnak, “sharing with each other” is transformed to communication with each other. It was romantic to use the cultural object for modern social behavior.
4. **Framework for Human-Culture Interaction**

Taking the “Eternity” as an example, the “Linnak” is a typical cultural object which can be transformed into a contemporary design for the current consumer market. There are social meanings, ergonomic concerns and functional achievement associated with this cultural object. To provide an ideal drinking cup for the modern market, both the social and
operational interfaces of the “Linnak” need to be well-designed. However, the contemporary consumer market may need a new form for the modern environment. Thus, how to communicate with the “Linnak” and extract the idea of “sharing with each other” in the design of the “Eternity” is valuable for enhancing usage in our daily life (Lin, 2007). Based on the previous studies and Norman’s conceptual models (Norman, 1988), a framework of Human-Culture Interaction (Figure 20) was proposed for examining the way designers communicate across cultures as well as the cultural aspect of interaction and user experience in the design process.

For the design model, the designer focuses on the analysis of cultural meaning, operational interface, and the scenario in which the cultural object is used. System image results from the cultural features that have been redefined in order to design a cultural and aesthetical product. The user’s model is the mental model developed through interaction with the cultural product. Based on the cultural context, the designer expects the user’s model to be identical to the designer’s model through the culture aspect of interaction design.

For the designer’s conceptual model, there are three levels of processing including visceral, behavioral, and reflective design. Using the “Eternity” as an example, the design features of “Linnak” have been identified with three levels of cultural features: (1) reflective design (inner-level) focuses on the cultural meaning of “making friendship”, “working together”, and “sharing with each other”; (2) behavioral design (mid-level) focuses on the consumer behavior and the scenario in which people will use the “Linnak” on various occasions; and (3) visceral design (outer-level) focuses on the “Linnak” form factors which are associated with material, colors, texture, and pattern.

For the user’s model, the user communicates directly with the cultural product. If the cultural product does not make the culture meaning clear and attractive, then users will end with the wrong message during the human-product interaction. There are also three levels of human-product interaction: aesthetic experience, experience of meaning, and emotional experience. The aesthetic experience involves a cultural product’s form, color, texture etc., to delight the user’s sensory modalities. The experience of meaning involves the user’s ability including operation, safety etc., to assign the design features and assess user pleasure with the cultural product. The emotional experience involves user emotion including self-image, personal satisfaction, memories etc., which are elicited by the cultural objects and designed into the cultural product.

Based on communication theory, according to Jakobson’s model (1960), a designer sends a message to a user via the cultural product. The designer recognizes that this cultural product must refer to something other than itself which is called the cultural context. The emotive function is to communicate the designer’s emotions that are extracted from a cultural object by all those elements that make its meaning unique. The other end of the process is the conative function which refers to the affection produced in the user by the cultural product. The referential function is the most important part of human-product interaction in culture meaning of the cultural product. The framework indicates how to extract the cultural features for designing a cultural product. These features underlie the different conceptual models of cultural product experiences which are used to explain the process and culture meaning of human-culture interaction.
5. Designing “Friendships” into the “Eternity”

In Lin’s study (Lin, 2007), the “Eternity” demonstrates the value of aboriginal culture in design. After the paper was published, some comments came from many readers arguing the loss of the culture meaning of “sharing with each other”. In Figure 19, the scenario of “Eternity” in the night club indicated that the “Eternity” might lose the culture meaning of close relationships when two people are not drinking at the same time. For example, Norman’s personal comment stated that:

“I still very much like the Linnak cup in which the two people drink at the very same time, side by side. I am afraid that this behavior has been lost with the “Eternity”: With Eternity, the two people have to drink one at a time – this is very different. I wonder if your students would explore this difference?”

These comments emphasize the cultural aspect of human-culture interaction design. Therefore, designing the culture meaning of “sharing with each other” into the “Eternity” became an important issue in the cultural product design process. Following the scenario of using "Eternity" at a night club (Figure 19), in which the man wants to develop a relationship with a lady using just the standard form of “Eternity”, subjects communicated developing a relationship with their friends. When the “Eternity” bridges close relationships, the next step is to use the ball (in the middle of two cups) as pivot and turn the bottom cup to a traditional Linnak as shown in Figure 20. At this time, the couple can drink together at the same time, side by side, shoulder by shoulder, or even face to face to show how intimate they are!

Based on the structure of the “Eternity” and the user experience and comfort considerations, the refined version of designing “close relationships” into “Eternity” was developed. The design case A is shown in Figure 21. A special joint device was designed for transforming three usage forms—the standard form of cups up and down, the turning form via the rolling ball, and the two cups side by side. In testing user experience, the users stated that “positive relationship with the partner will make them take the two cups closely.” According to user response, a metal device joining the glass-body of cups was proposed to transform the cup form and fit the different relationships and drinking situations. Figure 22 shows design case B. The rolling ball device for transforming to fit different drinking situations was retained. For usability considerations, design case B added the new handle part at the side of the cup edge, and made the edge of cup thick and solid to become the holder.

6. Conclusion

“Culture” plays an important role in the interaction design field and has been considered a key design evaluation point for the future. Designing “culture” into products will be a design trend in the global market. The importance of studying culture in human product interaction design is shown repeatedly in several studies in all areas of technology design. In addition, HCI considerations in system design continue to progress, and in the field of interaction design between human and product, especially the cultural aspect of interaction design and affective interactive experience of users will be more broadly used. Therefore, this
paper proposed a framework of human culture interaction that shows how the cultural aspect of interaction design would be developed in the field of human interactive design beyond the human-computer interaction process.

Figure 20. The concept of drinking together using “Eternity”

Figure 21. The redesign of “Eternity” in case A
The culture of drinking wine is a very common social event in human society around the world, and it presents the emotional communication of user experiences. With the primitive behavior of human beings, the social events of drinking wine culture proceeded constantly and wine related products became popular daily products in the design field. The “Eternity” presented in this study provides a good example of applying cultural features to interaction design while still retaining a meaningful cultural value. Taking “Eternity” as an example, this paper demonstrated the cultural features of “Linnak” found in three culture levels and how to transform those cultural features of interactive experiences into a new cultural product design which can fit into the contemporary market.

The framework of human-culture interaction that was proposed in this paper provides a different way of thinking about interactive experiences with acculturation. The acculturation process is the exchange of features that are composed of the traditional culture, cultural features, cultural objects, interface design, interaction experience, user emotion, and user response. The most important part of this process is the user experience added in the cultural product design process. The framework is of value for designers because it can help to design “culture features” into interaction design, and provide users with a valuable reference for understanding interactive experience.

For future studies, we need a better understanding of the acculturation process not only for the designer’s model, but also for that of the user’s. While cultural features become important issues in the interactive experiences of users, the acculturation process between human and culture becomes a key issue in the cultural product design and is worthy of further in-depth study.
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