



# Transforming Taiwan Aboriginal Cultural Features into Modern Product Design: *A Case Study of a Cross-cultural Product Design Model*

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With their beautiful and primitive visual arts and crafts, Taiwan's aboriginal cultures offer great potential for enhancing design value and becoming recognized in the global market. Evidence shows very high prospects for Taiwan's local cultures to become crucial cultural elements in future design applications. The purpose of this paper is to explore the meaning of cultural objects from Taiwan's aboriginal cultures and to extract their cultural features. The paper attempts to illustrate how, by enhancing the original meaning and images of these cultural features and by taking advantage of new production technologies, they can be transformed into modern products that meet the needs of the contemporary consumer market. The particular cultural object chosen for this study was the Linnak, literally meaning "twin-cup" in the Paiwan language. The study focuses on analyzing the appearance of the Linnak, how it is used, its cultural meaning, its operational interface, and the scenarios in which it is used. Finally, this paper establishes a cultural product design model that is meant to provide designers with a valuable reference for designing a successful cross-cultural product. The results presented herein provide an interface for examining the way designers communicate across cultures as well as the interwoven experience of design and culture in the design process.

**Keywords** - Cultural Difference, Cross Cultural Design, Taiwan Aboriginal Culture.

**Relevance to Design Practice** - The cross-cultural product design model proposed and discussed in this paper is of value for designers because it can help to design 'culture' into modern products, as well as provide designers with a valuable reference for designing a successful cross-cultural product.

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## Introduction

Taiwan is a multi-cultural blend of traditional Chinese culture with significant East Asian influences, including Japanese, and such Western influences as American, Spanish and Dutch. This blend has allowed Taiwan, over time, to gradually develop its own distinct culture, mostly a variation of Chinese culture from Southern China. In addition, the Taiwanese aboriginals also have distinct cultures (Chang, 2006; Taiwan Aborigines Art Studio, n.d.). Taiwan's cultural variety and distinction offers potential application in the field of design, especially as designing local features into products appears to be more and more important for the global market, where products are losing their identity because of similarities in function and form. 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 for the enhancement of the individual consumer experience (Handa, 1999; Yair, Press, & Tomes, 2001; Yair, Tomes, & Press, 1999). The increasing emphasis on localized cultural development in Taiwan already demonstrates an ambition to promote a 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, martial arts movies from Bruce Lee to Jacky Chan

to the films of the Oscar-winning movie director Ang Lee have promoted recognition of Taiwanese culture at the international level (Hsu, 2004; Cheng, 2005).

By using local features in design as a strategy to create product identity in the global market, designers have 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 this process of embedding cultural elements into products and in increasing their cultural value in the competitive global product market. Therefore, we could say that designing a product with local features in order to emphasize its cultural value has become a critical issue in the design process (Wu, Hsu, & Lin, 2004; R. Lin., 2005).

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Culture plays an important role in the field of design, and cross-cultural design will become a key point in design evaluation in the future. Designing culture into products will become a design trend in the global market. Obviously, we need a better understanding of cross-cultural communications not only for taking part in the global market, but also for developing local design. As 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 the global market worthy of further in-depth study. The importance of studying culture has been shown repeatedly in studies in all areas of technology design (Ho, Lin, & Liu, 1996; R. Lin, 2005).

In this global market-local design era, connections between culture and design have become increasingly evident. For design, cultural value-adding creates the core of product value. The same is true for culture, in which design is the motivation for pushing cultural development forward. Therefore, the purpose of this paper is to study how to transfer cultural features to design elements, and to design cultural products from a cross-cultural perspective as a way to reinforce their design value. The paper establishes a cross-cultural design model that can provide designers with a valuable reference for designing a successful cultural product (R. Lin, 2005, 2006). The results presented herein provide an interface for examining the way designers communicate across cultures as well as the interwoven experience of design and culture in the design process.

## Culture and Cultural Design Features

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 activity. Based on linguistic, anthropological, and sociological studies, culture has been described as that which deals with the result of the evolutionary process in human civilization, a process that involves language, customs, religion, arts, thought and behavior.

### Three Cultural Levels

From the design point of view, K. Lee (2004) has proposed a culture structure with multiple layers, including layers representing artifacts, values, and basic assumptions. These

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layers are identified by key design attributes, including attributes that reflect function, aesthetics, and symbols. Leong and Clark (2003) developed a framework for studying cultural objects that is distinguished by three special levels: the outer “tangible” level, the mid “behavioral” level, and the inner “intangible” level.

Based on previous studies (Moalosi, Popovic, & Hudson, 2004; Wu, Hsu, & Lin, 2004; K. Lee, 2004; Leong & Clark, 2003), this paper offers a framework for studying cultural objects, as summarized in Figure 1 (R. Lin, 2005, 2006), in which 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 layers of culture can be fitted into Leong’s three cultural levels, given above. Where 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, emotions, and cultural features, (2) the mid level, dealing with function, operational concerns, usability, and safety, and (3) the outer level, dealing with color, texture, form, decoration, surface pattern, line quality, and detail.

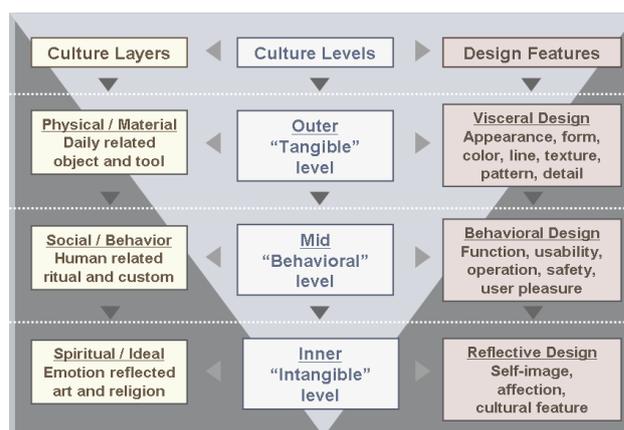


Figure 1. Three layers and levels of cultural objects and design features.

### Cultural Design Features

Using Taiwan aboriginal culture as an example, Figure 2 illustrates the application of the three levels of a ceramic pot from the Paiwan Tribe in designing a cultural product (R. Lin, 2005). The three levels of the cultural object can be mapped as three levels of design features: visceral design, behavioral design and reflective design (Norman, 2005). Visceral design concerns the appearance of a cultural object and aims to transform its form, textures, and patterns into a new product. The visceral design features become important where appearance matters and first impressions are formed. The behavioral design level concerns the use, function, performance and usability of a cultural object. Behavioral design features are the key to a product’s usefulness. Reflective design concerns the feelings, emotions, and cognition involved in experiencing a cultural object. Reflective design features are the most vulnerable to variability, as a result of differences in culture, experience, and education, as well as individual differences.

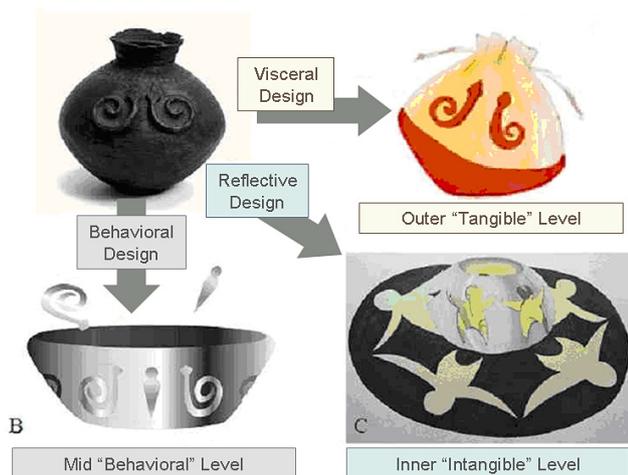


Figure 2. Three levels of a cultural product and its design features.

### 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 that can fit into society and can satisfy consumers culturally and aesthetically (Ho et al., 1996). Using cultural features to add extra value to products can not only benefit the economic growth of a society, but also can promote the uniqueness of a local culture in the global market. Therefore, because transferring cultural features into cultural products becomes a critical issue, a framework is proposed for combining cultural levels, layers and design features, as shown in Figure 3, in order to facilitate the understanding of cultural product design (R. Lin, 2006).

### The Three Phases of the Cultural Design Model

The cultural product design model in Figure 3 consists of three main phases: the conceptual model, the research method, and the design process. The conceptual model focuses on how to extract cultural features from a cultural object and then transfer these features to a design model. Creating the design model consists of three steps, as shown in the research method phase: identification (extracting cultural features from an original cultural object), translation (transforming these features into design information and design elements) and, finally, implementation (designing the cultural product). The research method phase, consisting of these three stages, is further described as follows:

1. Identification stage: The cultural features are identified in the original cultural object, including those related to the outer level of color, texture, and pattern; the mid level of function, usability, and safety; and the inner level of emotion, cultural meaning, and story-telling. Through this identification process, the designer, by using the scientific method and other methods of inquiry, is able to obtain design information from a cultural object and then evaluate and utilize this information.
2. Translation stage: In the translation stage, the design information obtained from a chosen cultural object is translated into design knowledge. In the process, the designer achieves some depth and experience of practice in relation to these design features and at the same time is able to relate this design knowledge to design problems in modern society, producing an appreciation for the interaction between culture, technology, and society.
3. Implementation stage: The implementation stage involves expressing the design knowledge associated with the cultural features, as well as the designer’s understanding of the meaning of culture, his/her aesthetic sensibility, and

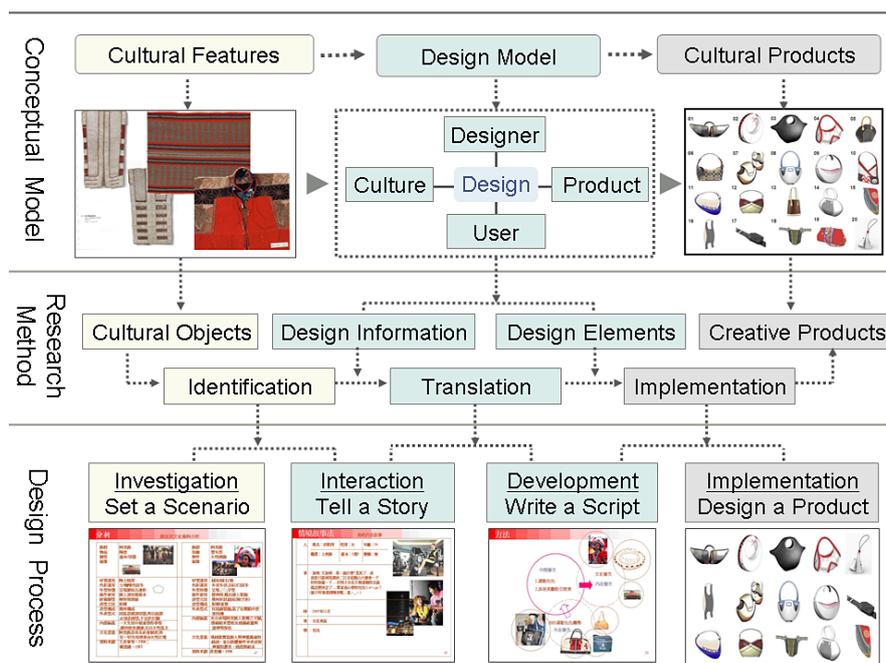


Figure 3. Cultural product design model.

his/her flexibility to adapt to various designs. At this stage, the designer gains knowledge of a cultural object and an understanding of the spectrum of culture and value related to that cultural object. The designer combines this knowledge with his/her sense of design in order to deal with design issues and to employ all of the levels of cultural features in designing a cultural product.

### The 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 (setting a scenario), interaction (telling a story), development (writing a script), and implementation (designing a product), as shown in Figure 4. The four steps of this cultural product design process are further described as follows:

1. Investigation/setting a scenario: The first step is to find the key cultural features in the original cultural object and to set a scenario that fits the three levels: the outer tangible level, the mid behavioral level, and the inner intangible level. Based on the cultural features, the scenario should take into consideration the overall environment in which the object is used, including such things as economic issues, social culture, and technological applications. In this step, the designer seeks to analyze the cultural features of the object in order to determine the key cultural features that can be applied to represent the product.
2. Interaction/telling a story: Based on the previous scenario, this step focuses on user-based observation to explore the social cultural environment in order to define a product that has cultural meaning and style derived from the original cultural object. Therefore, some interactions should be explored in this step, including the interaction between culture and technology, the dialogue between users and designers, and the understanding of the user’s needs and cultural environment. According to these interactions, a user-centered approach based on story-telling is developed to describe the user’s needs and the features of the product.

3. Development/writing a script: This step is the concept development and design realization step. The aim of this step is to develop an idea sketch in text and pictograph form based on the developed scenario and story. During this step, the scenario and story might require modification for the sake of transforming 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 user’s needs.
4. Implementation/designing a product: This step deals with the previously identified cultural features and the context of the cultural product. At this point, all cultural features should be listed in a matrix table, as a way to help the designer check the cultural features being applied in the design process. In addition, the designer needs to evaluate the features, meaning, and appropriateness of the product. The designer may make changes to the prototype based on the results from this evaluation, and may implement the prototype and conduct further evaluations.

### An Example of Cultural Product Design Based on the Tao Culture

The Tao people are a Taiwan aboriginal people native to the tiny outlying Orchid Island. Traditionally, the Tao people excel at making canoes. The Pinban boat shown in Figure 5 is an important symbol of their tribe. It is used for fishing, by which the Tao people make their livelihood. When they take these boats out for fishing, they usually bring along a special “holy dagger.” Figure 5 also 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 the Tao people ride in their Pinban boat with their holy dagger to protect themselves on the ocean while fishing. Based on this scenario, the Pinban boat was transformed into a modern bag and the holy dagger into a modern knife-like alarm. In modern society, one can imagine the scenario of a woman carrying this bag and bringing along the alarm to protect herself while walking down the street as matching

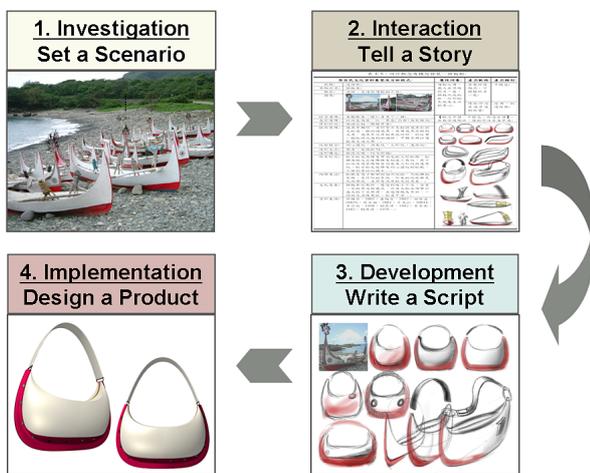


Figure 4. The cultural product design process.



Figure 5. Cultural product based on the Pinban boat and holy dagger. Source: upper left image: by the author; upper right image: Union Catalogs, National Digital Archives Program, Taiwan.

the previous scenario of the Tao people fishing with their Pinban boat and holy dagger.

## Cultural Levels and Design Features of the Linnak

Each tribe of the Taiwan aboriginal people has a unique culture and style that can be identified simply from its sculpture, textiles, weaving, leather craft, and pottery. A tribe can also be identified through the applied functions of its architecture, daily life objects, tools, ceremonial equipment, weapons, and decorations. Upon investigation of the equipment and tools of the 12 Taiwan aboriginal tribes, it was found that a type of cup called the Linnak, used by the Paiwan tribe, displays remarkable usefulness as a cultural resource. The unique shape of the Linnak, which could be described as a “twin cup,” expresses its cultural meaning, usability, and beauty. Therefore, the Linnak was used as an example to demonstrate the application of cultural features in product design.

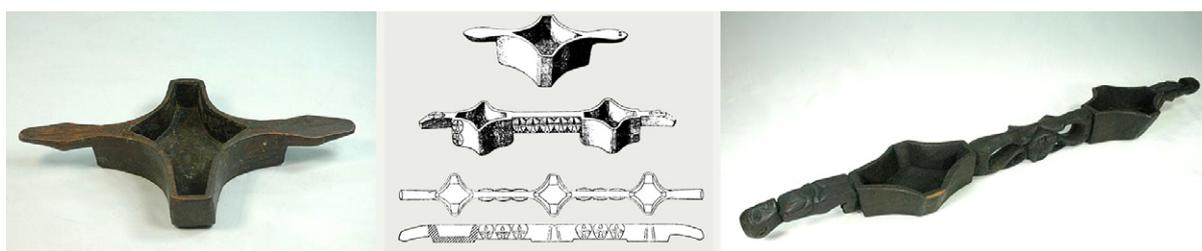
The “twin-cup” Linnak is a very common object in Paiwan culture. Indeed, among the Paiwan people, it represents a connection with their traditional culture. The Linnak is carved from one piece of wood and usually consists of two cups, with one handle on each side, as shown in Figure 6. The Linnak represents the aboriginal wine-drinking culture and reflects the traditional meanings connected with wine-drinking among the Paiwan and other aboriginal peoples. Traditionally, Taiwan aboriginal people often drank rice wine as a kind of sacred ritual. In ancient times they developed a variety of drinking containers, each of which had a meaning that was associated with a special event. For example, a one-cup Linnak could be used only in special events by the chief of the Paiwan tribe; the two-cup or three-cup versions, shown in Figure 7, were normally used in wedding or festival ceremonies and were meant to enhance the relationship of those taking part in the ceremony and to increase the warm feelings of the event.

In addition, there are certain social meanings, ergonomic concerns and functional considerations associated with the Linnak. To provide an ideal drinking cup for 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 according to the three levels of cultural features, as described below.

### Design Features Derived from the Outer Level of the Linnak

The design features derived from the outer level of the Linnak deal with material, color, form, texture, surface pattern, decoration, and detail. The outer level of the Linnak’s cultural features is illustrated by the embossed decorations, which are based on figures, heads, and snake and deer patterns, as shown at the top of Figure 8. The pattern of the snake, known as the long-hooded pit viper, is one that can be used only on objects belonging to a chief of the Paiwan tribe. These patterns and figures of the ancients, which displayed symbolic meaning, could be used as design elements and transferred to modern product design.

The physical dimensions of the Linnak include its total length, 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 the ideal of close relationships and have particular standards and specifications for different situations (Cheng, 2005; Chen, 1961). These dimensions indicate the way in which this object was used and also denote the idea of an invisible space between two people. From a usability point of view, the diamond-shaped cup illustrates that the cup was designed with an angular mouth for greater ease in drinking. Furthermore, the drinking process implicit in the cup’s design emphasizes the meaning of “working together” and “sharing with each other” (Wu, Cheng, & Lin, 2005).

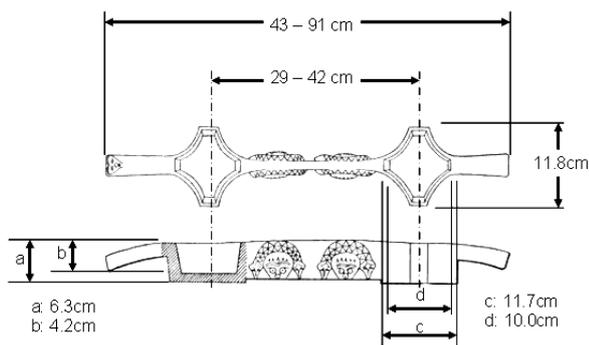


**Figure 6. The Linnak (twin cup), from the Paiwan culture.**

Source: left and right images: Union Catalogs, National Digital Archives Program, Taiwan; middle image: Chen(1961, pp. 75-76).



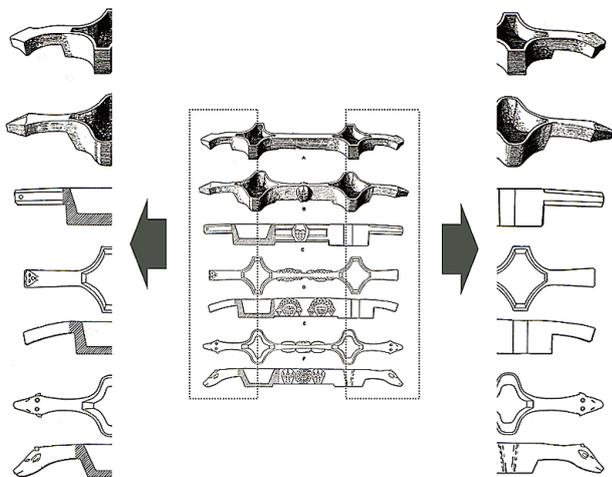
**Figure 7. Drinking from the Linnak at a wedding ceremony and at various other social events. Photographer: Wei-Hwa Lin.**



**Figure 8. The physical dimensions (outer level) of the Linnak.**  
Adapted and redrawn from Chen(1961, p. 78).

### The Design Features from the Mid Level of the Linnak

The mid level of cultural features focuses on consumer behavior and the scenarios in which people would use the Linnak on different occasions. It has been noted that people from different aboriginal cultures use different types of containers to drink wine in different ways, representing different cultural meanings. Among these cultures, the container designs may share some differences and similarities in either the concrete qualities such as the handle design or the abstract qualities related to cultural meaning. The handle design and the pitch between the two cups are the crucial elements for demonstrating 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 ceremonies, and it requires two people to manipulate the object smoothly for the drinking task. Therefore, the design features of the middle level of the Linnak should focus on how it can be operated smoothly based on ergonomics. Figure 9 shows the different patterns and totems on the handles, which may represent a personal style or character, depending on the different elements carved on the surface (Wu et al., 2005). An analysis of different handles could provide the designer with an idea of how to transfer the Linnak's usability into modern product design.

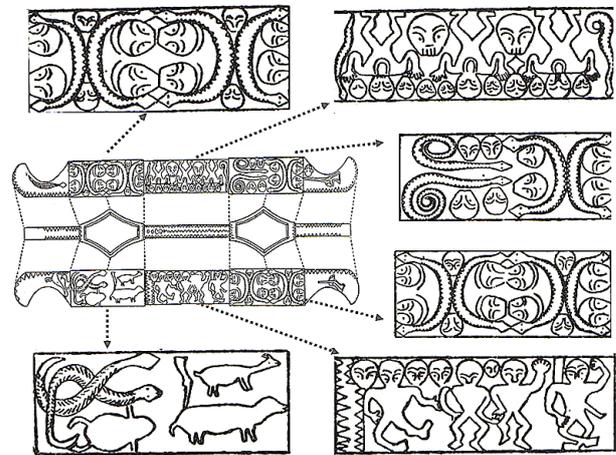


**Figure 9. The handles (mid level) of the Linnak.**  
Adapted and redrawn from Chen(1961, pp. 75-80).

### Design Features Derived from the Inner Level of the Linnak

The inner level of cultural features contains special content such as stories, emotions, and cultural meaning, and focuses on the symbolic qualities of the Linnak. In general, the inner-level interface of the Linnak is derived from the symbolic decorations shown in Figure 10. For example, the long-hooded pit viper pattern carved on the Linnak represents the glory, spirit and honor of a person of high status (Liou, 1979; C. Lee, 2000). The pattern also implies that the Paiwan people regard their ancients as people of nobility and worthy of respect, and also reflects the hierarchical society of the Paiwan tribe. In addition, although the Linnak is generally associated with contributing to the warm, sharing spirit of a festival or ceremony, it 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 at activities involving sharing with friends or drinking for pleasure. Taking Figure 10 as an example, we can see that the nature-inspired patterns seem to tell a story about the relationship between Paiwan ancestors and the respect they had for nature and the environment (Wu et al., 2005).

To further examine the Linnak, it is very important to study Taiwan Aboriginal totem art, as it offers a means for understanding a culture that lacks a written language. The totems appearing on textiles and sculptures can illustrate the culture itself (Chen, 1961; S. Lee, 2000; J. Lin, 2002; R. Lee, 1997). The design features of the inner level of the Linnak address the symbolic meanings of these patterns.



**Figure 10. The decorations (inner level) of the Linnak.**  
Adapted and redrawn from Chen(1961, p. 80).

### A Case Study of Transforming the Linnak into Modern Product Design

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 which also stimulates emotional pleasure. Therefore, a holistic approach to design has to aim to understand both the concrete and abstract contents of the Linnak, as shown 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 analysis of the Linnak demonstrates that cultural features are valuable elements to embed into a product to emphasize its value or meaning. The following are examples illustrating how the Linnak can be transformed into contemporary designs for the current consumer market.

### A Design Derived from the Outer Level of the Linnak: “Our Gloves”

The idea based on the Linnak of sharing and working together is one that is valuable for enhancing the usage of a product in our daily lives. In its cultural context, the twin-cup can enhance the socially interactive environment such as found at festivals and wedding ceremonies, in restaurants, and even in the kitchen, where the use of the twin-cup can emphasize emotion sharing, relationship building, and pleasure. Based on the cultural value of working together, the “Our Gloves” set, shown in Figure 11, was designed for couples to use to express the closeness of their relationship. The wife could use the middle glove or the separate one to work individually, or the couple could express their closeness by together using the middle glove, which serves to connect them and to express their sense of working together and sharing with each other.

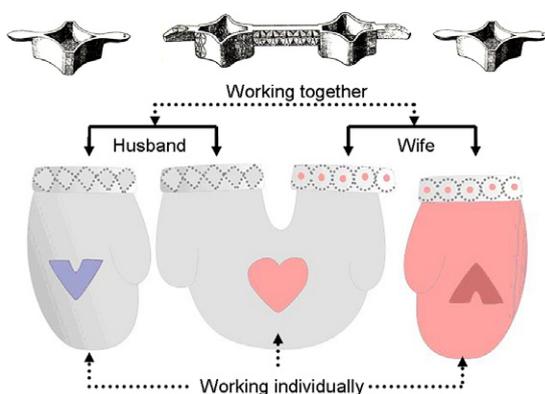


Figure 11. Our Gloves – designed from the outer level of the Linnak.

### A Design Derived from the Middle Level of the Linnak: “Our Cups”

During a Paiwan wedding ceremony, two people must hold the handles of the Linnak at the same time and manipulate the cup with good coordination in order to drink the wine without spilling it. In this case, the handle plays an important role as an invisible space that implies the relationship between two people. For example, a shorter pitch represents a closer relationship. Based on the cultural meaning of the Linnak, the “Our Cup” set shown in Figure 12 was designed to show the close relationship between mother and child by emphasizing the handles of the cups. From the usability point of view, the small cup, with two handles, was designed for a child learning how to drink from a cup, and the big cup, with one handle, was designed for the mother. When the two cups are not in use, they are connected by the handles, symbolizing the close relationship between mother and child. Another example derived from the idea of “sharing with each other” is the “Our Cups for Lovers,” shown in Figure 13. The design 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 each April in Milan, Italy, during the Salone del Mobile, the world’s biggest design fair.

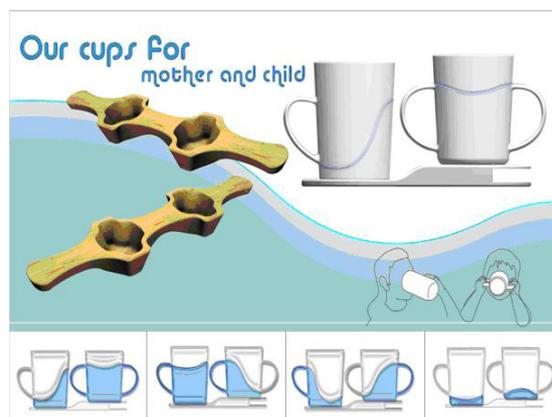


Figure 12. “Our Cups” for mother and child – designed from the mid level of the Linnak.

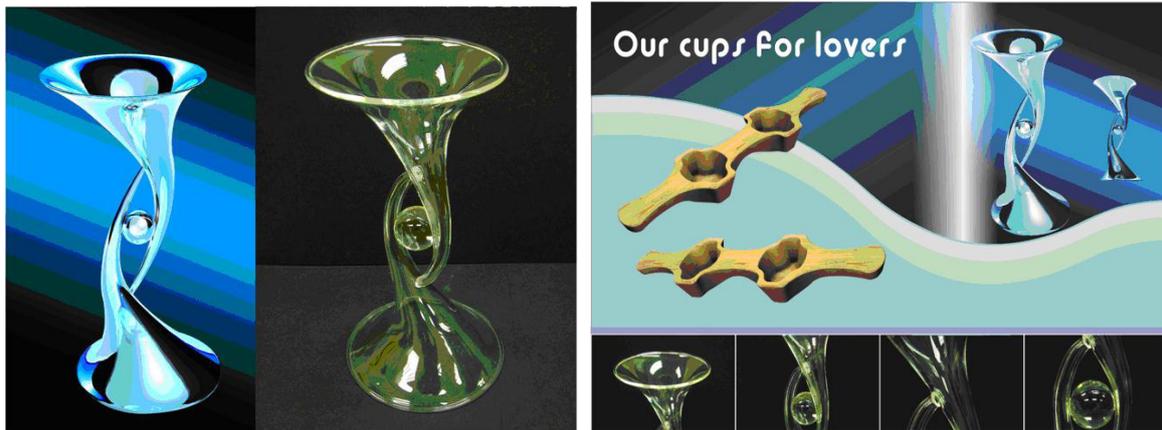


Figure 13. “Our Cups” for lovers – designed from the mid level of the Linnak.



Figure 14. “Our Pots” – designed from the inner level of the Linnak.

### A Design Derived from the Inner Level of the Linnak: “Our Pots”

At the inner level of the Linnak, the design of symbolic patterns expresses a sense of harmony between humans and nature. This concept of respecting nature was used as a basis for designing the “Our Pots,” shown in Figure 14, which are two small pots connected together, one pot to be used for cultivating a plant and the other for providing water for the plant. The design both symbolizes and fosters a close relationship between humans and plants by encouraging the human caretaker to share water with his/her plants. Furthermore, the design’s application of new material and technology provides a creative form that can enhance traditional cultural values in modern society.

### Conclusion and Suggestions

It has been noted that the beauty of Taiwan aboriginal culture and art demonstrates a great potential for enhancing the design value of modern consumer products. With its beautiful and primitive visual arts and crafts, Taiwan aboriginal culture offers great potential for enhancing design value and thus becoming recognized in the global market. Evidence shows that the perspective of Taiwan local culture will undoubtedly become a crucial cultural element in future design applications. Therefore, a cultural product design

model was proposed for transforming Taiwan aboriginal culture features into modern product design.

The Linnak-derived products provide good examples of applying cultural features to design while still retaining meaningful cultural value. This paper demonstrates the cultural features of the Linnak found at three cultural levels and how these distinguishing features can be transformed into a new cultural product design that can fit into the contemporary market. Hence, cultural products can extend the heritage and traditional values of Taiwan aboriginal culture to the consumer and increase the sense of a spiritual essence in human life. Perhaps the best way to extend a unique culture is to examine the impressions of the cultural object within that culture, as might be done with Taiwan aboriginal garments, crafts, decorations, utensils, furniture, ornaments, packages, etc., and to promote those impressions in daily life through product usage.

For future studies, we suggest field investigations and interviews with Taiwanese aboriginal people, in addition to an extended literature review, as a way to accurately understand their culture and art so as to avoid incorrect interpretations when transforming cultural features into modern product design. Furthermore, a detailed design process needs to be developed in the future in order to provide designers with specified procedures for designing cultural products.

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