# Next Step of Cultural and Creative Products - Embracing Users Creativity

Chia-Ling Chang[1] and Ming-Hsuan Hsieh[2](✉)

[1] Department of Creative Product Design and Management,
Far East University, Tainan City, Taiwan, ROC
`idit007@gmail.com`
[2] Department of Computer-Aided Industrial Design,
Overseas Chinese University, Taichung City, Taiwan, ROC
`mhhsieh@ocu.edu.tw`

**Abstract.** The use of cultural design products can improve products uniqueness and strengthen emotional consumer experience. In recent years, the concept of "open innovation" has initiated the age of "individual creativity", more and more users are showing a higher interest in expressing their design idea and being concerned in creative products which express themselves.

In this study, the creative users demand as the starting, propose "Cultural and creative user-based product Innovation Pattern". The steps of pattern are described below: (1) Prepare cultural themes and collect elements, (2) Extract cultural elements, (3) Transform cultural elements of product components, (4) Develop product interface, (5) Design creativity-friendly interface, (6) Prototype, and (7) Inspect the features of products. Since ancient times, the bat was used as a mascot in decorative arts as a symbol of good fortune and happiness as a characteristic of Chinese culture. We toke the bats as a cultural theme to practice the "Cultural and creative user-based product Innovation Pattern". This study escaped the existing cultural and creative product design methods by importing the users creativity into cultural products, refining the relationship between classic archives and users, and successfully developing "users permissible creativity development" into cultural and creative products. This study also was able to break the traditional cultural products usage intentions by not only allowing users to freely change the shape of the products, but also to meet the functional needs based on different needs. In this study, users' creativity-based, classical culture collections for reference, the development of the key of cultural elements proposed by "Cultural and creative user-based product Innovation Pattern" have lead cultural and creative designers to new strategies of thinking and designing. The archives will be more variable, interesting, and creative while logically maintaining Chinese cultural and conservative feel for daily life in the modern world. When the users practice their creativity based on transitional culture, they help maintain the cultural continuity, applicability, and value.

**Keywords:** Users creativity · Cultural and creative product · Open innovation · Innovation pattern

# 1   Background

Chinese culture profoundly contains many precious treasures. In recent years, Chinese culture has caught worldwide attention, and gradually moved towards the world stage. No matter whether it was in the heritage art auction market, or in the drawn films, it is gradually catching people's eye. From a *product design* view within the global competition market, the use of cultural features design application, not only improve uniqueness of products, but also better provides an emotional consumer experience. It is evident in developed countries of the importance of highlighting the cultural and creative design innovations for a competitive advantage. In terms of cultural and creative industries mixed with the consumer process in modern culture, functional product development will gradually focus more on spiritual values (Chen, 2009).

In recent years, the concept of "Open Innovation" (Chesbrough, 2003), made it possible for enterprises to realize the importance of users' creativity in their products. With each new generation, there is a stream of creativity that flows in this era of "individual creativity". More producers are asking users to get involved in areas such as: product components, tools or methods to the users. The products must meet the "user's creativity". Increasing numbers of users are showing a keener interest on design, and concern the products which can express themselves.

However, the current cultural product design still stays in *static state* product design. This study suggests that the cultural product design has become a focus of concern. It is suggested that the designers should focus more on products cultural components, narrative and artistic value, as well as the users' ability to appreciate or "re-create" an action. This means the products in addition to the requirements of basic functions must also be expected to be individual through one's own unique design ideas in the same way *Self-Realization* indicates in the first level of Maslow's Hierarchy of Needs. For designers, design is not only to meet consumer demands, but also more importantly through design transformation create products to meet cultural legacy and cultural creativity.

# 2   Literature Review

## 2.1   Users' Creativity

In the past, the mass production and manufacturing was about the concept of "Modularization." However, recently the importance of consumer awareness has been raised. Over time, standard products sales have declined due to not meeting consumer demands of creativity. Consumers live with a lot of creative ideas in their daily lives and try to play the role of the designer. Consumers attempt to change the shape or function to meet their own unique creative goals individually (Moreau and Dahl, 2005).

Observe the history of the development of industrial products, more products are willing to open creativity towards end user, such as: product components, tools or methods of the user, to meet the users' desire of their own design of the final product appearance or function (von Hippel E. & Katz R., 2002; Chan & Lee, 2004). In the past, research topics focused more on product patterns forming the final decision.

Moreover, the Design experience patterns were considered before the final decision without consideration to the level of the users. Users basically just own a *choose rights* and nothing more than practically *design rights*. In the role of postmodernism, consumer-oriented product development has been replaced by post-design (Luh, Lin, and Chang, 2005), with respect to post-modernism. In modernist terms, it was the emotion and gain that consumers expected and did not buy, but the experience gained through the purchase.

Users' creative concept proposes that designers open part of the designing rights to consumers. It will satisfy consumer demand in the creative product diversification. Even if they own limited abilities, they still can be creative to design, transform and other ways participate in part of the product design (Luh and Chang, 2007).

## 2.2    The Cultural Product Design

The rise of cultural and creative industries has increased the importance to aesthetics. This increase on economic power has become a major competitive key to countries' enterprises. More people have proposed "aesthetic design force" as another indicator of strength. By re-interpretation of the deep meaning of the intangible culture, cultural creativity feeds into operational design techniques in order to give concrete expression to the different carriers. The growth of aesthetic economy, cultural style and highlights of the lifestyle design, is becoming more favored by consumers.

Cultural assets cover a wide scope. It can be summarized into two areas: tangible cultural and intangible cultural. The first part includes historic buildings, natural landscape, cultural landscape, floral, fauna, regional life objects, etc. The second part includes things such as Tang poetry, Sung lyrics, classical literature, religions, customs, festivals, ritual, and behaviors. Lee (1996) considers culture as referring to "products of human activities, including tools, social life used to maintain the laws and institutions that depend on spiritual life all the art products, but also includes many the human activity history in the creation process." Highlighting the presence of the cultural characteristics, from the design side, the elements of national culture, such as symbols, lines, stories, shapes, and colors help to explore the product design and give information. Therefore, the consumers, in addition to the actual use of its functionality, can sense the designer through the commodity characteristics through desired shapes conveying the culture, to create a moving and common of emotional interaction.

To strengthen the product depth, scholars recently have proposed the cultural product design as the base. Yeh, Lin, and Hsu Yeh, Lin and Hsu (2011) employed a technique used in classical Poetry Literary Spirit as the starting point on how to master the background of the traditional "poetry" by capturing the key implications for analysis of morphology and content. Through the body and spirit, they were able to convert the essence of "poetry" to actual cases of "poetry" of product design, and put it into "God-shaped poetry conversion". Yang, Ho, and Luh (2011) utilized the three great classics: "Weave Dream of Red Mansions (織夢紅樓)", "Four Beauties (四大美人)", "Jin Yong Woman (金庸女俠)" to create actual metalworking creations. A construction of "Creative Tree" from the concept of base text, context, and gestalt, and from the proposed" hierarchy of Gestalt-oriented authoring mode shape ",

he proposed six procedures. These include: (1) Topic definition and data collection, (2) Excerpt and arrangement creative members, (3) Development and expansion of Gestalt level, (4) Screening the best level of Gestalt, (5) Story line definition and specific preparation, and (6) Creative practice and transition. Wang and Hong (2011) had proposed the metaphor of cultural and creative goods design patterns, using the similar relationship to build up the relevant context of people, events, and substance. Using a characteristic angle for dismantling and reassembling, one could design metaphorically and innovatively.

This study suggests that the cultural product design has become the focus of social concern. Designers should focus on such products not only to cultural elements, story ideas and artistic value, but also can not ignore the users' ability of rich interpretation of "resign" and "re-creation" acts. Currently, consumers rich diverse ideas and products can expect to show a unique and interactive style. Therefore, this study attempts to integrate the traditional culture of creative users, breaking the established range of cultural products and forms. It can be changed with the users' own creative appearance and features of products that makes the products escape the static artistic and cultural norms to achieve a new meaning and purpose of interaction.

## 3   The Cultural Product Innovation Patterns

This study analyses products based on users' creativity, attributed to common characteristics. Continued importance on cultural property towards historical and cultural objects for the design of application objects have been made "based on the user's creative product innovation model" to develop and meet the new cultural and creative products. By utilizing the user's creativity, one will strengthen the change and richness of cultural and creative goods.

### 3.1   Users' Based Creative Product Features

Such products are found mostly in single elements presented as non-integrity products. Essentially, users obtain a self-realization from a product creation process and become participants in the design of the products after purchase. From product suppliers, one can effectively reduce the cost and process time. Due to space restrictions, a outline of common features for these products are as follows:

### 3.2   Reassembled Components

Product components could be optionally replaced by users, components could be provided by manufacturer or easily obtained by users themselves. Some elements of the product may be reassembled by users to change the product mix, or replaced with renovation elements, to alter, amplify the product's use, or external morphology and function with variability.

## 4   Creative Friendly Interface

Interface-based takes on important interaction between the media and users' of the products. Human factors engineering scholars have proposed "friendly interface" to consider users' physiological, psychological state, to assist users more easily in operating the product, which is designed to reach a preset functions and objectives of the product (Fisk, 1999 & Mueller, et al., 1998). "Users Successive Design (USD)" aims to assist users to easily use their own product ideas, rather than the default preset. Clearly highlighting the differences between the two, USD products interface refers to "creative-friendly interface". Users of USD products meet highly creative and friendly interface exchange and they can effectively reduce the user's ability to achieve the threshold of creation.

## 5   Freely Design Authorities

Which means that the product can be re-designed or provided the possibility of further innovation. Product is preset design freedom, based on individual creative will, creative needs and design capabilities of users. Users can continuously design and development of the use of the different stages of the product shape, function, and even the original product categories.

## 6   Toleration

In the designer angle of view, "design is a purpose to solve a problem and will solve the problem correctly." Which means that designers have already offered one or more preset correct solutions for users. Others designers have not included this deeming it to be a "mistake" or "non" solution. "Toleration" that is a correct target system default, allows the users to reach the target when making a user mistake (Wu, 2004). However USD Product encourages users to conduct a variety of re-creations, allowing the user to change the original goals set. Then after the users design is derived from a variety of forms, the product can be regarded as reasonable and more creative and meaningful in its results. It's not only the result of a simple expansion or extension of the product, which can accept the "right" spirit which is greater than the allowable "wrong" sense. It has been called "toleration" here. Under this context, USD products will be considered as the integration platform for designers and users to show creativity.

### 6.1   The Users' Based Cultural and Creative Product Innovation Patterns

In this study, the creative users demand as the starting, construct creative user-based innovation patterns of cultural products. The steps are described below:

**Step 1: Prepare Cultural Themes and Collect Elements.**
Historically, when each parties has a unique culture, customs, atmosphere, and breeds diverse and rich cultural objects, one needs to avoid misunderstanding. Innovative design must develop a cultural theme first and create deeper understanding of the cultural context and spiritual meaning. Cultural themes drawn two methods: one is according to who、what、when、where、what, sometimes historical people, events, dynasties, regions, and other characteristics of the cultural heritage as the theme. The other is on emotional and personal preference or market-orientation to define the main topic to select what is most in line with market expectations or potential. According to the theme of collecting the relevant elements, one can do this in order to facilitate subsequent design thinking. Currently, Taiwan has build a number of national Digital Collection libraries, such as: Taiwan E-learning and Digital Archive Program (典藏臺灣)" http://digitalarchives.tw/. It collects over 3.2 million collections with content integrity, and by professionals who confirm the correctness of cultural materials in order to avoid cultural misinterpretation.

**Step 2: Extract Cultural Elements.**
To reduce cultural cognition error by designers and users, you maybe focus on interviews, questionnaires, product analysis, ethnography to define the users' awareness of cultural elements. The collection of cultural elements, can be categorized according to appearance, usage behavior, or ideology as a basic classification. Appearance then can follow by sizes, scale, colors, textures, shapes, surfaces, ornamentation, lines, details of the deal. The usage of behavior is in accordance with the functionality, interoperability, ease of use, safety, or structure. Ideology is in accordance with a special meaning, story, emotions and other abstract symbols and other projects proposed which may represent a key element to the design theme of cultural goods component of the transformation.

**Step 3: Transform Cultural Elements of Product Components.**
Product is composed by components, and each component carries and develops product capabilities. When units can carry most of the functionality of products, one can develop a single component, known as "primary components". Conversely, if the component is attached to the main demand components, in order to show the special features, it can possess, a particular feature, called "secondary components." To use "shape appearance", the "usage behavior", "ideology" of cultural elements to convert primary and secondary components into products, create complete product functionality.

**Step 4: Develop Product Interface.**
Product interface can be divided into specific "physical interface" is responsible for connecting between each components; and psychological "cognitive interface" is responsible for the interaction between product and consumer. Therefore, in the physical interface, designers must develop ways of engaging primary and secondary components, such as the common bonding method: mortise, snap, hook clasp, rings, bonding, plug, stapling, stitching, etc. according to the material properties of the components to develop a reasonable product interface.

**Step 5: Design Creativity-friendly Interface.**
To encourage users to conduct a variety of product re-design, re-creating behavior, cognitive friendliness of the interface that need to be reached, one could allow the users to be able to use both the knowledge and ability to design, create, as far as possible without additional study. In addition, an engaging way should come with an "undo feature" to allow the creation of a user to easily reply or reset. Designers may use product design techniques, such as product semantic interface to guide the users' creative friendliness.

**Step 6: Prototype.**
Primary and secondary components and interfaces can be founded by a common computer graphics, 3D printing, product sketch and functional models. The product components can be molded to test functional and creative diversity.

**Step 7: Inspect Features of Products.**
To confirm the product meets with users' needs based on cultural and creative products, it needs to be inspected by four features based on "users creativity" as mentioned. If one of them does not reach the requirements, you need to return to Step three.

## 7  Practice

In this study, the demand for creative users is the beginning point. According to the proposed "users' orientation of the cultural and creative product design patterns" and procedures are to target historical and cultural objects as the design of the application object, to develop creative innovations for users and to strengthen the cultural and creative goods to enrich design. The following example of steps can be taken.

**Step 1: Prepare Cultural Themes and Collect Elements.**
Since ancient times, the bat because the word sounds like blessing, rich,prosperity, the bat was used as a mascot in decorative arts as a symbol of good fortune and happiness as a characteristic of Chinese culture. Therefore, the shape of bats often appears in many traditional patterns, as seen on some of the old buildings, furniture and objects. Presenting bats as a cultural theme, from the website of " Taiwan E-learning and Digital Archive Program (典藏臺灣) http://digitalarchives.tw/ can collect bat culturally relevant artifacts and then chart a bat cultural artifacts profile (Table 1).

**Step 2: Extract Cultural Elements.**
Using the chart one can find connections between specific elements or searches. For example, if one wanted to know the connection between all the imagery of a bat and focus on the shape as a symbol, such as the overall shape being wide and flat, with symmetrical and rounded wings and the color that was used will most likely be the color of objects itself. Next sort by the bat's symbolic references, the function of the tread patterns which are mostly found in clothing accessories. Next, the connections of these six bat relevant artifacts to 30 survey respondents whose average age is 20.2 years old to yield the results of "Bat Lock (蝙蝠花旗鎖)" is the easiest understandably object to recognize. So this selection of Bat lock (ancient Chinese lock) (see Table 1) is a key

**Table 1.** Bat cultural artifacts profile

| | | |
|---|---|---|
|  |  |  |
| Late Qing Dynasty sil-ver bat hairpin[*1] (清末民初 銀蝙蝠簪) | Qing Dynasty jade bat[*2] (清朝 玉套蝠) | Qing Dynasty Jade bat button[*3] (清朝 翠玉蝙蝠式鈕扣) |
|  |  |  |
| Qing Dynasty Silver in-laid coral earrings[*4] (清朝 銀鑲珊瑚耳環) | Four bats ornaments[*5] (四福捧壽飾) | Bat lock[*6] (蝙蝠花旗鎖) |

element in this sample or the product component conversion design. According to its context and morphological characteristics, the deduction related design elements, structural proportions, and simplified the shape would be suggested.

**Step 3: Transform Cultural Elements of Product Components.**
To make the product in line with modern style and processing costs, designers use "flaky unit" concepts to simplify the shape of the bat lock. While retaining the outside contour, removing cloud-shaped patterns with texture details and central wing lettering, one can adjust wing spacing, develop the main components according to the context (Fig. 1). In addition, if the main component composition space gap is too large, one can develop a smaller size of the secondary compartments. The material of components may be made of a toughness and elasticity of PP (polypropylene), in order to meet users creative development from space limitations.

**Step 4: Develop Product Interface.**
According to the principle of bonding, the die assembly by two points are composed on a planar shape. Three points or more can be assembled to complete the 3D shape, for greater product features by taking three assembly points for the primary and secondary components linking the interface. Between the head and wings of the three main components will create a round pits design. Three rounded bumps are designed on the top of the tail and wings for every two components to be snapped together.
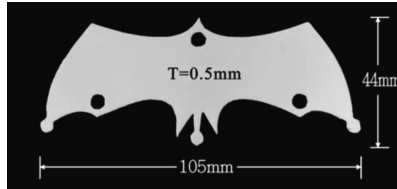
**Fig. 1.** The simplified process of Bats locks



**Fig. 2.** The mode with bat image

**Step 5: Design Creativity-friendly Interface.**
Using rounded pits and bumps to connect all components together, simply snap together without additional cognitive learning. A process similar to the Lego System, may allow the user repeat for a variety of three-dimensional stitching or removal of the creative interface easily.

**Step 6: Prototype.**
Using Autodesk to draw die, CNC machining cutting mode, complete the image of the product components several bat pieces of bats (Fig. 2), then create a creative puzzle design.

**Step 7: Inspect the Features of Products.**
Brainstorming with multiple users focusing on user's personal and creative needs of functional requirements of the product, one can combine memorable variability to the product. Figure 3 shows the results of the combination, including: a large flower pendant, a round-fu plate, a compartment tray. There are over three uses and aspects by four features based on users creativity (Table 2).

The work with the users can choose the number of units in different pieces freely such as: combined into large flower pendant, small nightlights, birdlike reflections, beautiful lighting forms and enjoyable thelights that are genuinely interesting. Different sizes of combination can be used for different purposes, both in practical and modern fashion, for blessings, for prosperity or for peace. Both are practical as gifts or for personal use. It contains both cultural meaning and practical value drawing one closer to culture within one's daily life.

**Fig. 3.** The outcome of design

**Table 2.** Description of feature inspection

| Feature | Result | Description |
|---|---|---|
| (1) Reassembled components | Y | All the components are reassembled |
| (2) Creative friendly interface | Y | Users do not need extra learning, fastening components intuitively |
| (3) Freely design authorities | Y | Creative achievement seen by the users, the product shape diversity, across containers, lamps of different functional categories. |
| (4) Toleration | Y | The creative process, the users can change the ideas any time all results can be regarded as a reasonable result. |

# 8 Conclusion

In response to rapid information exchange and trends of creative development being diversified, the rise in consumers who are into unique, emotional consumption is increasing. They don't just buy a simple object. They are concerned with their interaction with products. (Friesen, 2001). In this study, users' creativity-based, classical culture collections for reference, the development of the key of cultural elements proposed by "Cultural and creative user-based product Innovation Pattern" have lead cultural and creative designers to new strategies of thinking and designing. On the other hand, it makes the product a deep part of cultural literacy. For the consumers, historical

artifacts are no longer unfamiliar and distant. The development of user-creative products will be satisfied. Cultural artifacts will be more changeable, interesting, creative, and logical while upholding Chinese cultural conservation in modern daily life.

# References

Wang, H.H., Hung, J.L.: A metaphorical method for product design in cultural and creative industry. J. Des. **16**(4), 35–55 (2011)

Lee, Y.Y.: Culture and Accomplishment. Youth culture, Taipei (1996)

Luh, D.B., Lin, N., Chang, C.L.: Successive design. In: The proceeding of 2005 World Chinese Industrial Design Conference, pp. 305–308 (2005)

Luh, D.B., Chang, C.L.: User successive design: concept and design process. J. Des. **12**(2), 1–13 (2007)

Chen, H.Y.: . A Study on the Information Design of Cultural Product. Department Of Product Design, Ming Chuan University. Master thesis (2009)

Yang, T.L., Ho, M.C., Luh, D.B.: Gestalt-oriented approach to form creation. J. Des. **16**(4), 19–34 (2011)

Yeh, M.L., Lin, P.H., Hsu, C.H.: Applying poetic techniques of shape-spirit transformation in cultural creative design. J. Des. **16**(4), 91–105 (2011)

Fisk, A.D.: Human factors and the older adult. Ergon. Des. **7**(1), 8–13 (1999)

Friesen, G.B.: Co-creation: when 1 and 1 make 11. Consult. Manage. **12**(1), 28–31 (2001)

von Hippel, E., Katz, R.: Shifting innovation to users via toolkits. Manage. Sci. **48**(7), 821–833 (2002)

Chesbrough, H.: Open innovation: how companies actually do it. Harvard Bus. Rev. **81**(7), 12–14 (2003)

Chan, T.Y., Lee, J.F.: A comparative study of online user communities involvement in product innovation and development. In: Proceedings of 13th international conference on management of technology, Washington D.C (2004)

Wu, N.E.: Coverage in fault-tolerant control. Automatica **40**(4), 537–548 (2004)

Moreau, C.P., Dahl, D.W.: Designing the solution: the impact of constraints on consumers' creativity. J. Consum. Res. **32**(1), 13–22 (2005)