

Sustainable Development of Cultural and Creative Products Design in the Palace Museum from the Perspective of Civil Context

Xinlei Bai^{1,a}, Fei Wu^{2,b,*}

¹Department of Visual Communication, Luxun Academy of Fine Arts, Shenyang 110003, China

²Department of General Education, Luxun Academy of Fine Arts, Shenyang 110003, China

^a 2691877923@qq.com, ^b wufei@lumei.edu.cn

*corresponding author

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Abstract: Under the background of "Double carbon" goal in 2020, the Palace Museum launched the "zero waste" project, and the cultural innovation has entered a new stage and puts forward more ideas of sustainable design with a focus on cultural characteristics. In this study, the concept of civil context is proposed, thinking framework is constructed, future development path is explored and the research process is summarized from the perspective of historical and cultural inheritance. The study results indicate that the sustainability is the future trend for cultural and creative design. Furthermore, the core of sustainable development lies in civil context. The study of civil context promotes the development of urban cultural spirit, which provides accurate characteristic positioning and development guidance for cultural innovation. As the vitality and creativity of design rooted in culture, the civil context is the essential resource and driving force for the sustainable development of cultural and creative design in the future.

1. Introduction

In 2020, Chinese government issued new green guidelines for the Belt and Road Initiative. China will peak its carbon emissions before 2030, be carbon neutral before 2060, referred to as "Double carbon" [1]. The "Double carbon" strategy advocates a green, environmental, friendly and low-carbon lifestyle. As the main force to boost consumption in China in recent years, "Double carbon" goal becomes a new era background for the sustainable development of cultural and creative design.

These years, the sustainability in design draws has been concern for many scholars. Clark et al. [2] demonstrates the product design for the sustainability in developing countries. Spangenberg et al. [3] has done sustainable consumption research on eco-design. Other than sustainable design itself, Rahman and Agost [4, 5] focus on the consumers' response. Kozlowski et al. [6] explores the archetype categorization tool to aid designers for sustainable fashion design. Sumter et al. [7] identifies the sustainability competencies framework to successfully design products. Seonju [8] develops the digital design methods for sustainable fashion design on the basis of Korean Aesthetics. Based on the previous studies, this article conducts research on the sustainable cultural and creative products design in the Palace Museum with a focus on cultural characteristics.

The concept of cultural and creative industry was first put forward by the UK in 1998. It is aimed at forming a complete industry of culture and knowledge. Cultural and creative design is a form of expression of cultural symbols. It uses creativity to apply cultural elements to commodities in order to obtain commercial value. The rise of cultural and creative industries is due to people's shift from the consumption of product functions to the consumption of product cultural symbols [9,10].

In terms of ideology, China's cultural and creative design is generally considered to be the best form of integration of Chinese traditional culture and products. In recent years, China has paid more attention to the current situation of museums, and a series of policies have been issued one after another. The design of cultural and creative products in domestic museums has gradually become a hot topic in society. Marked by the success of in the Palace Museum, it has entered the fast lane of the

development of cultural and creative products. After the Cultural Industry Promotion Law was put forward, the Palace Museum has opened up a new direction, which proposes carbon reduction as the source of design.

Based on the above background, this paper studies the sustainable development of cultural and creative products design of the Palace Museum, investigates the relationship between the internal logic and external representation, and puts forward the importance of "civil context" for cultural and creative design. A good cultural innovation design must first have a rich spiritual core, and then use artistic techniques to express it. The recyclable concept of cultural and creative design can be integrated into the concept of environmental protection from the aspects of materials and forms of expression. From a deeper level, it is to do a good job in the transformation from culture to products, better transmit cultural values, make useful and inheritable design.

2. Theoretical Background

2.1 Cultural and creative design of the Palace Museum

As the largest cultural IP in China, the Palace Museum has attracted much attention in its cultural and creative development, from which, we can see that the cultural innovation design has experienced the exploration process from "simple copy" to "creative expression" and then to "cultural connotation". The cultural and creative development of the Palace Museum has gone through the following stages:

The first stage is the spontaneous research and development stage of cultural relics before 2010. At that time, the products design is mainly to simply copy cultural relics (as shown in Figure 1(a)) and directly extracts cultural symbols (as shown in Figure 1(b)) and sold out in small size (as shown in Figure 1(c)).



Figure 1. Beaded earphones (a) —source: people.cn

(<http://finance.people.com.cn/money/n/2014/1023/c218900-25890397.html>, accessed on 21 Jan. 2022), “Fengzhilvxing” series luggage tag (b) —source: China.org.cn

(http://www.china.org.cn/arts/2015-08/10/content_36268983_4.htm, accessed on 21 Jan. 2022) and “I’m such an emperor” folding fan (c) —source: people.cn

(<http://finance.people.com.cn/money/n/2014/1023/c218900-25890397.html>, accessed on 21 Jan. 2022).

The second stage is the conscious research and development stage of cultural and creative products design from 2010 to 2017. The Palace Museum began to make bold use of cultural creativity and network communication means, and made bold attempts. The cultural elements really entered the public's life from the museum. At this time, the cultural innovation of the Palace Museum focuses on the expression form and innovative application of design, and expands the media communication. As shown in Figure 2, the online store of the Palace Museum was officially launched in 2015, and the cultural innovation and design commodities reached more than 8700. The cultural and creative industries have not only created new economic growth points, but also played an important role in promoting the transformation of traditional industries and the adjustment of industrial structure. The cultural and creative industries have become a new engine for sustainable development and urban regeneration.



Figure 2. The Palace Museum online stores—source: TMALL (https://ggcbs.tmall.com/?spm=a1z10.1-b-s.w5003-21861372568.1.68167e28OvuXzN&scene=taobao_shop, accessed on 21 Jan. 2022).

The third stage is the theme cultural creation stage. From 2018 to 2022, the cultural innovation of the Palace Museum pays more attention to the importance of cultural connotation and changes from quantity to quality. By studying the cultural history and cultural relics of the museum itself, as well as the living habits and lifestyles of ancient Chinese people, the designers carried out the theme research and intelligent research during the development of cultural and creative products. The cultural innovation of the Palace Museum not only finds a balance between a profound sense of history and a relaxed and interesting sense, so that more people can understand China's history and culture.

With the advent of the epidemic era in 2019, the cultural and creative design is also facing a new direction of transformation. Under the background of "Double carbon" goal in 2020, the Palace Museum launched the "zero waste" project and proposed to build an internationally leading "zero waste Museum". Two years later, the Palace Museum handed over its "answer sheet". The average recycling rate of garbage reaches 45%, and the per capita garbage reduction rate reaches 89.2% [11]. The total annual carbon reduction is equivalent to the carbon sequestration of 7719 trees a year. The Palace Museum has displayed the waste recycling sculpture of "farewell to the old" as shown in Figure 3(a). About 92% of the materials come from the waste produced by the Palace Museum, totaling 0.32 tons. The team builds the skeleton with waste steel, fills it with the waste plastic products and finally shapes it. Figure 3(b) depicts the zero waste environmental protection cultural innovation. During this process, the recycled waste plastic bottles are converted into renewable plastic particles. Yarn is made by professional equipment and spun into cloth. A beautiful scarf comes from only 3 PET plastic bottles, while a useful handbag comes from 8 PET plastic bottles. On this occasion, the cultural innovation of the Palace Museum has entered a new stage and puts forward more ideas of sustainable design.



Figure 3. "Farewell to the old" waste recycling sculpture (a)—source: wenming.cn (http://www.wenming.cn/wmzh_pd/sj/sjtp/202107/t20210714_6111333.shtml, accessed on 21 Jan. 2022) and "Zero waste" scarf and handbag (b)—source: sohu.com (https://www.sohu.com/a/484661401_121107011, accessed on 21 Jan. 2022).

2.2 From Culture to Products

Based on the idea from culture to products, the cultural and creative design process is proposed in

this paper, as shown in Figure 4. Taking "tradition" as the starting point, it studies Chinese culture, deeply refines new product design ideas, and meets the lifestyle and aesthetic needs of modern people. In short, the cultural creative design is a practical process from culture to product. The specific process are lists in the following sections 2.2.1-2.2.4.

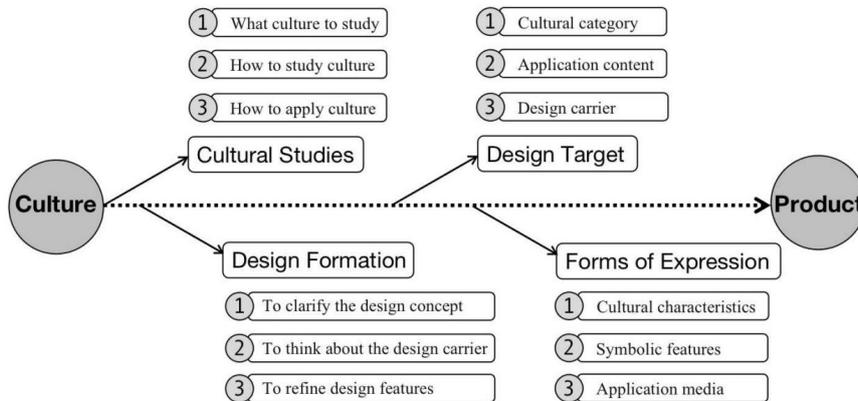


Figure 4. The design procedure from culture to product. Source: the author.

2.2.1 Cultural Studies

The so-called culture includes all aspects of a nation's life. The core part of culture is the traditional ideas and their values.

What culture to study: from the perspective of different classification, there are culture in material form and intangible culture related to spiritual level; there are also utensil culture, culture habits and concept culture; there are also cultural categories di-vided from the perspective of region or diet. The connotation of cultural and creative design is to transform these cultural contents into new aesthetic design products.

How to study culture: the onsite investigation cannot be conducted on some past cultural phenomena, but it can be achieved by collecting and analyzing historical documents. For the research on history, the sociocultural investigation method is used to record the intangible cultural heritage. Besides, the corresponding conclusions could be obtained through the similarities and differences analysis of similar cultural phenomena by classification and comparison. At the very least, the cultural phenomena could be observed purposefully and systematically. Figure 5 is Best of the Best 2013, awarded by Red Dot. In developing countries, 2.5 million people still rely on coal for cooking, but the disadvantage of this method is that a lot of heat is lost in the process of burning coal. Double Warm is an environmental protection stove in which there is a water-bearing layer around the stove, so users can boil water when cooking. It depicts the process of how to make a new coal stove design by observing the use of the traditional one.



Figure 5. Double Warm—source: Design China
(http://www.333cn.com/shejizixun/201950/43495_158562.html, accessed on 21 Jan. 2022).

How to apply culture: the spiritual and internal core of culture should be applied in design, and the corresponding application is to take the usage process as the creative point of design. While the

application of external image is more intuitive, it refines and summarizes the traditional objects and patterns, breaks up and reconstructs them. Figure 6(a) shows a censer, which adopts Chinese fable "high mountains and flowing water" as its internal spiritual core and innovates in the structure of cultural and creative product to make the smoke flow down like water. Figure 6(b) shows Lufa Series by Mexican designer Fernando Laposse. Loofah is a sustainable fruit, popular in Asia. Its material is soft, with semi translucent and air permeability. It is honeycomb in structure and can be loaded evenly. These features are well applied in the design products such as stand lamp, vases, cup set and lufa screen.

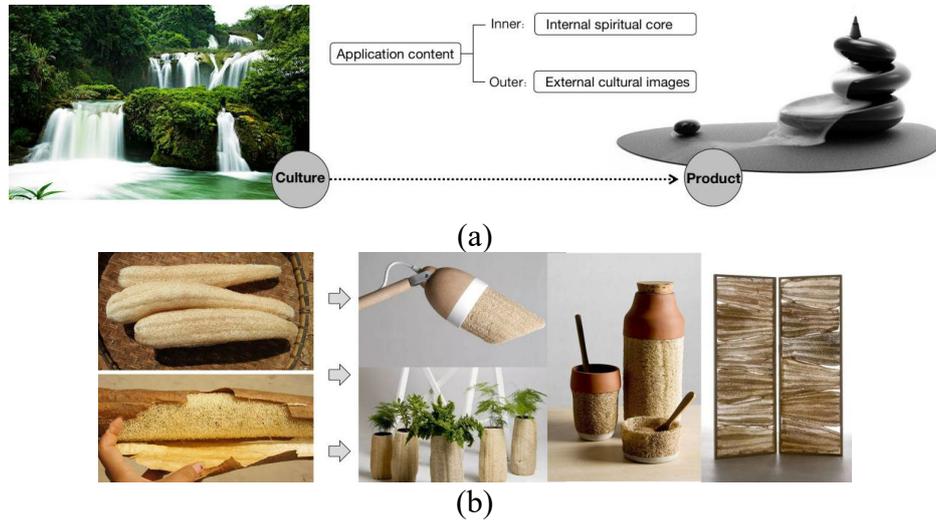


Figure 6. Empty Mountains (a)—source: LKK

(<https://o.lkkdesign.com/product-show-id-5f4f529a3ef6e609-classifyid-20-hyid-.html>, accessed on 21 Jan. 2022) and Lufa Series (b)—source: goood (<https://www.goood.cn/lufa-series-by-fernando-laposse.htm>, accessed on 21 Jan. 2022).

2.2.2 Design Formation

The process of cultural and creative design formation is the process of cultural in-novation points gradually generating design ideas. Through the preliminary design re-search, designers ought to firstly clarify the design concept, construct the concept, and boldly carry out design thinking from different angles, levels and directions. Secondly, designers had better think about the design carrier and apply the design concept or in-novation to the appropriate carrier. Thirdly, designers are advised to summarize cultural symbols, refine design features and endow them with new application value.

2.2.3 Design Target

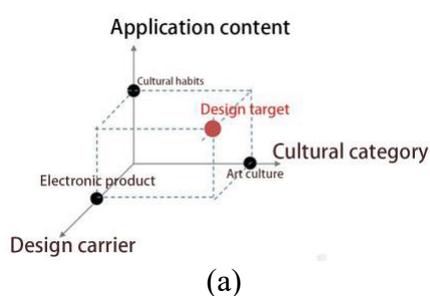


Figure 7. The analysis procedure of design target (a)—source: the author and wall-mounted CD player (b)—source: MUJI (<https://www.muji.com.cn/cn/store/commodity/6607>, accessed on 21 Jan. 2022)

The design target of cultural and creative products is to determine the content from three aspects—cultural category, application content and design carrier, so as to deduce the design direction with clear objectives. The design target can not only solve the problem of conception method, but also find

the appropriate form of expression between the target and the content. The thinking procedure is depicted in Figure 7(a) and Figure 7(b) shows a wall-mounted CD player by MUJI as an example. People got used to pull the light cord before the switches were invented. The design integrates the traditional cultural habits into the electronic products, which becomes a characteristic design target.

2.2.4 Forms of Expression

In order to make traditional culture integrated into modern people's life, the cultural and creative design should not only absorb the essence of traditional culture, but also identify the appropriate meeting point and combine it with modern products so as to generate concise expression. During this procedure, the traditional patterns should be refined and new technologies can be united with new materials. Furthermore, the structure of cultural elements can be broken up, decomposed and reorganized in order to figure out design clues and methods, and adjust traditional elements to contemporary design. For example, "Ice play • silk scarf "(Figure 8) is inspired by "Ice play" painting by Qing Dynasty painter at the Palace Museum [12]. The elements are extracted from one traditional painting, which are broken up to form a more modern language and transferred to silk fabrics. This cultural and creative product well explains how to transform cultural elements into commodities with functional materials in appropriate forms of expression.



Figure 8. "Ice play • silk scarf"—source: The Palace Museum TMALL online store (<https://detail.tmall.com/item.htm?spm=a1z10.3-b-s.w4011-15331857433.70.23bd7870EEXHH6&i d=592060137693&rn=4b1de60af57a4f1e701cfc35383db8d7&abucket=9>, accessed on 21 Jan. 2022).

3. Research Methods

The cultural and creative design is based on the cultural cognition. If the cultural characteristics of the product is not perceived comprehensively, the design form of cul-tural and creative products will be one-sided and lack of vitality and innovation, which lead to a convergence trend. There are also problems such as overdesign and waste of resources. On the road of exploring the sustainable development of cultural and creative design, the higher requirements are put forward for cultural research. This study lays more emphasis on the core study of its cultural characteristics.

3.1 The Concept of Civil context

"Civil context" is an abstract noun, which refers to the culture and cultural tradition of a country or city, reflecting the vitality and development of civilization. Civil context is like blood, showing the life state of culture, including the past, present and cultural tradition. The difference of civil context shows a completely diverse social outlook [13]. The research of civil context, from cultural phenomena (one-dimensional) to cultural events (two-dimensional), and then the sorting of cultural regions and cultural categories (three-dimensional), as well as the multi-dimensional research process from point to surface from the perspective of historical and cultural inheritance

(four-dimensional). The process of cultural phenomena or cultural events evolve into civil context is established, as shown in Figure 9.

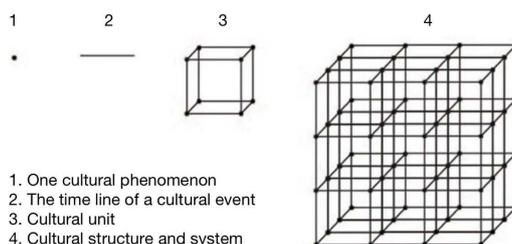


Figure 9. Model diagram from culture to civil context. Source: the author.

Taking the cultural and creative design of as an example, the Palace Museum has rich elements and cultural heritage, and countless Chinese elements can be explored. Cultural and creative design not only includes the individual design of certain cultural phenomena, such as “Thousand li Landscape” stationery design, but also contains the overall design integrating some cultural elements or cultural categories, such as Hersee Beauty lipstick series. Figure 10 shows that the design symbols are extracted from Dunhuang color. The essence of the design is the creation based on each cultural point, in other words, the core of it is the civil context and cultural characteristics of the Palace Museum.



Figure 10. Cultural and creative design of Hersee Beauty lipstick series in the Palace Museum—source: Hersee Beauty

(https://detail.tmall.com/item.htm?id=615875485444&ali_refid=a3_430673_1006:1247100075:N:yPdXeq/5ox7MzFXAI4VihOMISzfCYILT:56e20b8f4bb9c061519bccf50c1c70a8&ali_trackid=1_56e20b8f4bb9c061519bccf50c1c70a8&spm=a2e0b.20350158.31919782.6, accessed on 21 Jan. 2022).

3.2 The Reconstruction of Civil Context

Due to the diversity and complexity of cultural resources, the construction of each cultural unit is as important as design itself. The civil context research is to construct the cultural point-line-unit structure methodically, and carries out the systematic exploration of cultural resources, so as to make all cultural elements integrated as a whole. The expression of cultural and creative design is a continuous exploring process of cultural connotation.

Cultural and creative design is an interdisciplinary subject of design and culture. The research on civil context focuses on two aspects: design thinking and cultural symbols. From the perspective of cultural and creative development, civil context has the cultural duality of structurization and symbolization. Systematic construction and innovative research are carried out from the cultural level. Structurization and symbolization are an integrated concept and an innovative cultural field. Figure 11 shows that the research on cultural duality of civil context is an integrated research from the concept to the framework, to the relationship and finally to the research ideas. It focuses on the method of design and application and the corresponding relationship between the two. Viewing cultural innovation from this perspective will change people's cognition of it, reconstruct the design system and carry out integrated research [14].

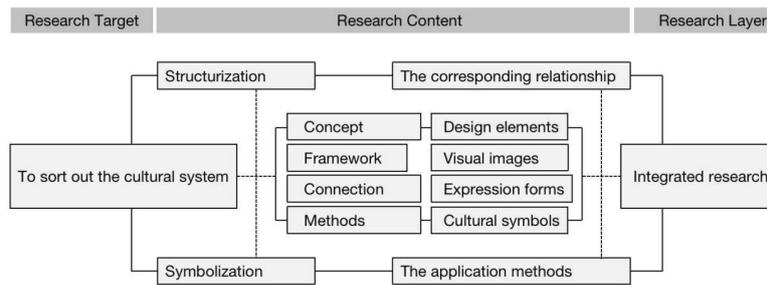


Figure 11. Integrated research framework of civil context. Source: the author.

Civil context is the core of culture. By analyzing the internal logical relationship of civil context in content organization, image positioning and visual language, the article aims to interpret the relationship between external visual representation and internal cultural expression, explore the construction needs of the internal meaning of urban culture, and establish the relationship with cultural innovation. The two both have exterior-interior relations and continuous relations. The research on the cultural duality of civil context provides effective theoretical support for the research of cultural innovation through structurization and symbolization. Only by gradually forming its own civil context and finding the appropriate visual image and expression language, the product design can keep constant in cultural innovation, so as to achieve the goal of sustainable development.

4. Conclusions

Facing the new era of cultural innovation, the sustainable cultural innovation design requires a comprehensive understanding of "Double carbon" from the perspective of design, and the product designers should integrate the concept of environmental protection into sustainable cultural innovation. The balance between cultural innovation and design should be kept, and the essence of cultural sustainability should be found at the same time. Today, with the rapid development of science and technology, the cultural and creative design should return to the original intention of cultural communication and cultural inheritance.

Under the circumstance of "Double carbon" goal, this paper investigates the cultural characteristics of the Palace Museum, puts forward the concept of cultural studies and proposes the thinking framework of civil context, so as to explore the future development path of cultural and creative design under the concept of sustainability. This study is meaningful in that it summarizes the three stages of product design in the Palace Museum from "simple copy" to "creative expression" and then to "cultural connotation"; it explores the process of what culture to study, how to study culture and how to apply culture so as to deduce the design direction from three aspects –cultural category, application content and design carrier.

Regarding as the future of sustainable cultural and creative design, this study is also meaningful in that to solve the problems such as overdesign and waste of resources, the process of how cultural phenomena or cultural events evolve into civil context is more emphasized. A multi-disciplinary and interdisciplinary research and analysis are required to better promote environment protection. As the vitality and creativity rooted in culture, civil context is the essential resource and driving force for the sustainable development of cultural and creative design in the future.

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