



INFUSING CULTURAL CAPITAL INTO PRODUCT DESIGN: CASE STUDY OF A COMMUNITY CO-DESIGN PROJECT

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ABSTRACT- This study investigated the cultural significance of the butterfly bush (*Buddleja paniculata*) in the construction of Thai meaning, belief, ritual, wisdom, and tradition with the goal of developing and implementing a model for a creative process to co-design related cultural capital products. The researchers synthesized the aesthetic and cultural characteristics of the butterfly bush for application to creative pattern designs and products and identified two cultural dimensions composed of meaning and belief that could be adapted into design patterns along with the flower's colors and composition. The synthesized patterns were applied to three types of women's bags based on an analysis of women's bag use behaviors, and the final products were evaluated by 3 flower experts, 3 design experts, 100 customers and fabric and bag producers. The results showed high satisfaction with the representativeness, attractiveness, and usability of the fabric and bag designs. The results highlight the value of cultural capital for producing attractive goods that align with market demand and contribute to sustainable livelihoods, as well as the critical roles of consumers, designers, and producers in the collaborative design of such products.

Keywords: co-design, creative arts, cultural capital, flower symbolism, product design

I. INTRODUCTION

The erosion and loss of traditional morality and ethics have widely been cited as negative byproducts of modernity (Bagnall & Soopunyo, 2019). Similarly, the rapid societal change triggered by globalization and advanced technology have generated long-lasting impacts on cultural values (Çakmakçioğlu, 2017), as local societies are increasingly exposed to diverse ways of living and thinking. Cultural values and cultural capital are critical dimensions of societal innovation and economic development (Zhu, Habisch, & Thøgersen, 2018), and these foundations can be applied to promote the generation of products, provide family incomes and enhance Thailand's image and reputation on the world stage.

Many scholars have advocated that the preservation of personal and local cultural identity can be achieved by the management of cultural heritage and capital in a manner that creates economic value (Samoraj, 1998). The transmission of culture through art is a way of sustaining cultural identity (Wangboje 1986). Moreover, the marketing of Thai cultural creativity as an intellectual property helps to preserve cultural heritage and identity while encouraging greater global understanding and appreciation of Thainess. Both the economic and cultural survival of local communities depend on their ability to ensure that local products and services are both endowed with cultural capital and can also meet market demands. Thus, it is critical to develop cultural learning resources and promote a deeper understanding of Thai history and culture both to enhance social immunity to cultural loss and to identify means of expressing Thai identity in a manner that meets the standards and demands of the global market (Thailand Ministry of Culture, 2016).

In the aforementioned context, the researchers explored the use of *Buddleja paniculata*, also known as butterfly bush, as a form of marketable cultural capital by linking the values of wisdom and cultural identity to develop products that could further the creative economy. The major research question asked in what way the butterfly bush could be developed as a form of cultural capital that conforms to the market in order to enable local communities to generate new occupations and livelihoods. The major objectives were to a) investigate the cultural significance of the butterfly bush in Thailand and b) construct a creative process to synthesize the plant's visual and symbolic characteristics to develop creative designs and products imbued with cultural capital based on the evaluations of local designers, craftspeople, and consumers.

II. LITERATURE REVIEW

Native to Malaysia and India, *B. paniculata* is among 140 butterfly bush species that are endemic to Asia, Africa, and the Americas. It has white petals and reaches a height of 2–5 feet. *Buddleja* species have been used as traditional medicine for the treatment of dysentery and eye and skin inflammation and as diuretic and antiseptic agents (Houghton, 1984). The flower is also valued as an attractant for bees, butterflies, and other insects, which promotes pollination, and honey production.



Figure - 1: Butterfly bush (*Buddleja paniculata*)

CUSTOMER SATISFACTION AND CULTURAL PRODUCT CO-DESIGN

Understanding the factors determining customer satisfaction are critical elements of the design procedure (Mahr, Lievens, & Blazevic, 2014). The participation of customers in the design process can enhance product originality and usability (Trischler, Pervan, SKelly, & Scott, 2017), thereby making the production process more effective (Liu, Moultrie, & Ye, 2019).

Sariya (2006) asserted that pattern designs of printed fabrics should be both fashionable and adaptable to daily life. The pattern designs of printed fabrics vary according to fabric types; thus, fabrics used for more mundane products such as furniture upholstery or curtains will vary from those used to make bags, clothing, and other fashion items.

Thienwet (2017) designed a stripe graphic produced using a simple, efficient technique for use in creating new products with the aim of sustainably supporting and preserving local wisdom. Ruangwannasak (2016) examined the use of patterns inspired by the *Nymphaea lotus* "Red" (*Nymphaea zenkeri*) in Thai souvenir designs and found that the budding and bloomed flowers were most recognizable to tourists, for whom they evoked images of the "Red Lotus Sea," a major seasonal attraction in the region of Udon Thani.

A model for infusing cultural capital into design constructed to guide the design process, as depicted in Figure 2.

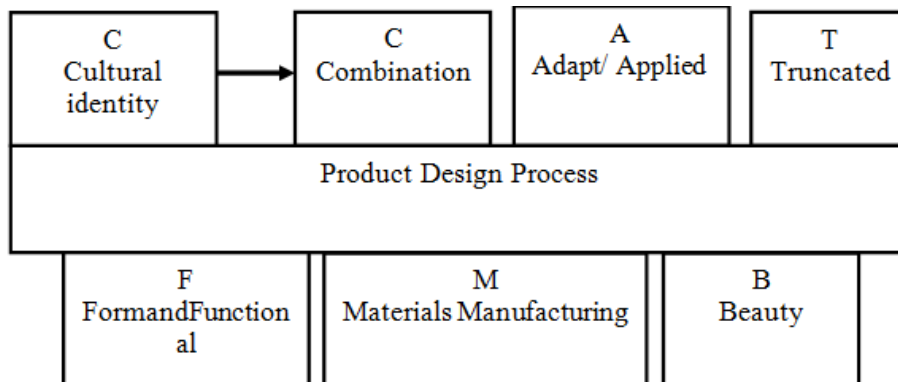


Figure - 2: The design process

Where *C* = *cultural identity* involves cultural capital, which in this case is the butterfly bush; *C* = *combination* entails the integration between design shape and production materials; *A* = *adapt or applied* relates to using pattern and shape as an inspiration for product development; *T* = *truncation* is needed to reduce the shapes and patterns of inspirational objects to suit the product's usability, materials, production process and beauty (Ruangwannasak, 2016); *F* = *form and functional* concerns about the usability that corresponds to the product; *M* = *materials and manufacturing*; managing materials and the production process to avoid difficulties and adjustment of the original production process; and *B* = *beauty* focuses on pattern and product attractiveness as well as the representation of identity and cultural capital.

III. METHODOLOGY

The researchers used descriptive and quantitative analyses, as well as co-design procedures involving flower and design experts, fabric producers, and customers.

PARTICIPANTS

Participants included a group of fabric producers, leatherwork producers, and bag producers from Ban Phai District, Khon Kaen, who tried to produce a set of woman bags, 3 flower experts, 3 design experts, and 100 female customers. All participants gave informed consent, and their identities remain confidential.

Data collection and design procedure

The researchers used descriptive and quantitative analyses. The researchers first gathered information from primary documents and studies of the cultural significance of the butterfly bush in Thai meaning, belief, ritual, wisdom, and tradition. Then, the researchers conducted fieldwork in the area of Suan Sunandha, Dusit District, Bangkok, to collect data from semi-structured, in-depth interviews and focus group discussions with the flower and design experts regarding the flower's meaning and symbolism and feasible pattern designs. Moreover, the researchers observed the physical characteristics and uses of the flower and analyzed pattern design and composition theories.

The above-collected data were used as a basis to sketch patterns based on the synthesized information. On the basis of the identification of cultural capital, the researchers developed a construction of the creative process for product development.

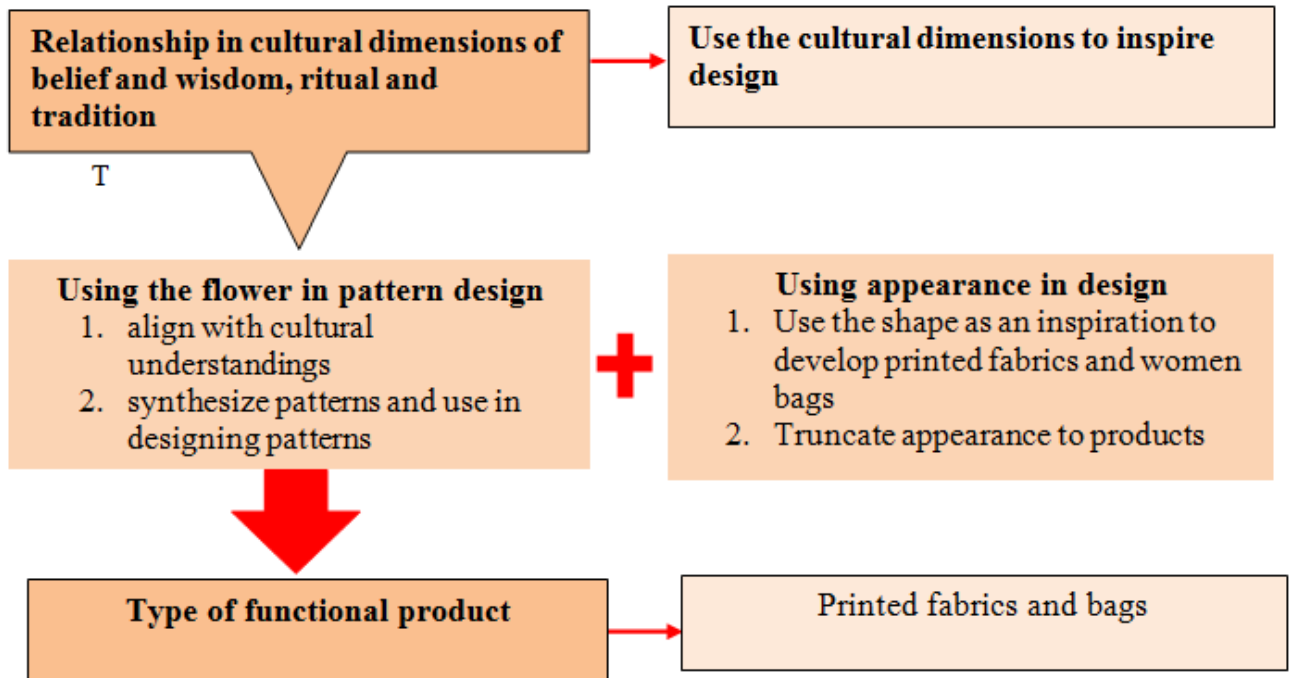


Figure - 3: Summary of infusing to develop patterns and products

To develop guidelines for the design of printed fabrics and bags, the researchers analyzed items made by the fabric and bag producers. The researchers applied the patterns inspired by the butterfly bush to design the pattern of printed fabrics for application on women's bags.

The researchers obtained production guidelines based on the customer product use behaviors of women's bags from 100 female informants between 25 and 45 years of age. The patterns were printed onto fabrics, which were then applied to the selected bag types. A closed-ended questionnaire and evaluation form surveyed customers' and experts' opinions regarding the adaptation of the butterfly bush into the pattern and design of the printed fabrics and bags. The questionnaires included images of different versions of the products to record customer preferences, which were used to inform the designers' and producers' efforts. Finally, an evaluation form was used to measure customers' and experts' satisfaction with the final product.

DATA ANALYSIS

The data gathered from documents and studies were descriptively analyzed to investigate the cultural significance of the butterfly bush in Thai society. The questionnaire and evaluation form data were analyzed by calculating percentages, means, and standard deviations.

IV. RESULTS AND DISCUSSION

CULTURAL DIMENSIONS OF THE BUTTERFLY BUSH

The analysis of the butterfly bush's cultural significance revealed two main cultural dimensions. Known in Thai as *rachavadee*, the butterfly bush is associated with belief and wisdom. In terms of belief, the butterfly bush was the flower of King Rama V (1853–1910), who initiated massive liberal reforms such as abolishing slavery while being received as an equal among the European powers even as neighboring nations fell to colonization. In the area of wisdom, in addition to its medicinal uses, the flower's essential oils are used for aromatherapy.

Some overlaps with tradition and ritual can be seen as well. This study was centered in the area of Suan Sunandha Rajabhat University due to its high floristic diversity, which Eiamprapai (2010) attributed to the fact that the university grounds were previously part of Suan Sunandha Park, a recreational area for ladies of the Thai royal court. Butterfly bushes were planted all over park for use in fine arts and craftworks, such as arranging and stringing flower festoons and Chinese tassels; grouping, tying, knotting and layering floral vases; and making pedestal trays for worshipping the Buddha or honoring the royal family (Eiamprapai, 2010). Moreover, they were used in traditions such as the Songkran New Year festival and various Buddhist holidays.

PATTERN DESIGN

A synthesis of elements of the flower's associated symbolism, meaning, and belief (represented in the form of inspiration or cultural capital) along with its colors and composition were adapted into the pattern design. The shape of the butterfly bush was integrated using visual design and composition principles (i.e., repetition, movement, balance, and emphasis of using geometric forms, and lines to create weight). The design employed 5% warm colors (orange, red, and yellow) as graphic pattern and background colors and 95% cold colors (blue, purple, and white). White-colored petals and blue and purple were used to evoke a joyful feeling (Figure 4).

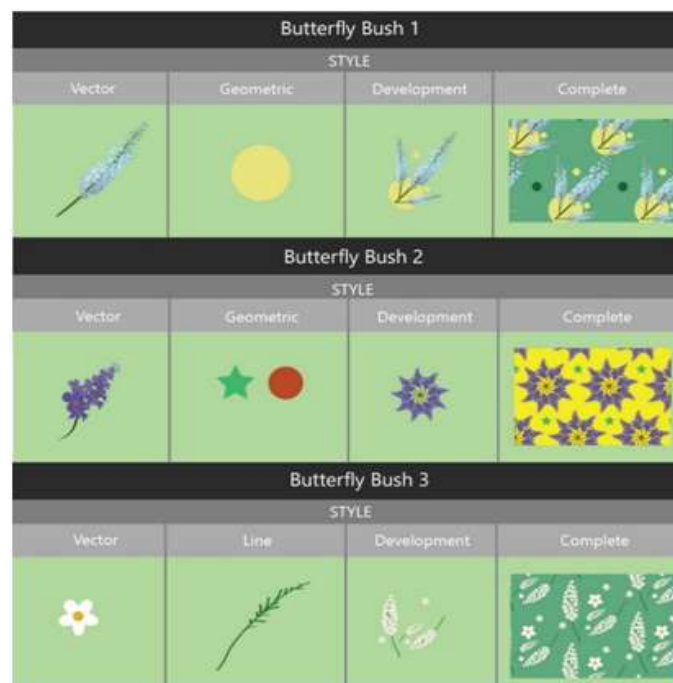


Figure – 4: Synthesizing butterfly bush characteristics to pattern composition

DESIGN EVALUATIONS

Table 1 presents the result of butterfly bush pattern synthesis and the pattern evaluations by three design experts and three flower experts. The third pattern received the highest rating with a total mean of 5.00;

however, the experts also gave positive ratings to the first and the second patterns with mean values of 4.33 and 4.00, respectively.

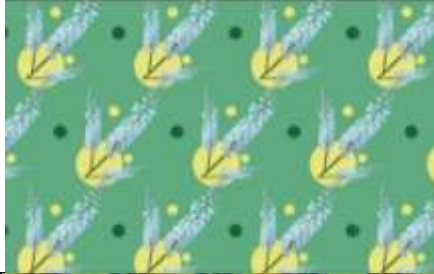
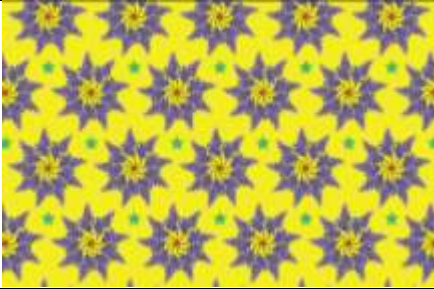

No.	Pattern	Mean	SD	Satisfaction
1		4.33	0.57	High
2		4.00	1.00	High
3		5.00	1.00	Highest

Table - 1: Design and slower expert evaluations

APPLYING THE DESIGNED PATTERNS

On the basis of the design evaluations, the researchers applied the third pattern to printed fabrics.



Figure - 5: The printed fabric

The analysis of customer behavior for bag use is summarized in Table 2. The most commonly carried items were smartphone, wallet, and cosmetic bags.

No.	Item	Percent
1	smartphones	100
2	wallets	100
3	cosmetics bags	100
4	purses	95
5	umbrellas	90
6	pencil boxes	75
7	books	75
8	tablets	65

9	sunglasses	45
10	mirrors	25
11	hats	25
12	folders	15

Table 2 Results of women's bag use analysis

In addition, the researchers categorized the bags based on convenience in improving the style of the bag including a handbag, a shoulder bag, and a wallet (Figure 6). These styles of bags were designed to be able to carry all belongings of the customers.



Figure - 6 : The final products

PRODUCT EVALUATIONS

As summarized in Table 3, the customers and flower experts generally agreed that the products were representative of the butterfly bush's identity, with overall means of 4.56 and 4.33, respectively.



No.	Topic		
		Customers	Experts
1	Representation of the butterfly bush's identity	\bar{x} (SD.)	\bar{x} (SD.)
	1.1 Shapes and patterns represent identity.	4.73 (0.61)	4.33 (0.94)
	1.2 Shapes and the patterns are exotic and suitable for the products.	4.77 (0.49)	4.67 (0.47)
	1.3 The use of color is suitable to the design.	4.26 (0.91)	4.00 (0.82)
	1.4 Shapes and patterns are suitable for production and increase product value.	4.49 (0.79)	4.33 (0.94)
	Total	4.56 (0.75)	4.33 (0.85)

Table 3 Customers' and flower experts' evaluations of identity representation

In the table 4, the customers and design experts generally agreed that the products were aesthetic suitability, with overall means of 4.57 and 4.56 respectively.

No.	Topic		
		Customers	Experts
2	Aesthetic suitability	\bar{x} (SD.)	\bar{x} (SD.)
	2.1 The shapes and patterns are beautiful and suitable for the products' design.	4.72 (0.51)	5.00 (0.00)

	2.2 The composition is suitable and beautiful.	4.34 (0.78)	4.00 (0.82)
	2.3 The pattern and material are beautiful and suitable for the products.	4.65 (0.64)	4.67 (0.47)
	Total	4.57 (0.67)	4.56 (0.68)

Table 4 Customers' and design experts' aesthetic satisfaction

V. CONCLUSIONS

This study investigated the cultural significance of the butterfly bush in Thailand as a means to inform the construction of a creative process model to design and develop products highlighting the cultural capital of the butterfly bush. The analysis showed that the butterfly bush has two main cultural dimensions, including belief and wisdom and tradition and ritual, and the flower is also associated with a pleasant and relaxing scent. A synthesis of patterns adapted these elements into fabrics and women's bags using the CCAT FMT design model, which involved infusing the cultural capital of the butterfly bush in a manner that combined symbolic and aesthetic qualities with production materials, which were adapted and truncated to enhance the item's attractiveness and usability and ensure a smooth production process. Consumer and experts' evaluations determined that the butterfly bush pattern was most suitable for printed fabrics and women's bags. Customers and the experts expressed high satisfaction regarding the representation of butterfly bush's identity and the products' suitability and attractiveness.

The results of this study highlight the potential value of cultural capital for producing useful and attractive products that enhance a country or region's image while also remaining competitive with consumer demand, supporting local livelihoods, and promoting the preservation of cultural heritage. In addition, the study illuminates the critical roles of consumers, designers, and producers in a sustainable and effective co-design process.

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