

A Practice-Based Study of AI-Empowered Regional Tea Packaging Design: a Case Study of the Fushan Bailu Design Project for Fuliang Tea

Jin Shengzhe

Jingdezhen Ceramic University, Jingdezhen, Jiangxi, China

Abstract: With the concept of rural revitalisation and the rise of cultural confidence, the two main problems for packaging design of region-specific products are effective innovation and cultural connotation expression. This study investigates the use of artificial intelligence in regional tea packaging design, aiming to identify new ways of integrating cultural inheritance with AI generation and optimisation. The Fushan Bailu packaging design project for Fuliang tea in Jiangxi Province is used as a case study to demonstrate how natural language processing extracts cultural elements and how generative instructions and models, combined with image extension and reshaping, create new visual materials. Based on the above, various cultural elements have been collected and organised by design professionals to form a complete work. According to the above data, AI has been used to improve the efficiency and expand the variety of inspiration generation in the early stages of design. Deep learning and creative reinterpretation of regional cultural symbols can also be used to design packaging with a combination of modernity and culture. This paper offers an application case of AI in traditional Chinese culture and provides some preliminary thoughts on the new role of designers in the AI era.

Keywords: Artificial Intelligence; Packaging Design; Regional Design; Tea Packaging; Fuliang Tea; Generative Design.

1. Introduction

1.1 Research Background

As changes in living standards and lifestyles have gradually occurred, so too has people's interest in new Chinese cultural products. Tea is also a symbol of traditional Chinese culture.

Packaging also needs to provide a convenient way for people to use the product, and it should help communicate the brand story, culture, and other values. Fuliang tea has a long history and has been mentioned in the saying, "From Fuliang and Shezhou, all nations seek tea"; however, its packaging design faces many problems in the current market competition^[1].

At the same time, a new generation of artificial intelligence technology called deep learning and generative artificial intelligence is also developing rapidly in the creative industry. AI is now being used to create images and apply styles, as well as to organise layouts and write copy. Given the above, we will investigate the application of artificial intelligence at all stages of the regional tea packaging design process to solve the problems in the traditional design workflow.

1.2 Research Significance

1.2.1 Theoretical Significance

This paper integrates Design Studies, regional culture research and artificial intelligence. Establish a theoretical system and method for AI-driven regional packaging design; expand the scope of research in intelligent design; provide a new theoretical basis for the innovative development of traditional Chinese culture, etc.

1.2.2 Practical Significance

Based on a commercial design project, this paper explores the current use of AI tools to enhance design efficiency, expand the range of creative ideas, and strengthen cultural expression. Based on this, we hope to improve the packaging of Fuliang tea and other regional agricultural products to strengthen local industrial branding, increase their market competitiveness, and promote rural revitalization^[2].

1.3 Research Content

First, some studies have been conducted on AI-

assisted Design and tea packaging design. Then, it will present the basic ideas and set the goals, technology paths and assessment standards for AI-aided teaching. Finally, based on the Fushan Bailu project, we will examine all the times and places when AI tools have been used, how they have been used, what results have been obtained, and then assess and reflect on their impact.

1.4 Research Content and Methods

1.4.1 Literature Research

The study systematically reviews relevant domestic and international academic work on AI-empowered packaging design to establish its theoretical foundation.

1.4.2 Case Study

The Design Project of Fushan Bailu will be employed as the empirical case study. As a member of the project's Design Team, I participated in all aspects of the project and recorded the use of AI tools^[3].

1.5 Research Innovations

Conventional regional packaging design has a limited amount of information and a small number of creative expressions. Artificial intelligence will be used for the packaging design in this paper, and the entire process, from "cultural text datafication" to "AI visual generation" and finally to "human-AI collaborative refinement", will be presented to promote design innovation.

According to the specific conditions of the regional design, this paper will explore how artificial intelligence can learn about, analyze and reconstruct the basic elements of regional culture by integrating technology and culture. Fuliang Tea has had a thousand-year history and is therefore a suitable object of study. The design practice is a new form of expression for traditional culture that has shown some worth in practice.

2. Literature Review

2.1 Domestic and International Research

The literature review addresses domestic and international research on tea packaging design and AI-empowered design^[4].

2.2 Assessment of Existing Research

The design problem consists of two relatively independent parts: technological exploration

and cultural research. It plans to use the latest generative artificial intelligence technology to create new works inspired by the regional culture of Fuliang Tea and integrate technology with local culture.

3. Concepts and Theoretical Foundations of AI-Empowered Tea Packaging Design

3.1 Definitions of Core Concepts

3.1.1 Regional Tea Packaging Design

Regional tea packaging design is the concept and realisation of packaging that has a distinct regional identity and a sense of cultural belonging, drawing on the natural scenery, history, folk culture, traditional activities, handicrafts, materials and products of a particular place. At the foundation are the translation of cultural symbols and the reconstruction of their contemporary value.

3.1.2 AI Empowerment

AI empowerment refers to the use of generative AI models as "collaborators" in the Design stage of this paper. At different times, the models can help designers collect cultural information and ideas, make rough sketches, create visual representations, refine concepts, etc.; together, they form an extended workflow.

3.2 Design Objectives

The packaging should move beyond the simple appropriation of symbols such as Fuliang's mountains and waters and its historic tea and porcelain routes. It should offer a contemporary expression of their underlying poetic qualities, associated with the imagery of Bai Juyi's *The Song of the Pipa*, and their contemplative qualities, associated with the idea that tea and Chan meditation share a common essence.

It should be simple and modern, but also have a sense of tradition. It should break the stereotype of traditional tea packaging to be either very old-fashioned or too flashy, and meet the aesthetic demands of the target consumers.

3.3 Technical Pathway

This study establishes a technical pathway comprising three layers.

3.3.1 Input Layer: Cultural Datafication

DeepSeek and ERNIE Bot are tools that can be employed for semantic analysis of historical texts, such as the Fuliang County Gazetteer and related poems, as well as natural features, such as the shape of mountains, water bodies, plants,

and special craft traditions of porcelain and tea. Extract keywords, colour codes, imagery associations and the main story from this analysis. For example, if you enter "Fuliang, mountains and waters, early morning, clouds and mist, white porcelain, tranquility", the AI will elaborate on this description and link it with visual elements to generate the first part of creative materials^[5].

3.3.2 Generation Layer: Visual Exploration

Jimeng AI and Doubao are the image-generation models that create pictures according to the "cultural prompts" obtained in the input stage. The Prompt will help the AI create the necessary packaging pictures, backgrounds and other materials based on the design. Based on the list of cultural elements, analyze the specific graphic forms that can be derived from them and create a decorative graphic that conveys the same meaning; Chinese ink-painting style; a restrained palette of black, white and gray, with an accent of mineral-green tea liquor; a surreal scene; swirling morning mist; soft light filtering through the leaves; brushstrokes have the texture of stone carving; the overall image should have the texture of a stele rubbing. Repeat iteration and selection are used to build an initial collection of design proposals.

3.3.3 Optimization Layer: Human-AI Collaborative Refinement

Designers select, deconstruct and recombine good images from the generation stage. With the help of Photoshop, Illustrator and AI image-editing functions, you can arrange the components, set the scale of information, add brand logos, and create special effects for production, such as foil stamping and embossing. The above operations will complete the work in an organised way.

3.4 Evaluation Criteria

The following multidimensional criteria are established to assess the effectiveness of AI-empowered design:

Whether the design accurately and meaningfully reflects the essential spirit of Fuliang's regional culture, rather than merely accumulating superficial symbols.

The originality and artistic impact of the design's form, color, and composition.

Whether the design reinforces Fushan Bailu's positioning as a premium, refined, and natural brand.

4. AI-Empowered Packaging Design Practice for Fuliang Tea's Fushan Bailu Brand

4.1 Project Background

Fushan Bailu is a product line under the Fuliang Tea Industry Group. Its raw materials are obtained from the ecological tea gardens in the high mountains of northern Fuliang, and they are of high quality. The brand name is inspired by the scenery of Fuliang; Bailu refers to the mountains and waters in the area and has a gentle, elegant character. The package should convey the thousand-year tea and porcelain culture of Fuliang while also being modern and high-end. The first group of people are those who value a good life and cultural inheritance.

4.2 Design Process and Implementation

4.2.1 Stage One: Cultural Decoding and Design Positioning

The first stage will be led by the designer, and AI will provide some design support. First, carry out a field investigation and cultural research; then, have an in-depth, interview-style "cultural brainstorming" with DeepSeek. We entered the following prompt: Starting from the lines in The Song of the Pipa, 'The merchant values profit and gives little thought to parting; last month he went to Fuliang to buy tea', analyze the historical and cultural imagery of Fuliang tea and suggest related visual elements and emotional atmospheres.

AI has found pictures of "parting", "traveling merchants", "the waterside" and "the bright moon", and has also associated them with "solitude and tranquility", "longing for someone far away" and "a sense of vastness as water and sky meet" to add an emotional layer to the Design beyond that of goods. The Design Keywords for the text output have been reduced to the following: "vast ink-wash landscapes", "the lustrous smoothness of porcelain", "overlapping green mountain silhouettes", "a boat's silhouette under the moon", and "tranquil ethereality".

4.2.2 Stage Two: AI Visual Generation and Concept Diversification

In the second stage, AI will lead the Design, and the designer will assist. The keywords above have been expanded into particular prompts for Jimeng AI. For example, to discover the main packaging visual, the following prompt was used:

Design a logo for a tea brand called "Fushan

Yunlu". It should be simple, modern, and have a touch of Zen.

Basic idea: Combine "floating clouds" and "the outline of mountain foothills" with simple lines. The shape of the cloud may subtly take the form of a tea leaf, or the outline of the mountain may be composed of the shapes of tea shoots and leaves. Use Negative Space and Flowing Lines. It should be abstract but have a deep sense of emotion.

Colors: Use one or two colors. Suggested choices are ink black, dark blue-green, tea brown, or a combination of dark green and light gray.

Requirements: Combine the graphic symbol with the brand name "Fushan Yunlu" set in a standardized Chinese typeface. The lettering should be slender and elegant. The overall impression should be clean, ethereal, and culturally expressive.

By adjusting keywords relating to color schemes, composition, and the arrangement of lines and imagery, AI quickly generated dozens of landscape-image variations with different emphases but a consistent style. To explore packaging materials, we also entered "textured surface patterns" to generate specialty-paper textures.

4.2.3 Stage Three: Concept Selection and Human-AI Collaborative Refinement

In the first stage, the designer leads the process, with AI providing design assistance. From the AI-generated images, three directions with the greatest potential were selected:

A. "Vastness in Ink Wash," emphasizing the expansive atmosphere of mountains and waters.

B. "Porcelain Resonance and Mountain Silhouettes," emphasizing the combination of ceramic textures and mountain forms.

C. "Moon Reflected in Myriad Streams," using moonlight and rippling water as its central elements.

Select the combination of direction A and direction B as the basis for the next step, and then we found that the original AI images lack detail, have an irregular structure, or contain graphics that do not meet the required standards. Then the pictures were brought into Photoshop. AI canvas expansion was used to improve the composition, some parts were chosen as the main graphics, and the mountain contours in a more calligraphic style were drawn manually. Then, manually arrange the brand's text information to make it easier to read and more

attractive. The final Design of the packaging is an abstract ink-wash painting of mountain silhouettes created by AI and then optimised; textured special paper is used as the base, and selective hot-stamping of matte white lacquer is employed for accents.

4.3 Reported Evaluation of Practical Outcomes

4.3.1 Efficiency Improvement

The project account reports that a conventional workflow requires approximately 1-2 days to progress from initial ideation to three high-quality sketch proposals. With AI assistance, numerous visual ideas were obtained within three days, from which five to eight proposals with potential for further refinement were selected. The reported improvement in efficiency exceeded 300%.

4.3.2 Increased Diversity

Artificial Intelligence has added numerous new designs and styles to the scope of exploration. Many other unexpected but good combinations were also achieved, such as the "nestled between mountains and water" and "textured clouds and mist", and thus increased the scope of creativity.

4.3.3 Deepened Cultural Expression

Several times after changing the prompts, the AI-generated pictures have started to exhibit the spirit of "empty stillness" and "vast distance" in Fuliang's landscape culture, and are no longer just simple pictures of objects. According to the project account, both the client and the cultural experts agreed that contemporary expression has "the spirit of antiquity but not the old form".

5. Research Conclusions and Outlook

5.1 Research Conclusions

Based on the construction of the concept framework and the execution of the project, the following results have been obtained.

First, artificial intelligence has been used to prompt creativity and offer a large number of ideas for the design of regional packaging. It can help to solve the problem of lacking early-stage exploration and low efficiency in traditional design.

Secondly, the main idea of AI-assisted Design is "human-AI cooperation", not "machine substitution". Designers still need cultural literacy, an aesthetic sense and the ability to combine materials. Their roles are changing;

they are no longer "implementers" but are now "overseers", "directors" and "editors".

Thirdly, to achieve success, a standardised workflow of "cultural translation - prompt engineering - visual generation - manual refinement" should be established, and at the core of this workflow is the conversion of abstract cultural ideas into concrete and understandable language prompts for AI.

Fourth, AI-assisted regional design can help to innovate in the creation of cultural symbols and build a visual language that is rooted in tradition yet also looks forward, thereby fully supporting the revitalization of regional brands.

5.2 Research Limitations

This paper has some deficiencies. The application of AI in the Design of Fuliang Tea Packaging has been used to enhance Design Efficiency and Quality. The actual case is a product line under one brand, and it is unknown whether the conclusion can be applied to products in different market segments and cost situations.

The assessment of the results from AI is also subjective and varies among different clients. There is no single good and fair way to judge.

Technology is changing rapidly now. Based on the actual conditions of the current mainstream generative models, such as Jimeng AI 4.5 and

Doubao, we will continue to monitor the progress of technology.

References

- [1] Gao, Z., & Li, Z. (2026). A tea packaging design method based on artificial intelligence generated content. *Journal of Engineering Design*, 37(2), 339-371.
- [2] Hu, B., Zelenko, O., Pinxit, V., & Buys, L. (2019). A social semiotic approach and a visual analysis approach for Chinese traditional visual language: A case of tea packaging design. *Theory and Practice in Language Studies*, 9(2), 168-177.
- [3] Li, H., Xue, T., Zhang, A., Luo, X., Kong, L., & Huang, G. (2024). The application and impact of artificial intelligence technology in graphic design: A critical interpretive synthesis. *Heliyon*, 10(21), e40037.
- [4] Li, W., & Cheng, Y. (2022). Creating sustainable development of the destination with tea public version packaging design by obtaining relational space concept. *Sustainability*, 14(15), 9256.
- [5] Shi, Y., Gao, T., Jiao, X., & Cao, N. (2023). Understanding design collaboration between designers and artificial intelligence: A systematic literature review. *Proceedings of the ACM on Human-Computer Interaction*, 7(CSCW2), Article 368.