ZHUANG BROCADE FOR DEVELOPMENT AND ITS IMPLEMENTATION TO ENABLE THE FUTURE VIABILITY IN SOUTHWEST CHINA

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ABSTRACT

Purpose: 1. To study the factors affecting the development decline of Guangxi Zhuang Brocade. 2. Put forward the methods of sustainable development of Zhuang brocade to the problems existing in its development.

Theoretical reference: The methods of sustainable development of Zhuang brocade are studied through folk art, design, and project implementation.

Method: After comparative analysis, this paper combined with the market and future of Zhuang brocade puts forward four design methods that can help Zhuang brocade. They upgrade the development of Zhuang brocade from four aspects: product design, process production, publicity and sales, and market expansion.

Results and Conclusion: This paper puts forward eight ways which can bring positive influence on the sustainable development of Zhuang brocade. Conclusions are drawn from multi-dimensional research and practical projects, and the possibility of future sustainable development of Zhuang Brocade is discussed.

Implications of the research: Find out the sustainable development method of Zhuang brocade through research. Enhance the public's awareness of Zhuang brocade, so that Zhuang brocade can be better inherited and developed and is more suitable for modern people's life.

Value: Combined with the market and future of Zhuang brocade, this paper puts forward four design methods that can help Zhuang brocade. This research has a guiding effect on the development of Zhuang brocade and puts forward very referential opinions for the sustainable development of Zhuang brocade.

Keywords: Zhuang Brocade, Design for Sustainability, Textile Patterns, Guang Xi.

ZHUANG BROCADE PARA O DESENVOLVIMENTO E SUA IMPLEMENTAÇÃO PARA PERMITIR A VIABILIDADE FUTURA NO SUDOESTE DA CHINA

RESUMO

Propósito: 1. To estudar os fatores que afetam o declínio do desenvolvimento de Guangxi Zhuang Brocade. 2. Apresentar os métodos de desenvolvimento sustentável de Zhuang brocade para os problemas existentes em seu desenvolvimento.

Referência teórica: Os métodos de desenvolvimento sustentável do brocado de Zhuang são estudados através da arte popular, design e implementação de projetos.

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Método: Após análise comparativa, este artigo combinado com o mercado e o futuro do brocado Zhuang apresenta quatro métodos de design que podem ajudar o brocado Zhuang. Eles melhoraram o desenvolvimento do brocado de Zhuang a partir de quatro aspectos: design de produtos, produção de processos, publicidade e vendas, e expansão do mercado.

Resultados e Conclusão: Este artigo apresenta oito maneiras que podem trazer influência positiva no desenvolvimento sustentável do brocado de Zhuang. As conclusões são tiradas de pesquisas multidimensionais e projetos práticos, e a possibilidade de futuro desenvolvimento sustentável de Zhuang Brocade é discutida.

Implicações da pesquisa: Descubra o método de desenvolvimento sustentável do brocado de Zhuang através da pesquisa. Aumentar a conscientização do público sobre o brocado de Zhuang, para que o brocado de Zhuang possa ser melhor herdado e desenvolvido e seja mais adequado para a vida das pessoas modernas.

Valor: Combinado com o mercado e o futuro do brocado Zhuang, este documento apresenta quatro métodos de design que podem ajudar o brocado Zhuang. Esta pesquisa tem um efeito orientador no desenvolvimento do brocado de Zhuang e apresenta parâmetros muito referenciais para o desenvolvimento sustentável do brocado de Zhuang.

Keywords: Brocado Zhuang, Design para a Sustentabilidade, Padrões Têxteis, Guang Xi.

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1 INTRODUCTION

This paper studies Zhuang Brocade and puts forward some suggestions on how to use new design methodology to upgrade its industry and sustainable development. This study includes field investigation, data collection, data analysis, practice verification and other research methods, to comprehensively analyze the current development of Zhuang brocade and the possibility of future sustainable development. At the end of the study, the conclusions of this paper will be repeated examples, so that consumers in the market can experience and evaluate the upgraded production mode of Zhuang brocade by means of research and interaction.

2 THEORETICAL FRAMEWORK

The research idea of this paper is divided into three aspects. First, it is based on the investigation, data sorting and analysis under the background of public opinion. Then, in the background of design, it combines data to clarify the influence of contemporary Zhuang brocade's development, design, marketing, and sustainable development on it. Finally, the project implementation verifies the theory and draws a conclusion (Figure1).
3 RESEARCH METHOD

This paper mainly adopts ethnographic case study as the main method to carry out research. This research method usually involves a detailed investigation and description of the life purpose, behavior, beliefs, values, traditional customs and other aspects of the individual, group, or community, and is to explore and explain the cultural, social, and behavioral phenomena of the research object (Robert M, 2011).

In the field investigation, the author will comprehensively understand the social life, values, and social information of the research object through participating observation, interview structure, questionnaire survey and other methods of Zhuang brocade production factories and workers in the region. The obtained data are then described and interpreted in detail to gain a deep understanding of the behavior, culture, and social phenomena of the study subjects.

The data collection in this paper is based on Grounded Theory (Barney G, 1969). The key feature of grounded theory is that it is based on a systematic and rigorous process of data collection and analysis. It involves collecting data through methods such as interviews, observations literature and then analyzing this data to identify patterns, themes, and concepts. The analysis process is iterative and involves the continuous comparison, coding, and classification of data to develop concepts or theories that arise directly from the data.

This paper selects three enterprises, all of which are actively transitioning from traditional handicraft to industrial production. Compared with other private workshops, the production and sales methods of Zhuang brocade are relatively mature, which has research potential for exploring the sustainable development of Zhuang brocade in this paper.

Jingxi Zhuang Brocade Factory is in Jingxi City, Guangxi Province, was founded in 1956. After more than 50 years of development, Jingxi Zhuang brocade Factory has gradually formed from the original single production set product research and development, tourism development and technician training as one of the enterprises.

Guangxi Institute of Arts and Crafts, founded in 1960, is an earlier provincial arts and crafts research and design unit in China. Guangxi is the only comprehensive and independent research on arts and crafts development institutions. The institute already has a group of scientific research and technical personnel and folk craftsmen, and has become the largest and strongest research, design, development, and production base of Zhuang brocade in China.
Guangxi Binyang Xiangguang Brocade Workshop was founded in May 2002, the founder of the Chinese arts and crafts master Ms. Tan Xiangguang. Brocade Workshop is based on bamboo cage machine pure manual production, is to inherit, collate, develop Zhuang brocade traditional technology and modern Zhuang brocade decoration, practical supporting products, Zhuang brocade workshop in recent years, actively introduce a new type of electronic loom to design a series of Zhuang brocade products in line with modern consumption habits. This paper will take these three enterprises as research cases and investigate these enterprises in four weeks. The research is carried out from the steps of materials, production and sales, and the research objects are workers, designers, experts, sales personnel, customers, etc.

The research of this paper lasted for 4 weeks and visited three enterprises, including workers, designers, factory leaders, sales staff, and buyers. Conducted 15 interviews with more than 50 people over a period of 20 days and saved the results for analysis. The forms of research include dialogue, literature copy, data record, etc., and the forms of storage include written records, audio recordings, image recordings, etc.

Finally, the research object is analyzed in its cultural context, and the phenomenon is explored and explained from a cultural perspective, as well as in-depth research on individual groups or communities to provide detailed understanding of specific social groups (David M, 2013).

4 RESULTS AND DISCUSSION

4.1 The Relationships between Craft, Design, and Sustainability

Firstly, handicraft refers to handicraft products with unique artistic style made by hand. Handicrafts are usually made of natural materials and can be made in unlimited quantities. This kind of product is practical and beautiful with artistic and innovative performance to convey the cultural connotation of decorative, functional, and traditional. Has both religious or social symbolism and importance. (David Pye, 1968). At the end of the 19th century, European and American artists led by the famous British artist W. Morris initiated the "Arts and Crafts Movement". They pointed out that traditional handicrafts with a long history are the crystallization of human wisdom and a valuable artistic heritage. Under the wave of capitalist large-scale industrial production and advanced science and technology, handicraft should not only not be eliminated, but also be inherited and developed. (Edited by Kleiner, 2007).

Secondly, design refers to "the process of expressing an idea through reasonable planning and various ways". Man transforms the world through labor. Create civilization material wealth and spiritual wealth. And the most basic and primary creative activity is creation. Design is the pre-planning of creative activities, and the planning technology and planning process of any creative activity can be understood as design. There is an inseparable relationship between design and innovation. Innovation is present in all areas of life, but in organizations, it can be defined as the implementation of new ideas to create value for the organization (Leskova-Spacapan and Bastic, 2007). In Organizational Innovativeness Theory (OIT), people are interested in two aspects: technical innovation and administrative innovation (Damanpour, 1991). Technical innovation refers to products, services, and production processes. (Dao Mai Phuoc, 2013) Handicraft is just a process of creation. Whether it is traditional handicraft or modern handicraft, innovate design has a huge influence on handicraft. In the handicraft industry, raw materials, production, manufacture, sales, and other steps can be integrated into the design. Innovation design is a powerful tool for business competitiveness. It can lead to production developments like technologies and processes that can increase production capacity or reduce production costs and can also stimulate consumer demand for products. (Clark, 2009)
Finally, sustainable development is one of the requirements of the scientific concept of development on the coordinated development of nature, science and technology, economy and society. It first appeared in the International Union for Conservation of Nature's World Natural Resources Conservation Program in 1980: "It is necessary to study the fundamental relationships between nature, society, ecology, economy and the process of using natural resources in order to ensure global sustainable development." (The International Union for Conservation of Nature's World, 1980)

There is a close relationship between sustainability and design. Design plays an important role in achieving the Sustainable Development Goals. Sustainability aims to meet the needs of current generations without compromising the ability to meet the needs of future generations, and design can achieve this in a sensible and balanced way. All areas of design, such as industrial design, architectural design, graphic design, product design, etc., can apply the principles and concepts of sustainable development. (David Bergman, 2013)

At the same time, there is a close relationship between sustainable development and handicraft development. These two concepts are related to resource utilization, environmental protection, social equity, and economic development, so they often combine and influence each other in practice.

In this latter point, Walker (2011) introduced a framework, entitled Walker’s Quadruple Bottom Line of Design for Sustainability. Walker (2014) published the diagram, which helps foster a holistic view of sustainable practices (Figure 2). This diagram considers practical needs plus environmental impacts; social needs (equity and justice); personal needs (fulfilment, well-being, flourishing); and economic means (financial viability to enable the other three) (Disaya Chudasri, 2020)

These theories and practices blend to promote the relationship and development between sustainable development and handicraft development and provide a strong theoretical support for the writing of this paper.

The data collection in this paper is based on Grounded Theory. (Barney G.1969) The key feature of grounded theory is that it is based on a systematic and rigorous process of data collection and analysis. It involves collecting data through methods such as interviews, observations, literature and then analyzing this data to identify patterns, themes, and concepts. The analysis process is iterative and involves the continuous comparison, coding, and classification of data to develop concepts or theories that arise directly from the data. The research of this paper lasted for 4 weeks and visited three enterprises, including workers, designers, factory leaders, sales staff and buyers. Conducted 15 interviews with more than 50
people over a period of 20 days and saved the results for analysis. The forms of research include dialogue, literature copy, data record, etc., and the forms of storage include written records, audio recordings, image recordings, etc. (table1.table2)

Table1. The Location and duration of field study

<table>
<thead>
<tr>
<th>Research enterprise</th>
<th>Research time</th>
<th>Survey number</th>
<th>Survey time (h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guangxi Institute of Arts and Crafts</td>
<td>2023.1.2</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Guangxi Binyang Xiangguang Brocade Workshop</td>
<td>2023.1.10</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>Jingxi Zhuang brocade factory</td>
<td>2023.1.20</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

Source: table by the first author

Table2. The Composition of interviewees

<table>
<thead>
<tr>
<th>Interviewee identity</th>
<th>Research time</th>
<th>Survey number</th>
<th>Survey time (h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker</td>
<td>2023.1.3</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Designer</td>
<td>2023.1.7</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Plant manager</td>
<td>2023.1.12</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>Sales staff</td>
<td>2023.1.15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>buyer</td>
<td>2023.1.18</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>Customer</td>
<td>2023.1.22</td>
<td>20</td>
<td>24</td>
</tr>
</tbody>
</table>

Source: table by the first author

4.2 Findings from the Fieldwork

The fieldwork yielded important information, which was analyzed and synthesized into four main findings:

Traditional production mode and development of Zhuang brocade

First, we make a list of the selection of raw materials to produce Zhuang brocade by these three enterprises. According to the investigation, the traditional raw materials to produce Zhuang brocade are mainly silk and cotton yarn. For example, the dyes used by Jingxi Zhuang brocade Factory are natural plant dyes and mineral dyes, mainly soil vermilion, carmine flower, sapwood, yellow mud, turmeric, indigo, rind, bark, green grass, black soil, grass ash and so on. However, with the addition of industrial looms, the raw materials of Zhuang brocade have also responded to changes, such as the introduction of the knitting loom (Jacquard loom) and jacquard loom, the raw materials used will increase wool and synthetic fibers based on cotton and silk to meet the requirements of mass production (Figure3). Guangxi Tan Xiangguang Zhuang brocade Cultural Development Co., Ltd. collaborates with Hangzhou silk Factory to use modern electronic weaving machinery for production. The silk raw material used in the electronic loom comes from the silkworm cocoon, and the silk thread is obtained through the steps of degumming and processing, so that the existing Zhuang brocade products are softer and thinner.
4.3 Influence of design on Zhuang brocade production

There are some differences in the production of Zhuang brocade in different regions of Guangxi because of different economic development and national habits, but the weaving process of Zhuang brocade is basically the same. Generally, cotton yarn is warp, velvet is weft, the warp is generally black, and the weft is decorated with colorful threads.

Zhuang brocade was first produced with the theme of grid pattern as the textile color is simple, developed in the Ming and Qing dynasties, the color of Zhuang brocade began to diversify, and began to combine patterns with animal and plant patterns (Figure 4). In modern times, due to the modern design concept and the intervention of industrial weaving machine, Zhuang brocade fabric design has made new breakthroughs. Modern Zhuang brocade is mostly composed of several colors or even a dozen colors, but due to proper configuration, the pattern composition and tone design of Zhuang brocade have reached an unprecedented level. Product innovations are critical to the growth and prosperity of the modern corporation. Facing slow growth markets, heightened competition from home and abroad, and maturing products, companies are increasingly looking to new products as the route to achieve their sales and profit objectives. (Katerina Kozludzhova, 2013)

Zhuang brocade as a traditional ethnic supplies and handicrafts, in the past mainly used as suspenders and quilt, but also used for cigarette bags, waist purses, bags and baggage, is a precious daily necessities and gifts. With the economic development and market demand, factories and enterprises have correspondingly kept up with the demand, actively increased modern equipment and recruited designers, designed Zhuang brocade products that meet the needs of the current social people, and made the application of Zhuang brocade increasingly expanded. In addition to the strap core and quilt surface, it is also widely used in hanging bags, bed blankets, bed covers, curtains, tablecloth, seat cushions, pillow towels, scarves, clothing, flower shoes and wall hangings, brocade screen, etc., and has become a tourist souvenir and gift with profound local ethnic characteristics, products are exported to the country.
and all over the world. Among these newly developed varieties, shawls, scarves, wall hangings and satchels, bags and so on occupy the mainstream (Figure 5).

![Figure 5. Changes of Zhuang brocade products. Source: Photographs by the first author](image)

4.4 The important role of marketing for Zhuang brocade

In addition to production line and design upgrades, the market has also played a decisive role in the development of Zhuang Brocade. From the records to the 1980s, Zhuang brocade has been in the situation of small workshop. By the 1990s, with the advent of modern machine production, Zhuang brocade products gradually faded from the market, at this time, Zhuang brocade sales have become order system, on-demand production. After entering the 21st century, various enterprises actively increase the richness of Zhuang brocade products and expand sales, such as Guangxi Institute of Arts and Crafts since 2009 has developed new products such as brocaded diary, brocaded fashion bag brocaded umbrella and so on. At the same time, it has established cooperative relations with more than 30 enterprises inside and outside the region to accelerate the development of Guangxi national characteristics tourism, establish Zhuang brocade brand, and combine the production of brocade with Ecotourism. Ecotourism is about bringing together biodiversity, culture and sustainable travel. (I Gusti Bagus Rai Utama, 2023) It ensures that communities are embraced and take part in ecotourism activities (Fennell, 2001). The values of good ecotourism are minimizing impacts; building awareness and appreciation of ecosystems and cultures; providing positive opportunities for visitors and hosts; providing direct financial benefits for conservation; providing monetary gains and empowerment for locals and increasing exposure to the hospitality of rural communities (Barna et al., 2011); (UTAMA et al., 2021). In addition, the Internet consumer market provides a wide range of communication channels for Zhuang brocade, and the industry has also been upgraded, achieving industrial networking, and bringing huge economic benefits (Figure 6).

![Figure 6. Modern marketing mode. Source: Photographs by the first author](image)

To put forward the sustainable development method to solve the problem of Zhuang brocade industry decline, the sustainable development has a positive role in promoting the Zhuang
brocade industry, which brings new opportunities and development prospects for the Zhuang brocade industry. Specific performance is as follows:

Cultural inheritance and protection: Under the concept of sustainable development, the inheritance and development of Zhuang brocade skills will help protect and promote the unique charm of Zhuang culture.

Social equity: In the Zhuang brocade industry, many artisans and craftspeople played a key role. By ensuring that they receive reasonable pay and working conditions, sustainable development promotes the welfare and social status of the manufacturing sector in the Zhuang brocade industry.

Environmental protection and Sustainability: In the traditional production process of Zhuang brocade, natural fibers and vegetable dyes are usually used. In the context of sustainable development, this traditional production mode is positioned as environmentally friendly and sustainable, thus attracting more environmentally conscious consumers.

Local economic development: Zhuang brocade industry is usually carried out in local communities in Guangxi Zhuang Autonomous Region, which is conducive to the development of local economy and increase employment opportunities.

Marketing promotion: In the era of globalization, sustainable development is one of the development trends. The Zhuang brocade industry can attract more important consumers by emphasizing its unique cultural values and sustainable production methods.

4.5 A Design Project Implementation to Zhuang brocade

This paper designs a practice project about Zhuang brocade. The project lasted for a week. The research object was about 50 visitors of the Ethnographic Museum. This practice includes design, ethnographic case studies, questionnaires, etc. First, the event project was designed in the form of a brochure, which was used to promote the museum site and various digital media. Then explain and discuss to the interviewer in the form of games, and finally interview and record the participants in the form of questionnaire survey.

4.6 Brochure design

The brochure mainly contains the theme of this research project: "Zhuang Brocade Spring", and introduces the time, place, activity forms, participation methods, and reward mechanism of this project. Printed as a brochure and multimedia promotion, participants will receive the brochure when they visit the museum to decide whether to participate in the event (Figure 7).
4.7 Zhuang Brocade production demonstration and story sharing

Demonstration and Sharing Part The project invited traditional Zhuang brocade artisans to perform live demonstrations and teaching. Participants can participate in the weaving process of Zhuang brocade and learn traditional textile techniques and weaving (Figure 8).

4.8 Experience design (production, design, selection)

Due to the relationship between time and place of origin, participants were asked to choose a mini loom to make simple Zhuang brocade, to allow participants to personally participate in the production of Zhuang brocade. Participants can design patterns and color matching for Zhuang brocade according to their own personal aesthetic (Figure 9). This project lasts 30 days and will have 4 experience sessions. There are about 20 participants at a time, and at the end of each project, the participants are asked to vote for the best solution, and the winner gets a gift. These reward mechanisms can motivate participants to actively participate in Zhuang brocade experience activities and give full play to their creativity and skills (Figure 10).
It is very important to collect users' opinions on Zhuang brocade design, color matching, product factors, etc., which can help you better understand users' preferences and needs, to further optimize the product. In this activity, real-time records and questionnaires are mainly used. The details are as follows:

User survey: Designed for different aspects of the user survey, such as Zhuang brocade design, color scheme, product characteristics, etc. Quantitative feedback data can be obtained by collecting users' opinions through questionnaires. Focus group discussion: Invite some users to participate in a focus group discussion and let them discuss the design, color matching and other factors of Zhuang brocade in a small group environment. This can help you capture more detailed opinions and insights.

Social media interaction: Sharing Zhuang brocade's design, color matching and other elements on social media platforms encourages users to express their opinions and preferences through comments, likes and other means.

Feedback buttons: Guide participants through products on the website or app and add feedback buttons so users can directly provide their comments and suggestions.

User story sharing: Users are encouraged to share their stories related to Zhuang brocade, which can be their interactive experience with the product, emotional connection, etc., from which deeper feedback can be mined.

Data analysis: Analyze user behavior data, such as their browsing, clicking, purchasing behavior on the website, etc., to obtain user preferences for design and products.
Different approaches can be combined to ensure a comprehensive and diverse range of user views. While collecting opinions, keep an open mind and be willing to listen to users and make appropriate adjustments and improvements based on their feedback.

5 CONCLUSION

This paper draws conclusions from multi-dimensional research and practical projects and discusses the possibility of future sustainable development of Zhuang Brocade. First, we identify the relationship between craftsmanship and design and sustainability. Under these relations, how has Zhuang brocade developed from ancient times to the present? Then, through field investigation and record, we demonstrate the great influence of design and marketing on Zhuang Brocade and the decisive role of sustainable development for its future development.

Finally, we let more people participate in the design and production of Zhuang brocade with an experiential design project, which has a lot of positive help for the development of Zhuang brocade. Through interactive games, participants can have a deeper understanding of Zhuang brocade culture, history, and characteristics. Through personal experience, they can feel the unique features of Zhuang brocade more directly, which helps to establish a positive impression on Zhuang brocade, so that people are more willing to understand and learn. Through games, the young generation can get in touch with traditional culture more easily; If this kind of interactive experience game is set up in tourist attractions or special villages and other places, it can attract more tourists to come to participate. This has a positive effect on the development of local tourism. The most important thing is to help participants better understand the core values of Zhuang Brocade culture.

And through the feedback data of participants, we can also figure out how to better enhance the sustainable development of Zhuang brocade through some means, such as:

1. Increase cultural awareness: More live activities can help people have a deeper understanding of the history, values, and traditions of Zhuang Brocade. Such awareness helps to increase people's respect and interest in Zhuang brocade, thus promoting its sustainable development.
2. Attract the young generation: Current online games and experiences can better attract the young generation and make them interested in Zhuang brocade culture. This is crucial for the sustainability of cultural heritage, as the younger generation will be the main bearers of cultural heritage.
3. Increase tourist attraction: If interactive experiences and games can attract more tourists to experience Zhuang Brocade culture. It will bring tourism revenue and employment opportunities, supporting the sustainable development of the region.
4. Community engagement: Interactive activities can create participatory activities within the local community, encourage active participation of residents, promote community cohesion, and thereby support the sustainable development of the community.
5. Create employment opportunities: Through the development of Zhuang Brocade and tourism, job opportunities can be created, including activity organization, tour guide, game development, etc., to provide a source of income for residents.
6. Increase market visibility: Through the promotion of interactive activities, the visibility of Zhuang brocade can be increased. Attracting more market attention contributes to sustainable sales of cultural products.
7. Educational significance: The cultural knowledge of Zhuang Brocade can be integrated into the education of primary and secondary schools, providing more vivid and interesting education methods, and promoting the dissemination and sustainability of cultural knowledge.
The comprehensive use of the above methods can bring many positive influences on the sustainable development of Zhuang brocade. From cultural inheritance to economic development, it is helpful for Zhuang brocade culture to maintain vitality and inherit in the contemporary society, and further promote the sustainable development of Zhuang brocade.

This study is qualitative, with data collected from only 50 selected people in three enterprises. To be able to have more details, future study should be conducted quantitatively and compare with other provinces in China to see whether it is the same output or not.

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