

Research on the Development Path of Shaanxi Shadow Play Industry Driven by Design Creativity

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Abstract: The aim is to seek new development paths and design research perspectives for the inheritance of shadow art in Shaanxi. Methods: Field visits to shadow art museums, museums, cultural parks, study bases, and tourist attractions, participation in shadow activities in schools and communities, combined with visits to inheritors to obtain information on the current situation and identify practical problems. The self-organization theory is also introduced to analyze the evolutionary mechanism of the shadow industry. The conclusion summarises the main problems faced by the shadow culture industry and the main reasons for its development difficulties; it constructs a development path of "one guide and six dimensions"; inspired by the concept of "living" inheritance, the research perspective touches upon the basic equipment in the shadow art activities and discovers inspired by the concept of "living" inheritance, the research perspective touched upon the basic equipment in shadow art activities, and found that the shadow interpretation stage was primitive, simple and inconvenient to carry; finally, the design of a portable shadow stage was completed, solving the problems of inconvenience in carrying the stage, lack of sound, light, and electricity, and obstacles in the communication of dialect singing during the artists' mobile performance. The project has helped to upgrade the industry through design, broadened the ideas of shadow design research, and provided inspiration and reference for the heritage and development of the neighboring industry.

Keywords: shadow puppet; cultural and creative products; development path; design creativity; design heritage

Cultural confidence and the revitalization and transmission of NRMs is an important initiatives in recent years to enhance the country's cultural soft power. Many scholars are currently conducting research on the protection and utilization of various non-heritage cultural resources.[1-2] Shaanxi shadow is said to be "the source of shadow in the world and the hometown of shadow in China", and has a unique charm in the art of shadow-making, traditional techniques, and opera performances.[3] Academic research is also gradually increasing. In the field of design art, most of the research has been carried out in the areas of shadow modelling [4], color [5], transformation [6] and decoration[7], focusing on the artistic and academic value of the shadow, but neglecting the commercial and application value, and failing to fully promote the development and inheritance of traditional shadow. In this regard, it is important to use product design thinking and technology to address the problem of inconvenient and unreasonable interpretation facilities in shadow art activities through design exploration and practice, so as to promote the "living" heritage of shadow.

1. The current situation and dilemma of the development of shadow puppets in Shaanxi

1.1. Current state of the industry

The Shaanxi shadow puppets are divided into two main regions: East and West. [8] The East Road Shadow is best represented in Huaxian, Dali, and Huayin in Weinan, while the West Road Shadow is distributed in Baoji, Liquan, and Longxian.[9] In 2006, the Huaxian Shadow was selected as one of the first "National Intangible Cultural Heritage List" in China, and it is based on the Huazhou Shadow Cultural Park to carry out shadow art. It is based on the Huazhou Shadow Culture Park to protect and inherit the art of shadow play. The park integrates local cultural resources and has built the Huazhou Shadow Art Museum, with four main sections: shadow display, historical introduction, shadow play observation, and production experience. It has made an important contribution to the development of traditional shadow art but also faces four major problems: no one to pass on the art, a single source of funding, incomplete facilities, and a lack of creative products. (The average age of performing artists

is over 70 years old, and there is a lack of young people learning the art, the root cause of which is the meager income and the difficulty in achieving success. (2) Single source of funding, research activities are an important economic source for the cultural park. (3) Incomplete facilities and support, such as the small size and volume of the museum and the lack of content descriptions. The site facilities are rudimentary, the surrounding support is not sound, and the sense of tourist visiting experience is poor. (4) Lack of cultural and creative products, mainly traditional tourist souvenirs, such as mechanism shadow, with a single category.

1.2. The main reasons for the development dilemma

Changes in lifestyle are the main cause of the shadow development dilemma, with changes in entertainment vehicles and mediums replacing the traditional shadow interpretation. The industry's vitality, economic benefits, and social influence have gradually declined, and the number of places of origin and practitioners has plummeted. Secondly, urbanization has exacerbated the loss of local youth, losing the environment in which they were nurtured by the traditional arts, and there is a serious break in the generation of talent. Thirdly, the lack of interaction with the times and the failure to evolve in response to the changing times have gradually reduced the practical function of traditional shadow puppets. Fourthly, the industrial business environment is imperfect, the relevant institutions and policies are not sound, there is a lack of professional creative and marketing staff, and the public is not sufficiently educated and aware.

There are four reasons for the extreme lack of shadow culture and creative products, which are in urgent need of development. (1) It is heavily influenced by the survival environment of the industry. At present, the shadow industry is still in the primary development stage of solving the survival problem, with no intention or ability to develop the surrounding. (2) Lack of coordinated development planning and insufficient policy support. The shadow culture resources are not integrated enough, the forces are scattered and no synergy is formed. (3) Lack of professional research and development teams for cultural and creative products, and an imperfect industrial chain. (4) Influenced by the thinking of "shape and quality symbols". The design is mainly based on the direct application of the visual image of the shadow, the research perspective is not new enough, and the product design lacks creativity. For example, there are many similar products such as lamps, coasters, bookmarks, clothing, handbags, and other conventional products decorated with shadow motifs, which lack individuality and are difficult to form characteristics.

2. Mechanisms and paths of shadow industry development from the perspective of self-organization

2.1. Self-organisation theory and evolutionary mechanisms

The theory of self-organization was originally developed in physics and biology from Platts' "dissipation theory" [10], Haken's theory of coordination [11], and Eigen's theory of hypercycles [12]. It is the study of the evolutionary processes and laws that lead to an orderly and stable state in an open system in which things interact non-linearly with the internal and external elements of the living environment. In recent years, the self-organization theory has gradually been applied by scholars in the field of humanities and social sciences to explain and study the laws of the occurrence of complex social problems. The development of traditional shadow puppetry from its emergence (during the Han Dynasty of the Western Han Dynasty) to its heyday (during the Qing Dynasty) to its decline (in modern times) [13], the whole process is an open, adaptive, and complex self-organizing system. Especially during the heyday of the shadow culture industry in the Qing dynasty, there was full openness, integration, competition, interaction, and exchange between the various system organizations and the social environment, resulting in the deep development of the shadow industry in terms of shadow-making technology, artistic creation, interpretation, social influence, and economic benefits. According to the theory of self-organization, industrial development can only stimulate the vitality and competitiveness of the system organization when it interacts and exchanges with socioeconomic, cultural, and political elements in a non-linear and dynamic manner [14], thus enabling the development of the shadow industry to evolve from a disorderly to an orderly and synergistic state. The external social environment for the development of the shadow culture industry has changed dramatically in recent times, with the rapid development of online media technology and economic production, which has completely changed people's traditional way of life. The shadow industry interacted less with the external environment in this sudden change, (e.g. the shadow culture consumer market was single and failed to move with the times;

the number of practitioners decreased and the internal vitality of the organization declined, etc.) Failure to adjust and optimize the organization of the system in time leads to a decline in self-adaptability, vitality, and innovation, and begins to move towards closure and gradual decline. Therefore only when the industry maintains a good dynamic interaction with the internal and external environment can it promote the revitalization of the industry and the formation of an orderly ecosystem. The theory of self-organization provides ideological inspiration and theoretical support for the formulation of a development path for the shadow industry.

2.2. Policy-led revitalization system organization

In recent years, national and local policies to support cultural industries have been an important step in promoting the development of traditional cultural industries, activating market vitality, and facilitating systematic organizational interaction. 2011 saw the promulgation of the Law of the People's Republic of China on Intangible Cultural Heritage, and since then traditional and non-traditional heritage has been protected by law. 2016 saw the National "Thirteenth Five-Year Plan" In 2016, the National Thirteenth Five-Year Plan for the Protection of Cultural Heritage and Scientific and Technological Innovation in Public Cultural Services proposed to broaden the training channels for talents, cultivate composite talents in the fields of cultural heritage protection and public cultural services through external and internal training, and train high-end talents in creative research and development, business management and marketing and promotion. 2017 Shaanxi Provincial People's Government issued the Thirteenth Five-Year notice on the "Thirteen Five-Year Plan" for the integrated development of culture and tourism points out that supporting policies for the cultural tourism industry should be improved, social capital should be encouraged to participate in cultural tourism product development and project construction employing investment, equity participation, holding, mergers and acquisitions, etc. Special funds for culture and tourism should be tilted towards cultural tourism projects, and tax exemptions and other preferential policies should be granted to support the rapid and healthy development of cultural tourism projects. 2021 The Weinan Municipal People's Government issued a notice on the implementation plan for the comprehensive promotion of the innovative development of the national public cultural service system demonstration area in Weinan City, which requires the combination of unique local cultural resources such as the shadow capital. The government has also been working to strengthen the investment mechanism for the inheritance and development of outstanding traditional culture, improve policies on encouragement, donation, and sponsorship, and form a multi-channel and diversified investment mechanism that combines government and social investment. From a series of policies, the state is revitalizing the organization of traditional cultural industries through investment and policy guidance in talent training, financial support, tax and fee reductions, improved support, capital cooperation, environmental creation, collation and research, and publicity and education. Only by breaking the closed, single-system organization and promoting interaction between the internal and external environment of the organization can the elements of the traditional cultural industry re-integrate and evolve dynamically with each other.

2.3. The dynamic development path of "One Lead, Six Dimensions

Inspired by the theory of self-organization, to promote the development of the shadow industry, it is necessary to promote the opening up of the system and to realize the interaction between the various elements of the internal and external environment to activate the dynamic evolution of the industry forward. The development path should therefore be based on supporting the development of the industry, safeguarding the original art, guiding public participation, creating an environment, forming an inheritance echelon, studying and interacting with education, and integrating the new in a multi-dimensional way. The development path of "one guide and six dimensions" is established, i.e. under the guidance of policy (one guide), six dimensions (six dimensions) of regional protection, education and publicity, strengthening facilities, talent training, academic research, and product export are broken down to activate the revitalized heritage of the shadow industry.

Policy guidance - support industrial development. The government will promote and guide the industry, improve and build policies and regulations related to the protection of non-heritage, investment, and cooperation, provide the necessary financial support, and continue to increase funding and investment for inheritors and places of origin to create a business environment and artistic atmosphere for the shadow industry. Geographical conservation - guarding the original art. Strengthen investment in the protection and construction of supporting facilities around the shadow puppet's place of origin, and establish relevant support policies for the inheritors and representative projects to promote development.

Organize the content of local shadow culture materials, and strengthen the construction of infrastructure and environmental improvements. Education and propaganda - guide public participation. Traditional and outstanding shadow culture is introduced into teaching materials, classrooms, and communities, and research and workshop activities are organized. Continuing to strengthen public awareness of shadow art, broaden the forms and means of publicity, and improve the quality and strength of publicity. Strengthen facilities - create an environment. Establish a professional and large-scale shadow art museum, and build a product exhibition and exchange complex that is both educational and interactive, to educate and entertain. Cultivate talents - form an echelon of heritage. Establish corresponding talent training policies and models, provide targeted training support for young researchers, establish a joint university talent training mechanism, and strengthen cooperation with art and design disciplines to create research. Academic research-improve internal construction. Strengthen the professional research force, establish a multidisciplinary research platform, and focus on the combining of shadow content, digital conservation and display, and research on basic theory and artistic practice. Regular academic seminars will be held to improve the quality and quantity of academic journals and publications. Product output - new multi-dimensional integration. Promote handmade production, reduce the rate of mechanical processing, and ensure that there is less but more precision. Research and develop practical shadow culture and creative products, develop animation and games with shadow elements, and enhance the upgrading of shadow production tools and equipment. Through the "one guide, six dimensions" development path, the shadow industry can be promoted, creating economic benefits and enriching the diversity of shadow products, while gradually developing basic theories and methods.

3. The concept of "active" as an inspiration for empowering shadow design

3.1. "Active" heritage

The "active" heritage means that in the process of developing and evolving good traditional culture, we should focus on integrating it into people's productive lives, combining cultural meanings with modern people's lifestyles, needs, preferences, and technological achievements to create products that "integrate the past with the present". The "living" artistic practice can be expressed in four areas: creativity, method, interaction, and perspective. The interactive approach emphasizes the interactive experience between the product and the user, such as the combination of shadow head stubble, mobile devices, 3D printing technology, and sugar forms, resulting in a product that is ornamental, unique, cultural, fun, and practical. Perspectives live and focus on the entry angle of living heritage, which can be thought of in the form of cross-border resource integration, defining new experience scenarios, and focusing on production tools and co-branded creations. For example, on 4 October 2020 national non-hereditary inheritor Wang Tianzhian, Shaanxi shadow puppet inheritor Wang Haiyan and popular non-inverted actor Feng Jiachen spread the cultural skills of Shaanxi shadow puppets through the live broadcast of Jieyin, which attracted wide attention from young people. Xi'an Concert Hall launched an immersive interactive shadow show, "The Shadow Laughs", which combined traditional shadow, multimedia technology, and stand-up comedy to form a cross-border fusion of traditional art and trendy culture. From the perspective of modern people's preferences and needs, Wang's Shadow incorporates trendy anime IP into traditional shadow techniques. In 2016, they participated in the production of the anime shadow "The Little Red Queen of Fox Demons", and in 2019, they collaborated with DaXiaXiYue handicraft to create the shadow characters of Lixu'er and CangLangJun, which are well-loved by young people. They have also collaborated with brands such as Hermes and Fendi to fuse traditional shadows with modern elements and apply them in their windows and brand logos. Artist Wu Jian'an has collaborated with shadow master Wang Tianjun to create contemporary artworks such as The Legend of the White Snake, The Seven Mountains, The Nine Heavens, and The Immortal's Grove, drawing on the craft of traditional shadow and its unique visual language, a typical paradigm of cross-border fusion of traditional skills in a contemporary context with co-branded creations.

3.2. "Active" design

"The 'active' design is a way to integrate traditional culture with modern production and life from the perspective of design needs and to create economic value by designing practical products to benefit the public. It is a practical, easy-to-use, and economical product with cultural experience attributes so that traditional culture can be transmitted spontaneously through the product. It is a kind of design heritage that revolves around real needs, so the 'living' design should leave out the single symbols and simple pattern transplantation, and return to the basic characteristics of the product, such as physical needs,

cultural meaning, and emotional interaction. In terms of material needs, the product should be functional and not made into a souvenir. For example, the Forbidden City's cultural creation product, the U-shaped pillow with the four-cheeked perch, the spiny catfish, and the redfish in the Sea of Wrong, is a combination of traditional culture and modern lifestyle. Cultural significance, giving meaning to the product and enhancing its cultural attributes. For example, Rococo's 'Dare to be blessed' set is a contemporary physical expression of traditional cultural meaning, which, through the powerful communication of culture itself, has made the product popular with consumers. For example, Nature's Creations' Mid-Autumn Gift Boxes and the Oriental Shadow Play Interactive Experience Kit for parents and children bring tradition and modernity closer together through interactive experiences.

3.3. Insights

An important goal of "living" design heritage is to integrate traditional shadow culture into modern society by means of design and to promote industrial upgrading, thus achieving sustainable development. A different perspective on the same problem can often lead to more solutions. In recent years, Shaanxi shadow puppets have made many new attempts in their quest for development, such as live art lectures, animation creation, cross-border cooperation, presence in schools, community public performances, and study and education, which have had a positive effect on the social awareness and education of traditional shadow puppets. However, these are only one manifestation of the "revitalized" development of shadow art, while the production tools and equipment used to make and interpret the shadows are very primitive, mostly homemade by the artists and unnoticed. For example, the simple stage used to bring the shadow to schools and communities, the shadow carving workbench, the shadow interpretation stage, the mobile interpretation vehicle, the shadow maker's prop storage tools, and the means to moisten the skin when carving the shadow, etc. Upgrading basic production tools and equipment facilities can effectively improve the working environment, and efficiency and create a good atmosphere and mood for shadow practitioners, while good infrastructure can also attract more people to participate. Therefore, while we focus on shadow art, we can also identify and solve the problems related to shadow art in practice from the perspective of product design, and help to improve the shadow industry in general through design.

4. The practice of shadow stage design under the concept of "living"

4.1. Background

The shadow stage is the vehicle for traditional shadow puppet performances, usually using two square tables, nine floorboards, and wooden rafters as support to enclose six sides, with the rafters crossed and tied with a strip of rope, the front falling white cloth as a screen, and the other five sides covered with five pages of reed mat. The traditional shadow stage has remained unchanged for many years, and in the early days when people's recreational activities and economic conditions were scarce, this way of building an interpretative stage can be said to be a model of local materials and economic environmental protection and has been widely circulated among the people. At present, the country's economic and cultural prosperity and the introduction of cultural confidence have revived the excellent traditional culture that has been dormant for many years and has attracted a great deal of attention. Nowadays, traditional shadow puppet plays are abundant and frequent in communities, schools, and interactive research activities. This requires that the shadow interpretation stage should have integrated functions such as easy to carry, quick to build and collect, sound and light, and storage of shadow people. The traditional shadow stage construction technology does not have, nor can it meet the needs of modern social and cultural activities.

4.2. Current status

After participating in the activities of shadow puppets in communities and schools, it was found that the existing interpretation stage has the following four main problems: (1) the stage is built by the artists themselves through simple welding, the products are simple and crude, and can only meet the support of the screen, and no such products are sold in the market; (2) the interpretation facilities do not have integrated power supply and lighting, and need to be temporarily connected to electricity according to the performance site, so the performance is often restricted by the site conditions, resulting in the performance site being cumbersome and chaotic. (3) Shadow puppets are mostly local operas and the artists usually perform in local dialects, especially when performing in urban communities and campuses, most audiences do not understand them, which seriously affects the spread and experience of traditional

culture; (4) The traditional theatre stage does not have an integrated design, so the artists need to carry many objects such as shadows, curtains, support frames, lights, sound, ropes, and power cords, which are very inconvenient to carry and greatly increase the labor, time and transportation costs.

4.3. Functional vision

To solve the above problems, the design aims to provide a portable box-type shadow interpretation device, capable of sorting and storing the shadow performance parts, quickly disassembling and assembling, them while integrating sound and light, with subtitle function, so that the audience can better understand the drama plot, enhance the interaction between the artist and the audience; the product should be easy to carry, strong overall, disassembling and assembling quickly, good safety, strong ornamental, low cost, for the shadow The product should be portable, strong in its entirety, quick to disassemble, safe, ornamental and low-cost, and of practical significance to the dissemination and transmission of the art of shadow puppetry.

4.4. Design options

Compared with the prior art, the design solution has the following six advantages: (1) through the box storage, support rod connection for the shadow art to provide a convenient, feasible, efficient, low-cost interpretation of the stage; (2) the box in the integrated power supply, subtitle board, storage cabin, to meet the basic functional needs of the artists, the audience, while the power supply effectively solve the venue is limited, external power confusion, instability caused by (3) the setting of the subtitle board effectively avoids the audience's difficulty in understanding the dialect in local theatre, which is conducive to the inheritance of traditional outstanding culture; (4) the design of the film frame storage belt provides orderly storage of the support pole and support pole connection components, and does not occupy the internal space of the box, effectively enhancing the utilisation rate of the box, while the orderly storage makes the disassembly and assembly of the stage more convenient and efficient; (5) the curtain is connected to the periphery through Velcro and fixing straps in a simple, efficient and easy-to-operate manner; (6) the design scheme is compact, simple in structure and easy to implement, which can give full play to the advantages of the shadow mobile and convenient stage. The effect display is shown in Figure 1.

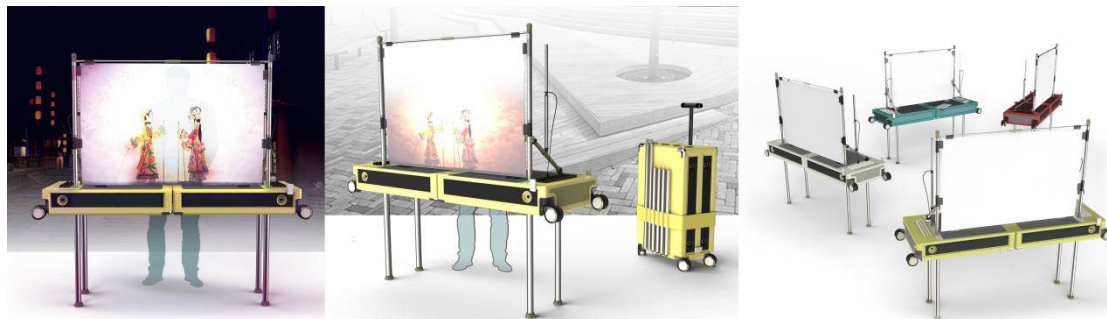


Figure 1: Portable shadow puppets perform stage design display

4.5. Operating procedures

The use of the shadow portable interpretation stage process includes the following five steps: (1) the box stopped to retrieve the mobile lever, respectively, take out the support rod and support rod connection components on the shadow frame storage belt, and then remove the shadow frame storage belt; (2) the left and right box flattened to 180 °, and lock the connection; (3) the installation of support rods in the bottom of the box, and adjust the height of the support rod according to the actual height requirements; (4) in the box (4) install curtain support rod and auxiliary support rod on the top surface; and adjust the height of the support rod according to the height of the curtain; (5) install the curtain, respectively, the curtain around the Velcro and adjacent support rod and box connection; (6) install the lighting rack, and adjust the light irradiation position and range; (7) the felt board out, unfolded and laid flat to the surface of the box; press the box on the power fast shutdown, start the sound and subtitle screen, so the stage The construction is completed.

5. Conclusion

In the process of passing on traditional shadow art, attention should be paid not only to the study of symbolic connotations and creative surroundings but also to the optimization and enhancement of production tools. It is a manifestation of 'living' design and heritage, and an important hardware basis for improving the working conditions of shadow artists, increasing efficiency, creating an environment, enhancing the quality experience, and attracting talent. In addition to the portable shadow performance stage, shadow carving workstations, shadow carving experience kits, improved ergonomic design of tools and mobile performance platforms will be the main directions of future design research by the group.

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