

Analysis/Reflection on the Influence of Combining Chinese Shadow Play with Digital Art for Foreign and Domestic Audiences

Liding Zhang

School of Veritas Collegiate School, Arlington Virginia 22202, United States

Abstract. This project focuses on the preservation and dissemination of Chinese Shadow Play, an intangible cultural heritage. In terms of methodology, digitizing traditional Shadow Play is an innovative attempt to break through geographical and content limitations to increase the audience and content diversity of shadow plays. The combination of traditional shadow puppet theater and 3D digital art can enrich the experience, increase interactivity, and lower the cost of viewing conditions, thus bringing the audience closer to shadow puppet theater. In terms of plot, traditional shadow plays' content is limited to Chinese myths and fables, which is far removed from the modern tide of entertainment; instead, recent events and mixed-cultural elements can effectively innovate the scripts, integrate timely social topics, and explore new possibilities of shadow puppet content, so that shadow plays can become a cultural channel to reflect social issues. In addition, the project hopes to promote concern for the employment environment of older artists and disadvantaged groups in the process of traditional cultural creation, protect the traditional cultural creation environment, and provide a stable employment environment and community for shadow puppet craftsmen. Finally, unexplored financial value of shadow theater can be discovered via combining shadow puppet theater culture with the wider cultural and creative industry. We can develop new cultural and creative products while maintaining the traditional culture of shadow puppetry, such as integrating puppetry elements into everyday items and its proceeds of sell would give shadow play new commercial values.

Keywords: Shadow Play; Digital Art; Domestic Audience.

1. Introduction

This project will be implemented sequentially in four stages. The starting point of the project comes down to the preservation and dissemination of the culture of shadow plays. Secondly, the combination of shadow plays' traditional 2D offline presentation with 3D online digital media will not only improve the experience of shadow puppets and give them more dimensional impact, but will also bring shadow puppets closer to the public, making them easier to watch. At the same time, innovative attempts to integrate current social issues and foreign and Chinese cultural elements to explore new shadow play content will effectively spread traditional culture and reflect social issues. Finally, putting innovative shadow character models into the creation of derivative cultural products, combining new artistic shapes with everyday objects to create a cultural and creative industry belonging to shadow puppets will offer shadow puppetry new commercial value while attracting consumers and gaining financial support for its dissemination.

2. Literature Review

The literature review of this paper would analyze shadow play's historical development, conditions under the current society, policies toward existing issues, and illustration of how the presented content correlate and influence the research question of this thesis paper.

2.1 Shadow Play's development and origin

The origin of shadow play is a universal topic that has been repeatedly discussed and explored by senior scholars worldwide (Mujia Yang, 2012). Not only due to shadow play's identity as an

intangible cultural inheritance of the world, but also because of shadow play's significance in its scope of influence. While shadow play relied upon various methods of expansion, Asia is the commonly accepted origin (Mujia Yang, 2012). Both Asian and Western scholars had published and recognized research papers that consider China as the authentic headstream of shadow play. Chinese Shadow Play is the puppetry genre that has its long-standing legacy and highly acclaimed position in China. A long history's cultural edification, Shadow Play expands itself across the world in various forms and traits. In Inge C. Orr's paper "Puppet Theater in Asia", they particularly noted the earliest form of puppetry, hand or glove puppet, was originated and popular over Asia regions (Inge C, 1974). Moreover, author Fan Pen Chen (Fan Pen Chen, 2003) from the State University of New York combined modern popularity of puppetry as a clue of expansion route. Where neighboring nations among the Southeast Asia still preserves shadow play as a largely living art form.

All in all, the combination of past records and modern evidence both suggests Asia as the origin where shadow play first thrived and developed (Fan Pen Chen, 2003). This paper shall illustrate the combination, modification, and adaptations that Chinese Shadow Play has accomplished under the modern era. As well as the social, commercial, and cultural extensions that Shadow Play has achieved.

2.2 Shadow Play's social status-quo

From Yang Mujia's "An Analysis of the Crisis of Shadow Play Inheritance and Development Measures" and Jiang Yuxiang's "On the Protection and Inheritance of Chinese Shadow Play", they exposed five problems and difficulties facing the development of shadow play: First, the number of old folk artists who know shadow play is gradually decreasing. Second, the repertoire is very old and unattractive. Thirdly, shadow puppets require a high level of skill to operate, so it is relatively difficult to learn. Fourth, for many reasons, the income of shadow puppeteers is not high. Fifth, today's society offers many ways to spend time other than shadow play (Yangmu Jia, 2012; Jiang Yuxiang, 2022).

2.3 Conclusion of literature review

From the literature review, the globalization and foreign development of shadow play (Inge C, 1974) is a huge advantage that consolidate the foundation of shadow play's acceptance in the modern society. The current dilemma that shadow play encounters are inevitable, the lack of financial interest (Yangmu Jia, 2012), social acknowledgement, and high barriers to entry (Jiang Yuxiang, 2022) lead to a higher cost of inheritance succession. The online format of shadow play museums that were intrigued during the pandemic era, though impacted offline industries in general, offered innovative inspirations towards shadow play's potential through combination with digital medias (Mak, Hei Wan, 2021), which the following thesis elaborates.

3. Methodology and Result Analysis

Shadow play museums' online exhibitions are the most effective protection means throughout the past decade. The online exhibitions improve on the first two limitations of shadow play. Namely, Chinese government runs the Shadow Digital Museum, an online museum of shadow play, it includes some of the most famous shadow repertoire, which is permanently displayed on the website and free to all visitors (Mak, Hei Wan, 2021).

However, online museums of shadow play have failed to make improvements in response to the art form's gradual disappearance. This is because the process of digitizing shadow repertoire in online museums does not generate economic benefits for shadow artists. Therefore, they are not financially rewarded for their efforts to promote shadow play. In addition, the online museum's videotapes are made through collaboration with professional and renowned shadow puppet performance teams, so they do not provide exposure to folk theater groups, and the folk heritage of shadow play is difficult to preserve.

3.1 Combined Foreign and Domestic Content Innovation

Our innovations in digital shadow play not only focus on the form, but also on the content of the show. Foreign and Chinese elements and recent events could be incorporated into the themes of plays to no longer limit them to traditional myths, folklore, and fables. For example, in a recent play "Nezha vs. Coronavirus," the anthropomorphic coronavirus figure and Nezha, a hero figure in Chinese traditional folklore, battle to a fierce soundtrack; in the same series of tributes to medical staff, "To the Most Beautiful Child of 2022" tells a heartwarming short story about medical staff and their young patients; in "Chang'e Runs to the Moon (English Version)," we interpret an romance in English and tell it in Shakespearean writing style .

After finalizing the character models, prop designs, and script structure, we paid dwarfism shadow play masters to sculpt, interpret, and record the film. This process reinforced the future compatibility of digital shadow puppetry, expanding the form and content of the presentation while providing a new economic income for traditional cultural craftsmen.

Finally, around the concept of "digital shadow play," such innovative scripts can be presented via Creative Programming and Mozilla Hubs so that they can be accessed and viewed more easily.

3.2 Innovative Industrial Products

The decline of shadow puppetry, according to our the initial investigation phase, was attributed in part to its weaker economic output being insufficient to support the industry's operations. Therefore, it became the goal to explore means that would help shadow plays to gain more economic benefits from unique cultural and creative derivatives. In the process of carving and creating shadow puppets at the Beijing Long In Sky Shadow Play Theatre, they mentioned that shadow puppets are not just movable performance props; each individual piece of leather has very fine carvings and colors. Out of this exploration, we developed a series of shadow puppets models to sell as merchandise. We envisioned putting the beautiful shadow artwork on everyday products, such as backpacks and containers and framing them in glass frames to sell as decorative pieces. Moreover, we could reach a wide audience and effectively engage their interests with the aesthetic designs. For instance, students and employees would be inclined to purchase the framed puppets as ornaments on their desk and elders could utilize woven bags that have shadow puppets on top. The below image shows a series of shadow puppet theater-related products being sold at the Cultural and Creative Pavilion of the Long In Sky Shadow Theater in Beijing.



Fig.1 A series of shadow puppet related products being sold at Beijing Chang'an Shadow Theatre Cultural and Creative Museum

3.3 First Method of Digital Shadow Play - Creative Python Coding

All background investigations pointed to a number of crises facing shadow puppet theater, such as social concerns, the employment situation of craftsmen, and an urgent need to update the artistic content. In response to these issues, two types of digital media are considered: creative programming is a new technological innovation that preserves the highlights of shadow play while minimizing the media limitations and inconveniences of 2D offline art. The Python language is applied to achieve this program. In the program, a "stage" will be captured by the camera, and the video will be shown on top of it (the stage can simply be a white sheet of paper). The camera recognizes and captures the

"stage" and starts playing the performance video. The creatively programmed digital shadow play brings the new concept of "creative stage" into reality. Through the precise capture of the program, the experience can be set on any "stage".

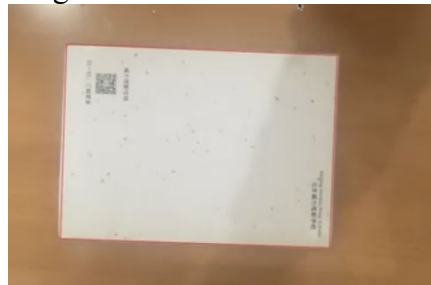


Fig.2: Capture any specified "stage" through the device camera (the "stage" in the image below is a blank sheet of paper)



Fig.3: Import shadow puppet video onto the "stage" (the picture below is the interface during the video import process)



Fig.4: After the video is imported, it will start to play on the "stage" (the program will scan the space, load the video and start playing after the video is loaded)

3.4 Second Method of Digital Shadow Play - Mozilla Hubs Meta-verse

Mozilla Hubs is an online 3D interactive space. Each user can select and create his or her own online avatar after entering the website and enjoy the online shadow play in the same space with other avatars. Firstly, this solution solves the dilemma of physical performances in the current post-pandemic era, while enhancing the participation of movie-goers through virtual audience images. Secondly, it integrates a current mainstream Internet presentation format while preserving the original characteristics of shadow puppetry, visual and auditory effects, and plot. Through Mozilla Hubs online interactive space, each viewer is presented as a unique online audience member to watch shadow puppetry. Once again, the 3D free-movement space allows users to choose any angle and any volume to watch the shadow puppet show. It precisely avoids visual or auditory discomfort caused by sitting with other viewers during offline viewing. Finally, Mozilla Hubs minimizes the cost of travel and time required for offline viewing, allowing the viewer to choose to watch any type of shadow puppet at any time and place.

(Below Images are from our Mozilla Hubs experiment; the picture on the left shows the page where the user selects or creates the 3D avatar after entering the web page; the picture on the right

shows the online shadow play theater seen by the subjects through the mobile computer after entering the interactive space)

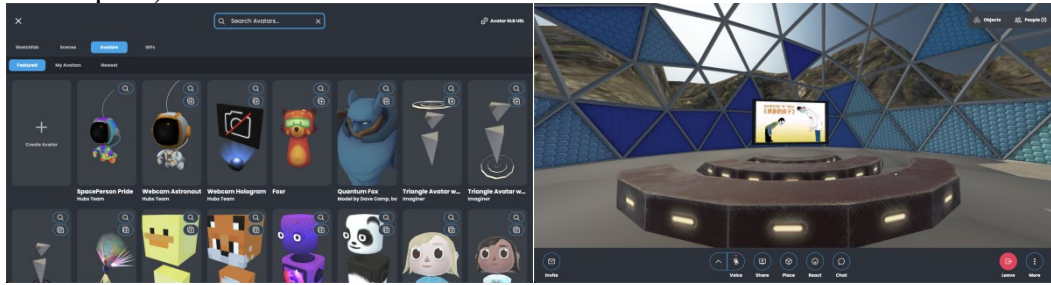


Fig.5: Our Mozilla Hubs Experiment

3.5 Innovative Experiment Method - Qualitative Interview and Response Analysis

In addition to developing new products with creative coding, an experiment is demanded to test whether this new online media approach to shadow puppet theater viewing can really bring a new viewing experience to the audience. Thus, we recruited subjects in groups for both Mozilla Hubs and Creative Coding presentations. In order to recruit as many different subjects as possible, we interviewed 23 subjects, aged 14 to 52, and ensured that they had different professional identities. To avoid "sequential error," half of the subjects experienced Mozilla Hubs before creative programming, and the other half vice versa. After the subjects watched the same content in both videos, a one-on-one interview would be conducted with them to understand their intuitive experience during the online performance. Interview questions were designed in advance, and during the interview, the experimenter would guide the subjects to elaborate their feelings about digital shadow puppets, ask about the differences with traditional shadow puppets, and the pros and cons of web AR (Mozilla Hubs) vs. mobile AR (creative programming). The audio recordings after obtaining the subjects' consent were then transcribed. By analyzing the interview transcripts and extracting keywords with high repetition rates from the interviewees' responses, we validated the results of the comparison between the experimental and control groups. High-frequency keywords were collected and reviewed during the final stages of analysis.

3.6 Experiment Result Analysis

In addition to digitizing shadow play with Mozilla hubs, an experiment is demanded to test whether this new online media approach to shadow puppet theater viewing can really bring a new viewing experience to the audience. Thus, a qualitative interview through thematic analysis would be conducted. In order to recruit as many different subjects as possible, there were in total 23 interviewees, aged 14 to 52, and ensured that they had different professional identities. After the subjects experienced and watched a shadow play performance on Mozilla hubs, a one-on-one interview would be conducted with them to understand their intuitive experience during the online performance. Interview questions were designed in advance, and the questions covered three themes for subsequent thematic analysis: first, subjects' background knowledge about shadow play; second, comparison of the subjects' personal experience between online and live shadow play performance, yet if the subject have not watched a live shadow play performance, the theme would become their experience solely from the online performance; thirdly, whether digital shadow play attract or motivate them to watch shadow play performance in the future. The audio recordings after obtaining the subjects' consent were then transcribed and further analyzed through thematic analysis.

3.7 Result: Thematic analysis from innovative experiment in 4.6

The result from the interview would be presented through the following themes corresponding with specific questions .

(1) Does the digital shadow play clearly illustrate the content of the story?

The vast majority of the subjects (19) gave feedback that this novel presentation format effectively increased the freshness of the shadow play, and therefore attracted their attention during the viewing, while clearly conveying the content of the play.

(2) What were the different experiences between offline traditional shadow puppets and online digital shadow puppets?

According to statistics, the repertoire allowed some respondents to experience the integration of shadow play and modern social issues. For example, one interviewee said, "Shadow play is a very interesting art form. Shadow plays usually tell traditional mythological stories, but reviewing the pandemic and even the cross-cultural Chang'e running to the moon through shadow plays brought me an unprecedented experience." Another respondent said, "I think it is difficult to show social stories in shadow. Because the shadow is only a piece of paper and not a living being, it has no way to show emotions unless it is rendered with voiceover or music, which may make people feel empathy, but because the shadow is not a real person, it is hard to feel it."

(3) What was your reaction to the interactivity from digital shadows?

According to further statistics, online preservation measures increase the interactivity of shadow puppetry and make it more accessible to modern audiences. For example, in Mozilla Hubs, each user can choose the method of viewing that is most comfortable for him or her; the online space avoids concerns about seating angles, audience noise, and fixed content; and creative coding allows viewers to choose their own "stage" for viewing by taking photos. For example, one of the interviewees said, "It's a good experience. The story design is very good. You can choose your own, watch it again and again. You can see a certain part, making the action more clear, and give people a deep overall feeling, leaving a long memory. Although offline interaction can have applause, online viewers can also offer praise, flowers and other encouragement. Aside from the viewing effect on the audience, viewing data and other analysis is more scientific and accurate, conducive to the development and promotion of shadow puppetry. It will also bring people the work itself to inspire and entertain."

Finally, all interviewees indicated that they would be willing to go to learn more about shadow puppetry and traditional culture and would watch a wonderful digital shadow play on the basis of saving some economic and travel costs. This is in line with our intention to preserve shadow puppetry as a cultural tradition.

4. Conclusion

This project focuses on the preservation and dissemination of shadow puppet theater, breaking through old traditions with a unique and innovative solution, providing more social significance, technological innovation and economic possibilities for the development of digital shadow play, and the transmission of intangible cultural heritage. Digital shadow play provides innovative solutions in all three aspects: the social role, scientific and technological innovation and economic benefits of digital shadow puppetry.

First, the methodologies proposed new forms of digital shadow puppetry for the online communication of shadow play and implemented two online shadow puppet products - Mozilla Hubs meta-verse and Creative Coding programming production. The videos of their productions have been released on Bilibili, Today Shadow Play, Youtube and other platforms.

Innovative experiment methods were used to answer the question of whether online shadow play can really help the spread of traditional shadow puppet culture. Through the qualitative experiment, we recruited subjects to watch our two online shadow puppet theater creative solutions and conducted in-depth interviews with the subjects. Through the analysis of the subjects' interviews, we believe that our project can use digital programming technology to break through geographical and content limitations and provide innovative solutions for the online dissemination of shadow plays. In particular, we believe that the project can enable the content and culture of shadow plays to be more widely disseminated. In addition, digital shadow play enhances the interactivity between shadow characters, shadow plays and viewers, making it more popular among young audiences. Increased

interactivity will increase the audience and content diversity of shadow play, and a larger audience would enhance the economic benefits of shadow play for craftsmen.

All of the above leads to the ultimate conclusion: digital shadow play can provide economic channels for traditional craftsmen and disabled shadow play artists while highlighting traditional shadow puppetry, opening up distribution methods, increasing convenience and interactivity for the viewers, as well as enabling cross-cultural exchange.

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