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Cultural Heritage and Technological Innovation in Papercut Animation: The Artistic Journey of Shanghai Animation Film Studio (1950s-1980s)

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Abstract: ***This paper examines the evolution of paper-cut animation at Shanghai Animation Film Studio (SAFS) from the 1950s to the 1980s, focusing on the fusion of cultural heritage and technological innovation. Highlighting the contributions of pioneers like Wan Guochan and Hu Jinqing, the study explores how SAFS integrated traditional Chinese arts into animation to overcome technical limitations and respond to socio-political changes. Through an analysis of seminal works such as "Pigsy Eats Watermelon" and "The Fishing Boy," the paper illustrates the studio's role in shaping the landscape of contemporary animation.***

Keywords: Shanghai Animation Film Studio, Paper-cut Animation, Cultural Heritage, Technological Innovation, Animation History.

1. Introduction

Animation, as an evolving art form, possesses a distinctive aesthetic and visual language. In China, the development of this medium is profoundly intertwined with cultural traditions and social transformations, reflecting a unique stylistic identity. Over the decades, animation has not only facilitated the transmission of cultural values and ideas but also advanced significantly in technological and creative realms.

Paper-cut animation, produced by Shanghai Animation Film Studio (SAFS), represents a significant achievement in the annals of Chinese animation history, spanning from the 1950s to the 1980s. Despite facing challenges such as limited resources and funding, it has continued to exhibit unique artistic merits. Pioneers like Wan Guochan and Hu Jinqing have been instrumental in the fusion and innovation within paper-cut animation, transcending traditional technical boundaries and expanding creative possibilities.

The evolution of paper-cut animation was not an overnight success. Utilizing rudimentary tools and scarce materials, artists developed a distinctive language of Chinese animation. Their creations, drawing inspiration from traditional Chinese cultural forms such as ink painting and New Year prints, demonstrated the potential for blending modern and traditional arts within animation. This paper aims to focus on the artistic exploration within SAFS's paper-cut animation, examining the technical innovations, expressive forms, and cultural implications introduced by artists like Wan Guochan and Hu Jinqing. By analyzing specific works, this study will explore how paper-cut animation overcame technical limitations and integrated national and foreign artistic styles, creating a unique aesthetic language that continues to inspire contemporary animation.

2. Pioneering Paper-Cut Animation at SAFS: The Cases of Pigsy Eats Watermelon and The Fishing Boy

2.1 Genesis of Shanghai Animation Film Studio

Established in 1957, the Shanghai Animation Film Studio evolved from the Northeast Film Studio's cartoon section. Originally formed as an art film group in 1949 and relocated to Shanghai the following year, it became an independent entity under the "Double Hundred Policy," focusing on animation, puppetry, and paper-cut films. In 1958, Wan Guchan, a pioneer of Chinese animation, led a team of young animators to produce "Pigsy Eats Watermelon," marking the debut of color paper-cut animation in China and heralding a flourishing era for this art form at the studio.

2.2 Innovative Techniques and Cultural Inspirations

The inception of paper-cut animation represented a seamless integration of artistic value and practical technique, incorporating folk styles into animation to significantly ease production burdens. Before the founding of New China, Wan Guchan had contemplated methods to reduce production costs associated with labor-intensive frame-by-frame hand-drawing, which required tens of thousands of meticulously crafted frames for brief animations. After joining Shanghai Animation Film Studio, Wan and his colleagues drew inspiration from traditional Chinese shadow play and paper-cutting, creating a new genre: the paper-cut film. This genre balanced the advantages of shadow play and paper-cutting, employing stop-motion techniques and maintaining the colorful and clear outlines typical of folk paper-cutting while incorporating the intricate details of New Year paintings to avoid the excessive abstraction of solid-colored paper cuts, making it ideal for conveying humorous and educational content to children [1].

2.3 Global Context and Technological Advancements

Prior to the release of "Pigsy Eats Watermelon," there had been global explorations into paper-cut animation, notably by German animator Lotte Reiniger. In 1926, Reiniger directed "The Adventures of Prince Achmed," recognized as both the earliest full-length animation and the first instance of paper-cut animation. She used a silhouette technique where scenes and characters, crafted from cardboard, were illuminated from behind and captured frame-by-frame, echoing traditional shadow puppetry techniques. This produced a unique flowing

silhouette effect. In contrast, "Pigsy Eats Watermelon" introduced a novel approach by Wan Guchan and his team. They placed a glass plate over the planar puppets and used frontal lighting for filming, resulting in vibrant and expressive visuals. This method not only differed from Reiniger's more abstract silhouettes but also aligned with the proletarian art style that reflected the social values of the People's Republic of China at its inception.

"Fisher Boy," released in 1959, built on the success of "Pigsy Eats Watermelon," highlighting the emerging talent of Hu Jinqing, a recent graduate from the Suzhou Academy of Fine Arts' animation program. At just 20 years old, Hu had directed "Pigsy Eats Watermelon," handling the initial sketches. His role expanded in "Fisher Boy," where he served as the lead animator. The production team immersed themselves in fishing villages and kindergartens to authentically depict the fisher boy's innocence and simplicity [2]. Artistically, Hu drew inspiration from Southern Chinese New Year paintings, blending traditional paper-cut simplicity with the warmth of detailed internal outlines. This technique produced a visual style that was richer and more integrated than its predecessor.

Beyond enhancements in visual aesthetics, "Fisher Boy" featured a notable innovation in the use of support materials. The production of paper-cut animations necessitates positioning glue for connecting movable joints of characters. Initially, during "Pigsy Eats Watermelon," this glue was made from thick, noodle-like strips of rubber cloth, which unfortunately created shadows beneath the paper cuts. A fortuitous discovery during "Fisher Boy"s production found that lightly baking the rubber improved its adhesion and eliminated the shadow issue, leading to the adoption of this method known as "scraping glue" [3]. This breakthrough helped standardize the studio's paper-cut animation process and led Shanghai Animation Film Studio into a peak period of artistic achievement.

3. The Pinnacle and Stagnation: Insights from The Golden Conch

During its mature stage, the Shanghai Animation Film Studio's paper-cut animation, notably exemplified by "The Golden Conch," achieved remarkable success. Released in 1963 and directed by Wan Guchan with Hu Jingqing as the art and motion designer, "The Golden Conch" garnered the Lumumba Prize at the Third Afro-Asian Film Festival. This period marked Hu Jingqing's ascendancy as he set new artistic and technical standards in paper-cut animation. The film, an adaptation of the folk tale "The Conch Girl," introduced intricate details and deep color layers, a style Hu Jingqing characterized as "delicacy." [4] Under the guidance of Qu Baiyin, the production team embraced a richly detailed Chinese aesthetic, endeavoring to redefine artistic expressions in animation and contrasting markedly with Western techniques. This focus on density and detail in character design epitomized the essence of "delicacy," rendering "The Golden Conch" a paragon of sophisticated, culturally enriched animation.

During this era, alongside "The Golden Conch," other notable paper-cut animations such as "Monkey and Turtle Sharing a Tree," "Almost," and "Red Army Bridge" were produced. These works largely preserved the traditional styles derived from shadow plays, paper-cutting, and New Year paintings, characteristics evident since the releases of 'Pigsy Eats Watermelon' and 'The Fishing Boy.' However, the creators within the paper-cut division did not strictly adhere to tradition; they expanded and innovated with new materials, techniques, and expressive forms. Particularly, they experimented more with character movement and emotional expression, allowing the animations from this period to diversify and more distinctly reflect contemporary characteristics. These subtle innovations marked a shift from merely showcasing traditional art forms to embedding richer dramatic and emotional narratives, underscoring the unique charm of Shanghai Animation Film Studio's mature phase. Nevertheless, just as paper-cut animation was poised for further innovation, the onset of the Cultural Revolution in 1966 halted its progress. Constrained by political mandates, artistic creation during this period was relegated to serving revolutionary and political struggles. Although some works like "Red Scarf" and "East Sea Little Sentry" were still produced, they lacked significant breakthroughs and were utilized as mere tools for political propaganda. The stagnation of paper-cut animation endured until the end of the Cultural Revolution, after which it began to slowly revive [5].

4. The Exploration of the Reboot Period: Paper-Cut Films Integrating Various Artistic Styles

4.1 Water-Ink Animation: Traditional and Modern Fusion

Following the reform and opening policies, as the socio-political climate became more permissive and the cultural arts sector revitalized, paper-cut animation experienced a resurgence. In the early 1980s, the Shanghai Animation Film Studio re-evaluated traditional art forms, gradually resuming the production of paper-cut animations, and explored new techniques and forms of expression. During this period, the studio's paper-cut animations began incorporating multiple materials and embracing other artistic styles, particularly evident in standout water-ink paper-cut animations like "The Bamboo Shoots Growing Indoors" and "The Snipe and the Clam." Previously, in the 1950s and 1960s, the studio's water-ink animations had achieved significant acclaim. Works like "Little Tadpoles Looking for Their Mother" drew widespread attention upon release and remain classics in animation history. The unique technique of water-ink texture used in these animations, producing delicate diffusion effects frame by frame, continues to challenge even modern computer animation, which struggles to fully replicate it. Despite their exquisite artistic effects, water-ink animations were extremely labor-intensive, requiring tens of thousands of frames, each needing meticulous adjustment, which resulted in long production cycles and low efficiency [6].

Faced with these challenges, the paper-cut group was inspired by the water-ink group's success and began to consider how to integrate water-ink styles with paper-cut animation, maintaining the charm of water-ink while improving the efficiency of paper-cut animations. Combining water-ink styles with paper-cut forms seemed like a contradiction due to technical limitations. The studio's paper-cut animations

emphasized clear edges and distinct "cut flavors," which contrasted with the blurred diffusion of water-ink. To resolve this, Hu Jingqing conducted extensive research and ultimately developed the "pulling hair" technique: using traditional bark paper with visible fibers, first painting the characters with water-ink, then meticulously outlining them with a damp brush, and finally manually tearing the paper edges to create a natural diffusion effect [4]. This technique not only softened the edges of the paper-cut works, enhancing the unique charm of water-ink paintings but also solved the common issue of harsh cuts in paper-cut art, achieving a perfect fusion of paper-cut and water-ink techniques.

The "pulling hair" technique was first introduced in the 1976 animation "The Bamboo Shoots Growing Indoors," where it was used to create soft, fluffy textures on small animals, significantly enhancing the visual experience. This technique was then applied extensively in various water-ink paper-cut animations by the studio, particularly for depicting the texture of animal fur, as seen in "The Mischievous Golden Monkey." Here, the technique helped to vividly portray the softness of animal fur under sunlight, adding liveliness to the characters. By 1984, in "The Snipe and the Clam," the studio had refined this technique to its fullest potential, achieving a peak in water-ink paper-cut style that perfectly captured the essence of water-ink artistry in paper-cut form. This period of innovation didn't just enhance the aesthetic quality of animations but also broadened the expressive capabilities of paper-cut films, making them more dynamic and emotionally engaging. Furthermore, during this time, the studio explored integrating various artistic styles into their paper-cut animations, as seen in works like "Mr. Nanguo" and "Fire Child," which incorporated elements of funerary art and Yunnan heavy color painting style, respectively, adding depth and diversity to the studio's artistic endeavors [7].

4.2 "Mr. Nanguo": Integrating Han Dynasty Art

The 1981 animation "Mr. Nanguo" stands as a paradigmatic example of the assimilation and reinterpretation of aesthetic principles from Han Dynasty portrait bricks and silk paintings within the medium of paper-cut animation. The film is distinguished by its coherent and impactful visual design, characterized by well-defined lines, shapes, and planes, along with meticulous attention to color and texture. The narrative structure utilizes a scattered point perspective, enhancing the depth and dynamism of the visual storytelling. The character designs incorporate traditional elements such as the wide robes and large sleeves typical of the Warring States period, presented primarily in profile to align with the conventional style of portrait bricks—this orientation also suits the planar constraints of paper-cut animation. The backdrop is deliberately simple and uncluttered, detailed only with essential elements and a few elegant patterns, employing strategic use of Kui and Baihu motifs that symbolize music, authority, and protection.

In terms of material execution, "Mr. Nanguo" utilizes silk screen printing and etching techniques to authentically recreate the textures of bronzeware and stone carvings in outdoor scenes, while the indoor scenes are imbued with a solemn color palette inspired by the Mawangdui silk paintings. The layout of the narrative, reminiscent of an ancient flowing mural, employs repetitive and decorative character arrangements, enriching the storyline and imbuing the film with a subtle dark humor as it satirizes reality through the lens of funerary art styles.

4.3 "Fire Child": Yunnan's Cultural Vibrance in Animation

In contrast, the 1984 production "Fire Child" explores the integration of paper-cut animation with contemporary artistic elements. This narrative, recounting the legend of the Torch Festival of Yunnan's Hani people, was overseen by Liu Shaoyun, a co-founder of the Yunnan Modern Heavy Color Painting School, ensuring a high level of artistic integrity. The painting style, which emerged in the post-reform era, melds minority arts with the vibrant colors and compositions of Dunhuang murals and modern decorative arts, making it particularly well-suited for portraying ethnic legends.

Technically, "Fire Child" employs the dry-rubbing technique characteristic of this school to create richly layered colors and textures, thereby conjuring a lush tropical rainforest ambiance. For example, forest scenes feature deep greens and ochres blended with the bright, saturated hues of large leaves and flowers, which contribute to a visually deep and vivid natural environment. Furthermore, the animation incorporates gold and silver foil appliqué techniques from Yunnan Heavy Color Painting in ceremonial scenes, augmenting their decorative impact and emphasizing the solemnity and sacredness of these moments. Director Wang Bairong's characterization of the artistic essence of "Fire Child" as having "the taste of chili" aptly captures the animation's robust color contrasts and dynamic lines, which reflect Yunnan's diverse and vibrant cultural essence.

5. The Decline of Paper-Cut Animation in the New Era and Its Implications for Contemporary 2D Animation

5.1 Challenges and Adaptations in 20th Century Chinese Animation

In the late 20th century, as China underwent significant economic reforms and opened up to the global market, its animation industry faced formidable challenges. The traditional, quality-driven approach to animation production was challenged by the influx of commercial animations from the US and Japan. These animations, characterized by their diversity, high-quality production, and rapid updates, swiftly captured a significant share of China's market, exerting considerable pressure on domestic productions. Television stations, emerging as the new primary platforms for animation, demanded much shorter production cycles to accommodate frequent broadcast schedules.

In response to these pressures, practitioners of traditional paper-cut animation were compelled to adapt by significantly reforming their production processes [8]. "The Calabash Brothers," for instance, transitioned from the traditional tale "The Ten Brothers" to a story about seven distinct, colorful calabashes. This adaptation not only simplified the storyline to better suit younger audiences but also significantly reduced the complexity of character design and animation, thereby

streamlining production. Hu Jinqing leveraged emerging photocopying technology to transform characters into standardized templates, facilitating minor adjustments for portraying various emotions and actions, thus meeting the demands for rapid production. While this innovation somewhat diminished the animation's artistic depth, it crucially addressed the issue of production efficiency.

However, by the late 1990s, the advent and popularization of computer animation technology began to overshadow traditional paper-cut animation. Computer animation not only offered higher production efficiency but also afforded greater flexibility in visual effects and expressiveness, particularly in the natural fluidity of movement and visual depth—areas where paper-cut animation could not compete. Confronted with these technological advancements, the paper-cut animation team at the Shanghai Animation Film Studio was eventually disbanded in the early 2000s [5]. This marked a significant transition in Chinese animation from traditional techniques to modern digital technologies, reflecting the broader challenges and opportunities that traditional art forms faced in the era of technological innovation. Although paper-cut animation was initially developed to enhance production efficiency, its inherent limitations became increasingly apparent against the backdrop of the superior efficiencies offered by computer technology.

5.2 Technological Innovations and Limitations in Paper-Cut Animation

Compared to traditional frame-by-frame animation, paper-cut animation faces significant limitations in character movement due to the flat nature of its figures, which restricts dynamic actions and makes movements appear stiff, much like in shadow puppetry. To address this, the paper-cut group incorporated elements of dance and theatrical motion into their designs, enhancing the fluidity and expressiveness of movements. This innovative approach started with "Fisherman's Boy" and was expanded in later projects such as "The Calabash Brothers." However, paper-cut animation also suffers from limited viewing angles and challenges in character rotation, often resulting in a flat and monotonous appearance in complex scenes. To combat this, the animators developed multi-angle components for the characters, allowing for smoother transitions in movement and a more three-dimensional effect, although the transitions can sometimes be jarring and disrupt the visual continuity.

In "The Bamboo Shoots Growing Indoors," challenges with maintaining visual continuity were evident as the young boy moved flexibly around the house. To facilitate his movements, the production team utilized two to three different angled parts for smoother transitions. However, rapid changes and frequent part replacements sometimes resulted in abrupt transitions that disrupted the visual flow. In contrast, "The Snipe and the Clam" improved upon this by reducing the number of transition frames, thereby enhancing the animation's smoothness. These detailed advancements in "The Bamboo Shoots Growing Indoors" and "The Snipe and the Clam" highlight the persistent exploration and refinement within paper-cut animation, offering valuable insights for the development of modern digital 2D animations.

5.3 Legacy of Paper-Cut Animation in Modern Digital Techniques

Initially, paper-cut animation embodies traditional aesthetic forms, offering visuals that are both simple and highly symbolic. Innovators in animation during the last century skillfully combined these elements with modernist art, creating characters and backgrounds that not only stand out aesthetically but also resonate deeply on an emotional level. For example, "The Fox Huntsman" minimizes character and background details to emphasize emotional and cultural themes, achieving a strong symbolic and expressive effect. This approach is especially relevant in today's digital animation, where global influences often push for intricate details that can detract from the emotional core. Paper-cut animation's unique "reductionist" strategy focuses on simplifying visuals to enhance emotional engagement, making it easier for audiences to connect with the story and its emotional expression.

Additionally, the exploration of technical and textural aspects in paper-cut animation has opened up fresh prospects for modern 2D animation. For instance, the "pulling hair" technique commonly used in water-ink paper-cut animations, the stone textures depicted through printmaking in "Mr. Nanguo," and the complex textures obtained through dry rubbing in "The Fire Boy" provide significant inspiration for modern animation techniques. In digital painting, it's possible to effectively replicate these traditional textures, enhancing the visual layering and depth. Beyond their aesthetic role, these textures enrich the narrative, offering viewers a more profound cinematic experience. The challenge of merging traditional art forms with modern digital technology to create innovative visual effects in digital animations continues to be a crucial area for exploration in contemporary animation efforts.

In narrative techniques, the use of non-linear storytelling and symbolic expressions in paper-cut animation offers valuable lessons for modern animation. By employing symbolic and abstract visuals, these animations create complex emotional worlds and explore deep cultural themes, providing inspiration for animators in a commercial context to tackle complex emotional and cultural subjects. Moreover, paper-cut animations' respectful portrayal of ethnic minority cultures serves as a guide for cross-cultural expressions in contemporary animation. As globalization deepens, the challenge of expressing and respecting diverse cultural values through animation remains a topic worthy of deep reflection.

6. Conclusion

The exploration of paper-cut animation at Shanghai Animation Film Studio serves as a distinct chapter in the history of Chinese animation. It illustrates how continuous innovation in animation techniques can reflect and influence cultural and social dynamics. This study has shown that SAFS's contributions went beyond mere artistic expression; they served as a cultural repository and reflected the societal changes of their times. The evolution of paper-cut animation at SAFS, characterized by its persistent fusion and innovation, transcended the traditional and technological confines to develop a unique visual language. This progression

profoundly influenced China's animation landscape and continues to provide invaluable artistic insights and lessons for contemporary animation development.

As an art form that transcends mere artistic expression to become a vessel of cultural memory, paper-cut animation will continue to inspire future generations of animators. It remains imperative for contemporary scholars and practitioners to further explore the integration of traditional art forms with modern digital technologies, aiming to create innovative visual effects that resonate with global audiences while preserving cultural heritage. This exploration not only enriches the animation medium but also ensures the continuation and evolution of a unique artistic legacy within the broader context of global cinema.

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