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WATERCOLOR ART AND DIGITAL ANIMATION PRODUCTION: THE INTEGRATION AND DIALOGUE OF TRADITION AND MODERNITY

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ABSTRACT

This study investigates the integration of watercolor art into animation production to explore its expanded expressive potential. Employing a qualitative research methodology, data were collected through in-depth interviews with experts in animation and traditional watercolor art, alongside comprehensive case studies and a literature review. Thematic analysis was used to interpret the data, allowing the identification of key patterns and insights regarding the synthesis of watercolor techniques with digital animation workflows. Findings indicate that cross-disciplinary artistic collaboration facilitates the incorporation of traditional art elements into animation, fostering diversified expressive forms. The integration of watercolor with digital workflows demonstrates progressive development trends, as evidenced by increased production output and interdisciplinary artistic engagement. Notably, secondary creative activities by multidisciplinary artists amplify artistic synergy while broadening application domains across aesthetic paradigms. This convergence enables audiences to perceive art through multidimensional interpretive lenses, accommodating varied aesthetic sensibilities. Projections suggest sustained growth in hybrid artistic practices, with watercolor-animation integration serving as a catalyst for technical innovation and cultural discourse expansion. The research underscores animation's evolving role as a medium for preserving traditional art forms through technological reinterpretation, ultimately contributing to enriched visual communication in digital media ecosystems.

KEYWORDS: Watercolor Art, Digital Animation, Traditional Art, Integration of Artistic Media, Animation Production, Integration of Traditional art and New Media.

1. INTRODUCTION

Watercolor language refers to an artistic expression that uses watercolor art as a medium, combining water and color along with painting techniques and materials to convey the artist's thoughts, emotions, and creativity. It constitutes the fundamental language of watercolor art, characterized by its fluidity and transparency, presenting a unique aesthetic through the form of painting (Li, 2010). The core of watercolor language lies in swiftly and conveniently recording the designer's mental imagery, transmitting design ideas through visual forms such as graphics and symbols. This art form not only possesses visual appeal and artistic value but also offers significant practical value and expressive space for hand-drawn designs, making it one of the essential material media for expressing design thinking.

In the 1990s, traditional production methods were still prevalent, as seen in works like (Wan Laiming, 1961) 大闹天宫 "Havoc in Heaven." As a classic work of Chinese literature handed down through generations, its use of color language embodies a high level of artistic aesthetic value and a rich national character. Its hallmark artistic trait is the ornate style marked by precise brushwork and lively coloration. Since color is one of the most important means of emotional impact on the reader, color meanings express the author's view of the world, and are also important for constructing a national picture of the world. (Zaraiskiy, 2023) The emergency of computer, developed to 1960s, has impacted various fields deeply, promoting reforms in every single aspect. With the help of computer technology, those reforms have been developing over time, which could be a telling evidence that computer technology has a positive bearing on the whole society. (Liu, 2024; Xia & Tirakoat, 2024). During this period, digital technology profoundly impacted the forms and expressive methods of traditional animation art. In the animation design of (Wang Nima, 2007) 暴走漫画 "Rage Comic," the characters are crafted using a simple sketch style, whereas productions such as (Lu Hengyu & Li Shujie, 2014) 十万个冷笑话 "One Hundred Thousand Bad Jokes" employ more decorative methods for character design. Once the character design is finalized, the next step involves creating scenes for those characters, employing drawing software to present the animated settings. Traditional animation art draws from the standard techniques used in animated film production. It employs cinematographic principles, specifically leveraging the human eye's persistence of vision, to

produce a sequence of incrementally changing static images. These images vividly depict a continuous dynamic process. They are then individually photographed and compiled, and through the television broadcast system, they are animated for viewers on the screen. The application of digital tools allows creators to devote more energy to honing creativity and details, thereby improving production efficiency. For example, digital painting software enables animators to create directly on the computer, allowing for the rapid rendering of realistic scenes. Moreover, the application of digital tools and software facilitates the swift transformation of creative ideas into concrete visuals and storylines, allowing creators to realize their concepts more conveniently. They can utilize digital software technology to convert static images into dynamic videos, significantly enhancing the creators' control over the overall rhythm of their work and the efficiency of scene editing. This convenience also allows advertisers and filmmakers to create more impactful and realistic visual experiences for the audience.

The combination of these two mediums has resulted in numerous outstanding successful cases, significantly advancing the field of animation art in both commercial and artistic aspects. The integration of watercolor art and animation can be traced back to the early 20th century, in 1942, Disney released the groundbreaking animated film, *Bambi*. In this film, Disney experimentally incorporated the art style of watercolor painting into the design of the animation backgrounds, endowing the movie with a soft and poetic visual effect. Tyrus Wong, as a background artist, made particularly notable contributions. He skillfully employed watercolor techniques to create the film's hazy and dreamlike forest scenes, thereby establishing a new milestone in the development of visual art in animated films. As animation technology continued to advance, an increasing number of artists began to experiment with integrating traditional watercolor techniques into animation production.

The Walt Disney Studio released *The Little Mermaid* in 1989 by Ron Clements and Musker, things had changed considerably for the United States and for the company itself. This increased role for women was recognised within the popular liberalism of Clinton in the 1990s. Furthermore, as a result of economic changes brought about by Reagan's neoliberal embrace of deregulation and marketisation, the American Dream itself was privatised in the 1980s. The Disney fairy tale is thus significantly more globalised in scope, emphasising

the power of America's market forces and consumerism as the American Dream reached into the post-industrial era (Mollet & Mollet, 2020). This ultimately led to Disney's rebirth and entry into a second golden age. As we stepped into the 21st century, digital advancements brought forth a wave of change in animation studios. Many embraced digital watercolor techniques, blending them with traditional methods. This fusion has now evolved into a popular trend, where animators preserve the authenticity of hand-painted watercolors while seamlessly integrating them with modern digital animation effects. The film by Miyazaki Hayao in 2001, *千と千尋の神隠し* *Spirited Away* is a work by Studio Ghibli that often employs hand-drawn and ink wash techniques to create exquisite and unique visual effects. The backgrounds in this work utilize a large number of watercolor techniques, creating soft and dreamlike scenes. The transparency and layering of watercolor enhance the depth and three-dimensionality of the images, making the audience feel as if they are immersed in the world of the film. Michael Dudok de Wit in 2016, *La Tortue Rouge* *The Red Turtle* extensively employs hand-drawn ink wash effects, presenting a simple yet poetic visual style. The ink wash makes the natural landscapes and emotional expressions softer and closer to nature, creating an atmosphere of solitude and tranquility. The fluidity and irregularity of ink wash bring a sense of spontaneity and freedom to the film's aesthetic experience. Sunao Katabuchi in 2016 filmed "*この世界の片隅に*" *In This Corner of the World* showcases the life scenes in Japan during World War II through a rich watercolor style. The delicacy and softness of watercolor fill the images with a sense of life and emotional color. The natural blending and texture of the background colors add a warm and nostalgic atmosphere to the entire story. Tomm Moore in 2014 *Song of the Sea*, an animated film from Ireland, is praised for its exquisite ink wash style backgrounds, vividly presenting natural landscapes and mythological elements through unique artistic techniques. This art style not only imbues the images with a fairy-tale quality but also enhances the overall three-dimensionality and profound meaning, providing the audience with an extraordinary visual experience. David Fine and Alison Snowden in 2018, *Animal Behaviour*, a Canadian animated short film, combines hand-drawn art with watercolor techniques, giving the characters and scenes a unique handcrafted feel. The watercolor technique brings a freely flowing expression and a rich gradient of colors to the artwork, greatly enhancing the work's interest and expressiveness, vividly highlighting the

characters' emotions and inner worlds.

2. METHODOLOGY

The author conducted in-depth interviews with four experts in the fields of watercolor and animation from March to May 2024. The purposive selection of experts for this study was based on four key criteria to ensure the credibility and relevance of the findings. All interviewees possess a dual background in academic research and practical experience, actively engaging in both theoretical inquiry and artistic or animation production. Their professional expertise aligns closely with the study's focus on the integration of watercolor art and digital animation, offering authoritative insights from animation, new media, and watercolor disciplines. Furthermore, the experts were selected to reflect geographical and cultural diversity, including representatives from various regions of China (Beijing and Liaoning) and an international perspective from Mahasarakham University in Thailand. Finally, all experts hold influential positions within their fields, such as university professorships and association memberships, ensuring their perspectives carry significant weight and representativeness within the broader academic and professional communities. These experts hail from Peking University, Beijing Film Academy, Mahasarakham University, and the Dalian Artists Association of China (Liu, 2024; Shen & Dong, 2024). Both watercolor and animation experts share the same views on the integration of the two disciplines. Firstly, the artistic characteristics of watercolor must be fully expressed and preserved in animation creation, without compromising its original aesthetic quality. Secondly, choosing an appropriate story for representation is crucial, as it allows the artistic strengths of both disciplines to be fully utilized, thereby overcoming the technical barriers between traditional art and new media.

Content analysis used for analysis issues including of combining digital animation with traditional watercolor art involves first simulating and recreating the effects of traditional static watercolor art within digital animation. This process achieves a re-creation of traditional watercolor art. Digital watercolor transcends the limitations of traditional static watercolor images, bringing watercolor art into a three-dimensional, dynamic, and auditory visual space. Additionally, watercolor is an art form that uses water to express the painting process. Water is the specific boundary that distinguishes watercolor from other painting types. Fluidity is one of the essential factors constituting its distinctive artistic beauty. With vibrant hues and

delicate brushstrokes, 3D watercolors enhance the image's content with more meaningful information (Zhang, 2023). (Zhang, 2023) Digital animation incorporates various artistic elements of painting, breaking the boundaries and categories of traditional painting. By combining the medium and materials, artistic language, visual style, and the aesthetic characteristics of both traditional watercolor painting and computer technology, it creates a cross-cultural aesthetic consistency. Finally, the thematic expression in digital animation is also heavily influenced by artistic styles. By integrating watercolor art elements into works that express specific cultures or focus on the artistic nature of animation, it can be applied across different art fields, highlighting and enhancing the fluidity of watercolor art.

Based on the above analysis, the integration of watercolor art into digital animation production mainly impacts three aspects: script creation, art design, and character performance. Therefore, the author will focus on discussing these aspects in this research.

3. INNATE STORYTELLING TALENT

Humans possess an innate storytelling instinct – a fundamental drive to construct meaning and communicate experience through visual, linguistic, and emotional expression. The integration of watercolor art and digital animation offers a compelling and affective platform through which this instinct can be vividly activated. Watercolor, with its natural fluidity, unpredictability, and emotional tension, inherently lends itself to lyricism and symbolism. Its non-realist and poetic qualities evoke rich associations and emotional resonance, allowing audiences to engage simultaneously as storytellers and story receivers. Digital animation, in turn, imbues watercolor imagery with temporality and movement. Through motion, rhythm, and editing, static watercolor compositions are transformed into narratives with structure and pace, enabling viewers to actively construct meaning and interpret plot through visual perception. This dynamic process mirrors the cognitive mechanisms by which the human brain organizes information and forms narratives, reinforcing the deep-seated human drive to tell and understand stories. Furthermore, the hybrid medium of watercolor and digital animation is not merely a technical synthesis, but a resonant dialogue between cultural memory and contemporary context. Viewers experience both the historical depth and tactile richness of traditional art and the narrative fluency of modern animation,

engaging in the co-construction of meaning within today's media landscape. Ultimately, this fusion represents more than a formal innovation; it serves as a powerful extension of humanity's storytelling impulse. Through its gentle, expressive, and evocative aesthetics, it rekindles an emotional and artistic identification with the ancient human capacity to tell stories, positioning visual storytelling as a vital channel in contemporary cultural communication.

Animated short films have long been recognized as a unique form of animation creation. They are distinguished by their historical significance, continued relevance in contemporary times, and their diverse nature. The uniqueness lies in its concise and accurate narrative, and the profound ideological dimension reflected through rigorous subject selection and advancement, which improves the overall level of the work. Processing of a narrative can lead to markedly similar physiological responses across an audience. This effect is likely high-level, and cannot be explained by visual or auditory salience alone. (Hammond et al., 2023) Moreover, the authors believe that compared to other visual art forms, animation creation is more experimental and avant-garde, with its core and foundation being the theme. This is not only closely related to the content selection of the work but also needs to be harmoniously unified with the visual art style. An excellent animated work must have a well-considered thematic intention, and the evaluation of an animated work should not solely focus on its production quality; the intrinsic meaning of the work is the key to its assessment. Therefore, the theme becomes a crucial criterion for judging the quality of an animated short film. Japanese director Akira Kurosawa once said, "A bad script cannot make a good film. A story without a good theme is soulless." For audiences appreciating animated works, good visual experience is undoubtedly important, but what often resonates deeply and concerns the essence of the work is its theme. As animation production techniques advance, the visual impact and tension in the imagery of these works are steadily increasing. In addition, in visual communication design, we should also focus on exploring and thinking about the problems of animation special effects production, explore the open problems in visual communication design, and give new meaning to animation special effects production through the special media force of visual communication design (Liu, 2022).

In the new era, the creation of animation scripts faces numerous challenges. Firstly, detecting key story elements such as protagonist, opponent, desire,

turning points, battle, and victory, etc. is essential for various narrative work applications including content retrieval and content recommendation systems. (Liu et al., 2019). Secondly, at present, most of the animation works that are widely active in the new media environment are short in length, well produced and in various forms. In order to let the animation short film play its advantages in the new media environment, such as the integration of itself and modern technology, unlimited production methods, animation artists have explored a series of creative strategies, such as the combination of rational thinking of technology and perceptual thinking of art, but it is the most basic and important narrative strategy. What kind of stories to tell and how to tell them are the most important for the development and dissemination of animation short films. (Zhou, 2020).

For example, the 81st Academy Award-winning animated short film "La Maison en Petits Cubes" (The House of Small Cubes) vividly portrays the themes of loneliness and warmth through the daily life of an elderly man and his profound memories of his wife. Against the backdrop of global warming, the imagery of the man continuously building new floors symbolizes the passage of time and the constant changes in life. The film captures the solitude and desolation of the elderly man's life, as well as his longing for the beautiful moments of the past, immersing the audience in a deep sense of sadness. However, when the man retrieves a pipe from the underwater remains of his home, a flood of warm and sincere memories resurfaces, evoking the cherished recollections of his past. In the final scene, as the elderly man toasts with his wife, he momentarily returns to reality, with the accelerating bubbles and rising visuals instilling a fear of being unable to escape the clutches of memory. Through its exquisite visuals and profound meaning, this short film leads the audience to explore the significance of life and the power of memories. The film's central theme poignantly expresses the relationship between the passage of time and memories. By depicting the elderly man's solitary recollection of family events, it illustrates the impact of time's passage on human life and how to find warmth and courage amidst loss. The rising sea levels and the inundation of the house symbolize the irreversible flow of time, while the man's memories become his sole solace and strength. The film's narrative and visual language delicately capture the warmth and sorrow of memories, echoing the theme that memories endure despite the unstoppable passage of time. Moreover, the film employs visual symbolism to convey emotions and

themes. Through cinematography and editing techniques, the house is depicted in a precarious state, symbolizing the elderly man's loneliness and the fragility of life. The image of an isolated island amidst the vast ocean further emphasizes the man's estrangement and isolation from the outside world. Additionally, the accelerated pace of his recollections shortens the audience's contemplation time, making it easier for viewers to be guided by the filmmaker's emotional expression. The concluding scene, which focuses on the man shaking hands with his imagined lover, provides a cathartic release for the audience's emotions and encourages introspection about their inner selves.

The 2D animated film "The Boy, the Mole, the Fox and the Horse" is adapted from Charlie Mackesy's book of the same name. This work won the Best Animated Short Film at the 95th Academy Awards. Despite its simple plot, it is rich in profound meaning and suitable for audiences of all ages. This text belongs to the genre of "healing journey films," which diverges from the conventional concept of a road movie. In *Sexual Healing*, the Dutch filmmaker Elsbeth Fraanje, known for the Dutch Academy Award winning documentary *Snelwegkerk* (*Highway Confessions*), portrays Evelien, a 56-year-old disabled woman who starts exploring her own body and her own sexuality: a journey she has never taken before, partly due to her personal aversion of her own body and partly due to the stigma that is still attached to sexuality and disability (Roeland, 2023). Traditional road movies like "Easy Rider" and "Thelma & Louise" signify a revolt against established norms. In contrast, "healing journey films" such as 'Rain Man' and 'Central Station' highlight a return to universal values like family and kinship, offering solace to fragmented hearts. Despite being an animated production, *The Boy, the Mole, the Fox, and the Horse* should be recognized within the "Healing Journey films" category. The thematic essence of this animated film is portrayed through the boy's journey with his animal companions, showcasing the emotional changes and growth humans experience when facing unfamiliarity, seeking family, and building dependent relationships. Through the boy's varied attitudes and interactions with the mole, the fox, and the horse, the film expresses human caution and kindness towards the unknown, loneliness and yearning in the quest for belonging and family and understanding and growth in establishing mutual dependence. The entire film presents the complexity and transformation of human emotions when confronting the external world and inner feelings,

ultimately conveying themes of growth, friendship, and mutual aid. The linear narrative structure highlights the emotional changes between the boy and his three companions throughout the journey. Set in a snow-covered wilderness, the interactions between the boy and his companions are warm and healing, devoid of complex plot designs and intense conflicts. The gentle and soothing narrative style, along with delicate visuals and soft music, creates a warm and peaceful atmosphere, providing the audience with a sense of relaxation and warmth. In terms of character portrayal, the fox, typically labeled as "cunning," is depicted in the film as a character with a fierce exterior but a kind heart, reflecting an understanding and kindness towards human nature. Overall, the film's simple yet sincere plot, warm and healing narrative style, and symbolic imagery create a magical chemistry that brings warmth to the audience's hearts.

Not only does the aforementioned work demonstrate this, Boydell and Croguennec conducted a survey. The survey responses indicated that the majority of viewers found the films challenged public misconceptions about refugees and individuals with mental health challenges and left them with a feeling of hopefulness (Boydell and Croguennec, 2022). For those aiming to showcase the artistic charm of animation through short films, it is essential to recognize several points: first, unlike feature films, animated shorts are not constrained by box office considerations, allowing creators greater freedom to express emotions, explore various themes, and achieve aesthetic innovations. Second, animated shorts employ creative modes such as fantasy, imagination, and symbolism, using exaggerated and deformed techniques to handle visuals, achieving aesthetic goals and conveying specific ideas. With the continuous progress of technology and the increasing diversification of supporting tools, the penetration and application of 3D film and television special effects technology in the animation industry is also deeper, thus playing an irreplaceable role (Li, 2023). This quest is evident in their selection of themes, emotional portrayal, exploration of profound subjects, and unique storytelling methods, revealing the creators' deep comprehension and commitment to artistic pursuits.

Based on the above content, it can be confirmed that the use of watercolor art elements in the portrayal of animated stories is successful, and even necessary for certain themes, such as in the work mentioned, "The House of Small Cubes." The watercolor artistic elements in this film provide strong psychological cues to the audience, such as

using low-contrast, dark colors to create a retro effect, which transports the audience's thoughts back to a specific time in the story. Additionally, employing paper texture effects enhances the emotional expression of a warm story theme. These techniques are commonplace in animated script creation. "The Boy, the Mole, the Fox and the Horse" showcases the unique characteristics of watercolor brushes and paints, offering freer line expression and effectively conveying special emotions when depicting characters. Moreover, as watercolor art spreads across different regions, its expressive forms and artistic characteristics continue to evolve and blend. Although watercolor originated in Britain with inherent Western aesthetic elements, it has undergone significant changes in other countries, such as its fusion with Japanese ink painting, resulting in new artistic landscapes. This transformation has influenced animated storytelling, exemplified by director Isao Takahata's animated film "The Tale of the Princess Kaguya," which combines Japanese ink painting techniques with watercolor to portray ancient Japanese legends, thereby presenting Japanese cultural characteristics to the fullest and imbuing the animation with new artistic charm.

In summary, the influence of watercolor art on animation scripts is multifaceted. It not only enhances the emotional expression of animation, fosters the integration of traditional and modern elements, and stimulates creativity, but also contributes to cultural heritage. The soft tones and rendering effects of watercolor are particularly suited for conveying warm and soothing emotions, which can be used in animation scripts to create specific atmospheres and moods, making it easier for the audience to resonate. The uncertainty and fluidity of watercolor can provide animators with a broader creative space. During the creation of animation scripts, these characteristics of watercolor can inspire more creative thinking, helping creators to break free from the limitations of traditional thinking and produce unique animated works. As a traditional art form, the application of watercolor in animation scripts also represents a means of cultural inheritance and innovation. By integrating watercolor art into animation production, traditional art can be revitalized, enriching the cultural connotations of animation.

4. ANALYSIS OF THE BENEFITS OF INTEGRATING WATERCOLOR LANGUAGE INTO DIGITAL ANIMATION

Watercolor painting is the result of human

production labor and an art form that has existed since primitive society. The development of watercolor painting is very long, from the original painting paper to paper, from a single content to rich content, from a single to rich colors, these are the results of the collective efforts of watercolor painters. The application and development of late technology makes watercolor an independent painting, standing in the hall of art (Xin, 2023). However, as watercolor art has developed to the present day, it has become widely recognized and significantly advanced in countries such as the United Kingdom, France, Belgium, Ireland, and Japan. Given this broader context, watercolor painting has inspired the development of a comprehensive innovative system for animation and film creation. Artists from various countries have explored unique techniques and visual methods specific to watercolor animation and film, with notable contributions from France, Ireland, and Japan. Several watercolor-style animated films have been created and released, including "The Monk and the Fish" and "The Secret of Kells," which sparked a trend in watercolor-style animation across Europe. The distinctive designs of characters, settings, and scenes in these films have led to the gradual acceptance and recognition of watercolor-style animation by a wide audience, providing a refreshing and unique viewing experience amid the prevalence of commercial films. Watercolor painting has unique stylistic characteristics such as transparency, fluidity, quick drying, and a textured appearance because it relies on water to blend colors. These qualities give watercolor artworks an ethereal and elegant beauty. Because it needs to use water as the medium to create color, the watercolor has the characteristics of permeability, fluidity, quick-drying, color texture and so on. The characteristics make the overall effect of the watercolor picture appear ethereal and elegant. It is based on the artistic characteristics of watercolor painting, which is more convenient for team operation than other art forms. It is very suitable for use in film and television animation. Therefore, in the early stage of animation production, most of the animation scenes and character design are finished with watercolor. In modern times, watercolor style animations are roughly divided into three types: simple style, realistic style, and decorative style. With the development of animation software technology, more powerful visual effects, standardized and more convenient production process, the use of watercolor hand-painted production of complex film and television animation has been a certain impact, but the watercolor animation style as a unique art

existence. In particular, the combination of watercolor and animation has undergone a long-term tempering and development to the present, and has already presented aesthetic values different from other artistic expressions. (Guo, 2019).

The application of watercolor art in 3D computer animation is typically seen in three creative scenarios: artistic concept creation, creative blending of virtual and real worlds, and the creation of a sense of space. This is due to watercolor's transparent, natural, and ambiguous qualities (Xia & Tirakoat, 2024). Most application scene of watercolour art in computer 3D animation is three creative scenes, namely, artistic conception creation, virtual reality combination creation and space level sense creation. This is because watercolour has the characteristics of transparency, nature and obscurity. In animation creation, its unique language forms and techniques can be used to express the artistic form and atmosphere needed in the scene (Zhu, 2022). In watercolor animation, the combination of water and color, by rendering variations in color depth and brightness, expresses the relationship between warm and cool tones and spatial dynamics. With the development of The Times, people's ideas have changed. While constantly innovating tools, techniques have diversified to some extent. Different techniques will bring a variety of different influences on the picture, and finally have different influences on the overall effect of the picture (Xin, 2023). Cool-toned pigments mixed with water can create a clear and transparent effect, giving the image a cool and refreshing feel while making distant objects appear clearer in spatial representation. On the other hand, warm-toned pigments enhance the vividness of the watercolor, warming the image and making the foreground more conspicuous. This creates an impression of depth and three-dimensionality. By adjusting the warm and cool tones and brightness of the watercolor, artists can create a rich spatial hierarchy and ambiance in the image, effectively conveying the contrast between warm and cool tones and the sense of spatial distance.

Integrating watercolor effects into animation frames faces multiple difficulties and challenges. Firstly, the accidental effects of watercolor, such as water stains and the transition of color intensity, are difficult to achieve naturally and smoothly in animation. Secondly, the textural characteristics of watercolor, such as the mutual permeation of pigments and the layering of color blocks, require special treatment to be effectively presented in animation. Additionally, details like the flow marks of watercolor are challenging to realistically

replicate. Technically, overcoming the limitations imposed by watercolor effects is particularly demanding in 2D animation production. During the production process, it is essential to balance maintaining animation quality with controlling costs. Key issues such as background rendering and edge line treatment in character design are crucial for achieving watercolor effects. If the budget allows, computer-assisted techniques can be employed to handle the textural effects of character animation or to draw from ink animation techniques; however, the balance between cost and quality must still be maintained. Significant discrepancies between adjacent frames, such as variations in position, shape, size, and color, can lead to discontinuity during playback, adversely affecting the viewing experience. Therefore, controlling the differences between adjacent frames, especially in edge line treatment, is critical to ensuring the stability and fluidity of the animation frames. Such as, remove the need for production data for training and introduce a new character recognition method that surpasses existing work by not requiring fine-tuning to specific productions. This proposed use case could help maintain consistency throughout production and unlock bolder and more detailed design choices without the production cost drawbacks (Cardoso et al., 2024). Or in order to improve the visibility of visual communication design works and achieve excellent information transmission effects, it is necessary to utilize many advanced science and technology methods such as visual communication design (Liu, 2022).

However, in the author's view, to address issues such as frame jitter and flicker caused by watercolor effects in animation production, optimizing artistic design and production processes is key. Firstly, by focusing on watercolor-style background rendering, the background can serve as the primary platform, allowing the background to achieve watercolor effects without requiring special technical processing, thereby reducing the likelihood of frame jitter and flicker. Secondly, in character animation production, utilizing computer assistance for frame-by-frame textural effects, block coloring for character animation, and special effects processing for lines and colors can further enhance the stability and fluidity of the animation frames. Moreover, in artistic design, managing the edge lines of scenery and characters is crucial for addressing issues such as frame jitter and flicker. Through meticulous study of watercolor-effect animations and overcoming difficulties and key points in practice, methods for incorporating watercolor into animation can be

identified, ensuring a balance between animation quality and cost. Lastly, by utilizing wet-on-wet techniques for background color blocks, depending on online drawing for landscape formation, and adopting line drawing and flat coloring methods for characters, backgrounds and characters can be harmonized. This effectively conveys watercolor effects while maintaining the stability and fluidity of animation frames.

4.1. A Poetic Animated Journey of "The Monk and the Flying Fish"

The 2D animated short film "The Monk and the Fish" received nominations for Best Animated Short Film at the 67th Academy Awards and the 48th British Academy Film Awards. This work showcases the subtle emotional interaction between the monk and the fish through the soft colors of watercolor and the precise motion capture of digital animation. The use of watercolor adds a poetic and warm feeling to the visuals, while digital animation ensures a smoother narrative flow. The combination of both creates a unique visual style. The soft texture of watercolor and the precise control of digital animation provide the audience with a visual experience that merges the beauty of traditional painting with a modern aesthetic. This blend also allows the work to be exhibited and disseminated across different digital platforms. In terms of technical application, traditional watercolor techniques are first used to paint the characters and backgrounds, which are then scanned into a computer for further digital processing. This approach allows animators to retain the natural gradients and transparency of watercolor while using digital tools for color correction, compositing, and the addition of dynamic effects. Moreover, this piece subtly conveys both Eastern and Western philosophical concepts. The simple rotation and 2D panning style adopted in the film resonate with the conveyed philosophical ideas. The straightforward transitions of light and shadow and the plain linear movements exhibit an ink-and-wash style, reflecting a fresh and serene perspective. This aligns with the film's dialectical thinking on desire and emptiness, such as the metaphor "fish scatter like birds" symbolizing a defeated army, illustrating the dialectic of desire and void. In the film's conclusion, the fish swims out of the room, gliding through the air and harmoniously merging with the little monk, gradually fading away, embodying Daoist ideals of simplicity and restraint. This style complements the philosophical themes presented in the film, highlighting its depth and thematic richness.

4.2. *The Tale of the Princess Kaguya: Emotions and Zen in Watercolor*

The 2D animated film "The Tale of the Princess Kaguya" is one of the representative works of Japanese animation director Isao Takahata. This film won the Best Animated Feature at the 8th Asia Pacific Screen Awards, the Best Animation Award at the 68th Mainichi Film Awards, and received other prestigious nominations and awards, accumulating a box office revenue of \$24,366,656.00.

A notable example of this style is seen in "The Tale of Princess Kaguya," known for its captivating watercolor-like animation (Li et al., 2024). The hand-painted watercolor quality is vivid and distinct, with unique color schemes that evoke the charm of traditional landscape paintings. The watercolor lines align with the characters' personalities, depicting lively and dynamic images, especially in the scenes where Princess Kaguya runs. The expressive and bold lines reflect her inner desires. The overall color tone of the film is comfortable, reflecting a contemplation of the meaning of existence. The colorist meticulously ensured consistency in each shot, with the depth and detailed handling during the coloring process being key to the near-perfect color presentation throughout the film. The employment of watercolor is not only for illustrating images but also for communicating emotions and thoughts. When integrated with modern technology, it demonstrates the distinctive allure of watercolor in animation. In "The Tale of the Princess Kaguya," Isao Takahata skillfully employs the exaggerated stylistic features of picture scrolls to shape the characters. Firstly, through delicate and simple lines, he presents characters in a sketch-like style, such as the harmonious proportions and exquisite lines of Princess Kaguya, focusing on facial features to meet the aesthetic standards of Eastern art. Secondly, he uses light and pale lines to depict the procession of deities, suggesting a sense of emptiness in the divine world, reflecting the Zen pursuit of spirituality. Lastly, in expressing the characters' emotions, he uses rough, heavy, and twisted lines to portray Princess Kaguya's complex emotions of anger and sadness, making the characters more vivid and emphasizing their inner worlds. The similarity between the line expressions of the characters and those in picture scrolls lies in the emphasis on conveying emotions and atmosphere through lines. For instance, when Princess Kaguya and Sotomaru wander freely, the thin and smooth lines depict their carefree state and joyous mood. In contrast, during her desperate escape, the rough, heavy, and twisted lines convey her anger and sorrow. This use of lines

allows the audience to feel the emotional fluctuations and changes in the atmosphere through the characters' lines. Overall, this work's painting style breaks through the traditional production methods of animated films. Firstly, it is entirely hand-drawn, utilizing deep and light watercolors flexibly for coloring, meticulously depicting backgrounds, and balancing watercolor and brushstroke relations to present a classic Japanese art style reminiscent of ink paintings. Secondly, close-ups of characters' faces use sketch-like lines, simplifying the sense of layering to focus the audience's attention on the characters' expressions. Furthermore, the expressive features of ink painting give the shots dual functions of landscape and metaphor, better portraying the characters' inner emotions. Additionally, the use of deformed and twisted lines on Princess Kaguya's face reflects her inner resistance and emotions, resonating with the audience. The painting style ranges from rough to light, showcasing the characteristics of different worlds and characters, embodying the Zen characteristic of "emptiness," bringing a sense of peace and transcendence. By leveraging the space for free imagination and its expressive impact, it communicates the protagonist's quest for natural beauty and a tranquil mind. This reflects a pure pursuit of art, distinct from the mainstream commercialized focus on profit and popularity.

4.3. *The Back-to-Basics World of Picture Books - "The Big Bad Fox Story"*

Another mentioned work is "The Big Bad Fox and Other Tales" from France, which won the Best Animated Film Award at the 23rd Lumière Awards in France, the Best Animated Film Award at the 43rd César Awards in France, and nominations for Best Director, Best Independent Animated Feature, and Best Character Animation at the 45th Annie Awards, with a box office revenue of \$19,030,780.00.

This film adopts a picture book-style two-dimensional flat style to present the spatial aspects of the animated film. The movie abandons the three-dimensional stereoscopic effects and complex special effects techniques of traditional mainstream animation, instead, it reproduces a static and planar childhood world through static picture layout and simplified character expressions. This innovative style is not only reflected in visual presentation but also conveyed through plain pictures and innocent character shaping, conveying a return to innocence artistic style, emphasizing childhood aesthetics, and innocent fun. However, this planar processing also limits the sensory impact and depth of thought of the

film, making its artistic expression relatively thin. The static handling of the background in the film presents a flat appearance, with natural scenery such as houses, farm equipment, and forests appearing static, highlighting the character image. The characters exhibit dynamic features, with animals such as ducks and rabbits presenting lively and vivid images, expressing character personalities through dynamic performances. This contrast between static backgrounds and dynamic characters highlights the characters' personalities and emotions, making them more vivid. At the same time, the film uses three-dimensional space to construct characters' dual identities and inner worlds, presenting dynamic aesthetic values. Overall, the use of watercolor in the work is ingenious. The film presents a picture book style, with watercolor painting simple yet vivid, shaping the stereoscopic feeling of an innocent world. On the screen, static two-dimensional flat space, through watercolor rendering, presents a rich and colorful palette, making characters and environments more vivid and lively. Blooming lotus blossoms, expansive forests, and vibrant animals all paint a stunning tableau through watercolor brushstrokes, stirring resonance and reviving childhood reminiscences in the viewers.

After carefully study the superiority of watercolor art, found to show animation art need to set in the use of watercolor abundant techniques, animation art designers to convey emotion, the harmonic water and color, to a proper extent show animation creative only two cartoons, giving new soul. Combined with watercolor and animation art set is the mutual choice. Art watercolor techniques as set by the media which presented to the audience is a watercolor art, so the choice of watercolor animation art set can improve greatly in the art of animation works. Most people believe that the most application scene of watercolour art in computer 3D animation is three creative scenes, namely, artistic conception creation, virtual reality combination creation and space level sense creation. This is because watercolour has the characteristics of transparency, nature and obscurity. In animation creation, its unique language forms and techniques can be used to express the artistic form and atmosphere needed in the scene (Zhu, 2022). Western novel, high-tech stereoscopic animated films are equally applicable to watercolor-drawn animation art settings. While the characters and scenes in stereoscopic animation are generated as three-dimensional models by computers, the pre-modeling two-dimensional art style design is a crucial step. Artistic skills are fundamental skills for outstanding animators, and the artistic style setting

of animation is based on fine arts. It emphasizes not only the shaping of forms but also the overall color coordination of the picture. It occupies an important position in animation. Excellent animation art styles should be able to promote creativity among other animators at various stages of production, help screenwriters better convey the storyline, assist character designers in better shaping characters based on their personalities, aid scene designers in creating attractive and soul-stirring scenes, and at the same time, bring significant commercial profits.

The 2007 film "Ratatouille," produced by Walt Disney Pictures, is a feature-length animated film made by Pixar Animation Studios. It won the 2008 Academy Award for Best Animated Feature and was directed by Brad Bird, with the preliminary design by Jan Pinkava. This film tells a story about romance, cuisine, and the pursuit of dreams. The story is set in the culinary capital of Paris, France, and the animation team conducted a research trip to the streets of Paris, taking over 4,500 photographs as reference material. The artistic techniques used in the film were varied and rich. For example, during the character design process, sculptors created nine clay sculptures of the protagonist Remy, six of which depicted different stages of his appearance, while the remaining three showed different poses. The film's watercolor concept art and the overall artistic style conveyed throughout the movie were perfectly aligned. The static scenery and dynamic scenes were seamlessly integrated, with the vivid transformation effects of the watercolor sketches matching the content conveyed by the 3D scenes in the animation. Using watercolor concept art to capture the film's style ensured the overall artistic coherence of the animation. The watercolor technique can be used to grasp the artistic form of general 2D or 3D commercial films, story shorts, and other animations. Additionally, the artistic expressions of animations using special materials such as sculptures, puppets, and origami can be treated differently.

In summary, the fusion of watercolor art with digital animation exerts a powerful visual impact, offering audiences a novel artistic experience through the amalgamation of color, motion, space, detail, narrative, and technology. This fusion not only enhances the visual appeal of artworks but also broadens the boundaries of artistic expression. Moreover, the integration of these two forms not only explores new possibilities technically but also fosters diversity in cultural expression and communication. Such amalgamation of artistic forms contributes to fostering global cultural dialogue and integration, enhancing mutual understanding and respect among

different cultures. It can also serve as a means to explore and express issues of personal and cultural identity. Through this fusion, artists can engage in discussions and reflections on identity construction

and transformation within the context of multicultural exchange.

Table 1: Comparative Case Studies: The Integration of Watercolor Styles in Animation.

Case Study	Visual Style	Technique	Narrative Role	Innovation
The Monk and the Fish	Soft watercolor hues	Traditional painting + digital editing	Symbolic & philosophical	East-West visual fusion
The Tale of the Princess Kaguya	Sketch-like with watercolor tones	Hand-drawn animation with digital coloring	Emotion-driven, Zen-inspired	Traditional Japanese brushwork modernized
The Big Bad Fox	Picture book flat style	2D flat animation	Childlike & nostalgic	Innocence and simplicity through watercolor
Ratatouille	Concept watercolor art	Watercolor concept + 3D modeling	Stylized realism	Artistic consistency in hybrid format

5. REFLECTION OF WATERCOLOR ART ON TRADITIONAL ART IN DIGITAL ANIMATION CREATION

The development of watercolor techniques has brought about significant transformations in the field of traditional art. The techniques of watercolor painting in traditional art have been extended and evolved in digital painting. This transformation represents not only a technical breakthrough but also a challenge to artistic concepts and aesthetic values. The natural fluidity and color gradation of watercolor art have been replicated in digital painting, expanding the possibilities for artists' modes of expression. Simultaneously, the combination of traditional watercolor art and digital painting innovation prompts the art community to reconsider the uniqueness and "Aura" of artworks. The influence of watercolor art extends beyond the technical realm, inspiring and guiding artistic creation and aesthetic concepts (Gao, 2023). Modernist painting is characterized by an emphasis on and expansion of flatness. Compared to earlier eras, modernist painting places greater importance on the flatness of the picture plane, considering it a crucial element. Modernist painting abandons the true representation of three-dimensional space and instead uses flat composition and color to convey the artist's personal viewpoints and emotions. This style of painting emphasizes the self-critical nature of art, encouraging artists to demonstrate sensitivity and awareness of flatness in their works. Rather than pursuing traditional sculptural three-dimensionality, artists create unique artistic effects through the use of flatness and color. Additionally, modernist painting rethinks and challenges the boundaries and compositional methods of the picture plane, seeking to break traditional constraints and norms, aiming

for freer and more individualized modes of expression (Greenberg, 2018).

In the realm of artistic expression, a fascinating dichotomy exists between traditional and digital art. While traditional art preserves centuries-old techniques, digital art unlocks a world of limitless possibilities. This also had a significant impact on the artists themselves, which in turn, has changed the way art is created and shared. Leading to the birth of a new art form called "digital art," a type of visual art that opens up new possibilities for artists to explore and expand their creativity. This evolution has attracted a broader audience and a varied range of productions. Both traditional and digital art are equally important in their own ways. While some may fear the impact of digital disruption on traditional arts, it is clear that technology is opening up new possibilities for artists and audiences alike. Digital art may offer opportunities that traditional art does not provide to keep up with the demands of the contemporary world (Zahreddine, 2023). With the rapid advancement of digital technology, artists have begun using digital programs and tools such as Photoshop, Illustrator, and 3D modelling for creation and modification, drawing inspiration from these technologies. This enables them to create innovative works that were previously unattainable through traditional art forms. The rise of digital technology has also led artists to pay more attention to the development and utilization of digital media, sharing and publishing their works to a broader audience through online galleries, social media platforms, and other digital channels. The emergence of digital art has altered artists' perceptions of creation, encouraging them to focus on using various technologies and media to express their creativity, rather than being confined to traditional art forms. This shift has had a profound impact on artists'

methods and content of creation, offering them a wider creative space and more possibilities for innovation.

Watercolor painting integrates emotional expression through the use of color, water, and thematic choices. Color serves as a vessel for emotion, capable of conveying the artist's inner emotional world. The use of water creates an emotional atmosphere within the image, with the control of water usage reflecting inner feelings. Thematic choices allow artists to select subjects that resonate emotionally with life, using them as vehicles for emotional expression. Emotion is the soul of watercolor painting; without it, the work loses its vitality. Artists infuse their emotions into their works through observation, perception, thought, and expression, endowing the works with greater vitality and appeal (Wang, 2023). Combining this with digital animation, a more liberating medium, will serve as an inspiration for breaking the barriers between traditional art and new media dissemination technologies.

In addition to watercolor, other traditional art forms have also successfully merged with the medium of animation. For instance, the Chinese 2D animated short film "The Nine-Colored Deer," which won the Special Honor Award at the Hamilton International Animation Film Festival in Canada, incorporates numerous mural elements and is based on a legend from the Dunhuang murals. Another example is the animated film "Loving Vincent," which received nominations for the Academy Award, the Golden Globe, and the Annie Award for Best Animated Feature. This work involved the collaboration of over a hundred painters who created 56,800 oil paintings in a studio in Gdańsk, a historic city in northern Poland. The entire creative process was based on the PAWS system, which included the use of stop-motion animation software to assist hand-drawing. Additionally, the animated short film "Dear Basketball," which won the Best Animated Short Film at the 90th Academy Awards and the Best Animated Short Subject at the 45th Annie Awards, showcases characters and scenes colored predominantly in pencil art style. Animation master Glen Keane not only demonstrated his superb animation skills but also vividly captured the free and dynamic charm of pencil art. There are many other examples of traditional art forms, such as paper cutting and sculpture, being integrated with animation.

The fusion of digital media art with film and television animation production ushers in a new artistic and technological synergy era. Incorporating

Virtual Reality (V.R.) and Augmented Reality (A.R.) technologies also opens up novel avenues for immersive viewer experiences. (Shen and Dong, 2024). Furthermore, digital animation has profoundly impacted traditional watercolor painting. Firstly, the proliferation of digital animation technology has made watercolor art creation more convenient and faster, especially in the sketching phase, significantly reducing time costs. Secondly, digital animation has introduced new technical methods to traditional watercolor art, such as creation and playback on digital devices like computers and smartphones, expanding the possibilities for creation. Thirdly, as an emerging product of the rapid development of science and technology in the new era, digital media art is the application of computer processing, digital special effects, and other technologies in the field of artistic creation. The birth and development of digital media art has greatly improved the quality of film and television animation creation and has a profound impact on the future development of film and television animation (Huang, 2023). Additionally, digital watercolor, as an emerging art form, has further enriched the expressive forms and aesthetic pursuits of watercolor art. Therefore, animation art has spurred the transformation of traditional watercolor painting in aspects of tools, materials, and creative methodologies, promoting the relentless progression and innovation of watercolor art.

In conclusion, the application of watercolor art in animation creation has significantly facilitated the integration of traditional art into the modern era. The transition of traditional art into modernity necessitates interdisciplinary support and innovation. Artists should possess a broad knowledge base, as interdisciplinary research offers the potential for deeply transforming the essence of art and promoting the advancement of traditional art into modernity. Within the global cultural context, traditional art can achieve the sharing of cultural values. It is essential to abandon inertial cognition and re-examine the modernity of traditional art with a global cultural development perspective. Additionally, it is important to address the bottlenecks in the longitudinal study of traditional art and overcome its limitations through innovative development. In contemporary art, traditional artists must be willing to experiment with new creative forms, surpass the constraints of technique-focused approaches, and genuinely pursue innovation. Only then can they enter the modern era and achieve contemporary expressions of their cultural values.

6. CONCLUSION

The integration of watercolor art with digital animation exhibits some differences from traditional animation art in terms of narrative and coherence. Firstly, watercolor animation presents a more vivid depiction compared to traditional animation due to the unique artistic texture and incidental effects of watercolors, resulting in natural and warm imagery. Secondly, during the frame-by-frame production process of watercolor animation, the uncertainty of color positioning engenders subtle differences in each frame, imparting a sense of movement to the characters and enhancing the liveliness of the imagery. Moreover, the watercolor style of animation is better suited for dramatic and narrative film genres, as its natural and spontaneous characteristics complement character actions and plot development. Thus, in terms of narrative and coherence, watercolor animation emphasizes vividness and naturalness of imagery over traditional animation, allowing audiences to immerse themselves more deeply in the story.

At present, the development of audiovisual arts and media has entered the post-digital era, where the emergence of numerous digital tools has continually lowered the technical barriers to artistic creation. In this context, the creativity of artists has become increasingly crucial. Preserving the charm of various art forms and enriching their modes of expression have become the focal points of contemporary creation. As a significant component of traditional fine arts, watercolor art transforms its static beauty into dynamic beauty when combined with animation media. This integration provides an excellent reference for revitalizing other traditional arts, and media convergence has evidently become an inevitable trend in the field of artistic creation.

It is anticipated that more artists from various professional art domains will join animation creation in the future, integrating traditional art into animation production and presenting it in diverse forms. The convergence of these two realms represents a positive trend, with production levels expected to continue rising. The increased frequency of secondary creation activities by professional and industry artists reflects artistic harmony, while the exploration of different artistic forms broadens their respective application domains, enabling audiences of varying aesthetic levels to appreciate art through different methods. Furthermore, this process will likely witness the creation of more watercolor artworks tailored for digital animation production, resulting in a significant increase in output. This implies the potential for presenting superior watercolor works in digital animation format. Such

endeavors will require highly skilled artists, discerning audiences, and artists capable of transitioning from traditional to modern art forms.

Unlike previous studies that often regarded watercolor merely as a stylistic reference or a background element within animation, this research pioneers a systematic method for synthesizing traditional watercolor techniques with digital animation workflows as an integrated aesthetic and production strategy. By treating watercolor not only as a visual effect but as a core expressive medium embedded within the narrative and technical processes of animation, the study develops a novel methodological framework that bridges the material essence of hand-painted art with the procedural logic of digital media. This fusion technique—referred to in this study as "synthesized watercolor animation"—represents a departure from conventional pipelines by preserving the accidental beauty, texture, and fluid dynamics of watercolor while overcoming the constraints of frame consistency, editing control, and cost efficiency. Therefore, the research expands the scope of hybrid animation practice and contributes a unique perspective on how traditional media can actively participate in the evolution of digital storytelling, rather than serve merely as a nostalgic or decorative reference.

To promote the integration of watercolor art and digital animation, practitioners should enhance their interdisciplinary collaboration awareness. Establishing joint teams of watercolor artists and animators—particularly during the early stages of concept design—can help ensure visual coherence, as seen in the background art of *Song of the Sea*. Regular workshops are also recommended to facilitate mutual understanding of techniques, especially in balancing the spontaneity of watercolor with the precision of digital media. Narrative and aesthetic considerations should likewise guide stylistic choices: watercolor is particularly well-suited to emotionally delicate themes such as nostalgia and healing, where its transparency and fluidity enrich the atmosphere, exemplified by the muted tones of *The House of Small Cubes*. In contrast, for action-heavy genres, watercolor should be applied with caution to avoid motion blur that could compromise its textural integrity. From a cultural perspective, integrating traditional artistic elements—such as *liubai* (intentional blank space) from Chinese ink painting or the bold contours of paper-cutting art—into character and visual design can deepen symbolic meaning. Works like *The Tale of the Princess Kaguya* offer valuable models for how local visual traditions

can inform a contemporary animation aesthetic.

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