

"Panimation"(Pan-Animation) Paradigm

Exploring the Innovation of Digital Art on Sports Development

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ABSTRACT

In the era of rapid development of digital science and technology, with the concept of "Panimation" as the perspective, through the "Panimation", the authors extend it to the AIGC, digital twins, digital games, virtual reality, meta-universe and other related fields of digital art, and in-depth study of the opportunities for the empowerment of digital art on the development of sports. They have studied in-depth the opportunities for digital art to empower sports development. This expansion makes digital art no longer be limited to the traditional animation field, but cover multiple industries that create the "illusion of movement", forming a new category of "Panimation". The in-depth analysis of the relationship between the new digital art form under the concept of "Pan-Animation" and the development of sports in China aims to inject new vitality and innovative power into Chinese sports. Digital art is not only a fusion of technology, but also a collision of cultures. Through this cultural feast, it is expected to open up a unique path for Chinese sports and lead it to a new height in the digital era.

Keywords: "Panimation"(Pan-Animation), Digital art, Digital aesthetics, Sports development.

1. INTRODUCTION

In the era marked by the proliferation of digital technologies, digital art has emerged as a transformative force permeating diverse industries through its cross-disciplinary innovative expressions and robust virtual experiential capacities, catalyzing novel momentum for societal advancement. Within China's developmental matrix, sports constitute an integral component of the national soft power infrastructure, currently confronting dual imperatives of opportunity and challenge. At this critical juncture, digital art demonstrates expansive imaginative capacities and technological sophistication, thereby engendering unprecedented possibilities and developmental vectors for Chinese sports. Through the analytical lens of the "Panimation", this study investigates the transformative impacts of digital art on China's sports ecosystem. Transcending conventional animation parameters, the "Panimation" framework facilitates digital art's permeation into advertising, gaming, virtual reality, and other domains, generating multifaceted virtual engagements within

sports contexts. This disciplinary convergence represents not merely technological integration, but more fundamentally, a process of cultural symbiosis and innovative paradigm formation.

2. ENABLING MECHANISMS FOR SPORTS DEVELOPMENT UNDER THE "PANIMATION"

The concept of "Panimation" (Pan-Animation) was first proposed in 2003 by Professor Li Zhongqiu, Vice President of ASIFA (International Animated Film Association), on China Animation Web. It represents an extended conceptualization of animation, reflecting its ongoing evolution and development. At its core, Panimation seeks to expand the expressive forms and applications of animation across various fields, making it accessible to a broader audience. It posits that animation is not merely a form of visual art but a fundamental element of cognition and memory, serving as a visual medium for human thought. This redefines animation from a traditional cinematic art form to a tool for visual and conceptual expression.

Historically, digital art was often confined to the traditional boundaries of animation. However, with rapid technological advancements, digital art has transcended these narrow definitions, entering a more expansive domain known as "Panimation." "Panimation" is not limited to conventional forms such as animated films, television animations, or web-based animations. Instead, it is an all-encompassing concept that includes diverse forms such as animated advertisements, landscape animations, digital games, virtual reality, and the metaverse. In essence, "Panimation" can be understood as an extension and expansion of digital art. It moves beyond the restrictive definitions of traditional animation, establishing a more comprehensive and inclusive domain that integrates various forms of digital expression and technological innovation.

Within the conceptual framework of "Panimation," artistic expression is no longer confined to simple forms such as animation and comics. Instead, digital art, developed through computer technology, extends as a new digital concept, offering innovative design approaches. It leverages the inherent creativity and pioneering nature of digital art, enabling it to continuously deliver greater value in new domains. Simultaneously, digital art boasts a wide range of application scenarios, playing a significant role across various fields. By extending the expressive forms of digital art into these areas, dynamic imagery serves as a powerful medium for better expression and communication of information. The introduction of the "Panimation" concept not only represents an expansion within the field of digital art but also signifies an innovative mode of thinking. Furthermore, it serves as a profound exploration of the digital entertainment industry, providing a more comprehensive perspective for understanding the role of digital art in the development of sports[1].

With the widespread application of digital art, the visual experience in sports venues and events has undergone profound transformations. Through augmented reality (AR) and virtual reality (VR) technologies, digital art provides sports audiences with immersive sensory experiences, allowing them to engage with virtual sports worlds. This not only enhances spectator involvement but also infuses sports events with additional entertainment elements. Beyond event experiences, the application of digital art in sports training has significantly improved athletes' training effectiveness, offering innovative pathways for

cultivating sports talent and accelerating the advancement of China's sports standards. "Panimation" also plays an active role in promoting national fitness. By integrating sports into daily life through digital games, virtual reality, and other forms, digital art has sparked widespread public interest in sports. This helps cultivate more sports enthusiasts and drives the vigorous development of national fitness initiatives. As the core of "Panimation," digital art has brought unprecedented empowerment to Chinese sports. Through deep integration into the sports domain, digital art has not only expanded the forms of sports expression but also infused it with innovative thinking and vitality, propelling Chinese sports to new heights in the digital era.

3. STRUCTURAL CONSTRAINTS AND SYSTEMIC CHALLENGES IN CHINA'S DIGITAL SPORTS DEVELOPMENT

China's sports industry, driven by national policy support and market demand, demonstrates a vigorous development trend, with its economic growth rate becoming a crucial component of China's overall economic expansion. Collaborative development across multiple sectors has fostered a substantial market scale. The rise of China's sports industry has not only propelled the growth of related industrial chains but also created new opportunities for enhancing national soft power and advancing digital development. However, all developments bear dual aspects. Amidst the backdrop of comprehensive high-speed growth, the sports industry inevitably faces certain developmental challenges.

3.1 Cultivating Talents through Digital Sports

In recent years, China has achieved remarkable progress in sports talent development. However, amid rapid global economic growth and increased international investments in sports infrastructure, China must further intensify efforts to cultivate sports talent, particularly by fostering athletic interest among adolescents. Economic prosperity has diversified leisure and entertainment options, inadvertently diverting attention from foundational sports participation. For many, sports lack sufficient appeal. The rise of digital art provides innovative solutions to this challenge.

Within the "Panimation", anime - as a traditional medium - disseminates sports culture to youth through animated narratives, leveraging sports-themed storytelling to resonate with young audiences and amplify their interest in athletics. Digital art, serving as the primary medium extending "Panimation", merges technology and artistic expression to create dynamic digital works that align with athletic principles. This approach enriches sports education for adolescents, guiding athletic development through interest-driven engagement. For instance, games like "1-2-Switch" exemplify digitized sports experiences, enabling players to enjoy the joy of physical movement, authentic social interactions, and enhanced coordination, reflexes, and fitness through gameplay. Such innovations facilitate virtual athletic engagement, gradually advancing national fitness initiatives and building talent reserves. The integration of digital art and sports not only advances youth sports education but also generates a positive impact across the digital art and sports industries.

3.2 Optimizing the Digital Sports Industry Structure

The rapid development of China's sports industry has led to significant market expansion, yet it has also exposed structural imbalances. Within the sector, certain sub-sectors - such as sports equipment and football clubs - have grown rapidly, dominating the industry, while others, including winter sports and extreme sports, lag behind, resulting in an unbalanced industrial ecosystem. This uneven growth poses challenges for structural optimization. On one hand, excessive competition in dominant sectors risks resource depletion and market saturation; on the other, underdeveloped areas fail to unlock the full potential of the sports industry. Addressing how to optimize the industrial structure and achieve comprehensive, balanced development has become an urgent priority.

In this optimization process, digital art, as an emerging force, can leverage its unique advantages. By applying digital technologies, the industry can diversify its manifestations of sports, enhancing both spectating and participatory experiences. The integration of digital art not only elevates the entertainment value of sports events but also generates new commercial opportunities, fostering more balanced growth across sectors. Furthermore, digital art can expand the industry's multifaceted

development pathways through virtual experiences, interactive gaming formats, and other innovations. Such approaches attract broader audiences, cultivate sports enthusiasts, and lay the groundwork for the industry's sustainable growth.

A key pathway to structural optimization lies in harnessing digital art's capacity to enhance diversity and innovation within the sports industry. The deep integration of digital art and sports will inject new momentum and direction into China's sports sector. Applications of digital art will deliver immersive experiences for audiences while infusing events with innovative elements, propelling Chinese sports development into a more remarkable phase [2].

4. THE IMPACT OF DIGITAL ART ON SPORTS DEVELOPMENT: A CASE STUDY OF JAPAN

4.1 The Development of Japanese Anime Sports Works

The development of Japanese sports anime in the last century is both legendary and rich in cultural significance. In the early 20th century, with the introduction of Western animation and technological advancements, the concept of animation first emerged in Japan. Through vivid visuals and captivating storylines, it attracted a large audience, making Japanese creators and viewers aware of this creative medium. As society evolved, the style of Japanese animation continued to change. After World War II, as a defeated nation, Japan's public sought cultural products that were easy to understand, widely accessible, and affordable to meet their spiritual and cultural needs, heal their post-war trauma, reignite hope for life, and provide courage, joy, and imagination. Anime, fitting these characteristics, began to flourish rapidly under the push of a market economy.

Japanese sports anime reached new heights from the 1960s to the 1980s. During this period, the themes of anime became more diverse, and sports-related works gradually increased, including classics such as "Tomorrow's Joe" and "Captain Tsubasa", which had a profound impact on the future of Japan's anime industry and sports development. These works not only depicted intense competition but also emphasized the emotional struggles and growth of the characters. Audiences were not only drawn to the thrilling matches but also moved by the inner worlds of the

characters. Notably, while exploring sports, these works also focused on showcasing the personal charm and emotional expression of athletes. Through in-depth character development, emotional resonance was established between the audience and the characters. Sports were no longer just about competition but also a spiritual journey that touched the hearts of viewers, laying a deep cultural foundation for future sports anime and cultivating a generation of outstanding athletes for modern Japanese sports.

With technological advancements in the late 20th and early 21st centuries, Japanese sports anime entered the digital age. The use of computer technology and special effects made the visuals more dazzling and the portrayal of sports more realistic and emotionally impactful. Representative works from this era, such as "The Prince of Tennis", further propelled Japanese sports anime onto the international stage, significantly enhancing Japan's cultural influence. The development of Japanese sports anime in the last century was not only a journey of continuous technological innovation but also a process of deeper exploration into sports and emotional expression. The foundation laid during this period provides valuable experience and inspiration for the future integration of digital art and sports development in China.

4.2 The Role of Sports Anime in Shaping Cultural Identity

As cultural products, sports anime play a unique and important role in the development of sports. Through distinctive narrative techniques and vivid character portrayals, these works have successfully created a series of representative sports cultural images [3].

By using the medium of anime, virtual sports stars or teams are able to establish a more profound image in the minds of the audience. This image is not limited to the display of competitive sports but also emphasizes emotional and personality expression, allowing the audience to gain a more comprehensive understanding of these sports and inspiring enthusiasm for sports among the public. Such creative approaches help establish a richer and deeper societal awareness of sports culture. Sports anime also combine sports with culture by creating stories around events and the backgrounds of competitions. This creative method is not merely a simple record of sports events but delves into the lives and struggles of athletes, making sports culture more vibrant and vivid. Through these

works, audiences not only witness the intensity of competitions but also feel emotional resonance with the stories behind them. Sports anime also play a positive role in cross-cultural communication. Through character shaping and storytelling, these works can transcend language and cultural barriers, conveying sports culture to international audiences in a more vivid and engaging manner. This has significant implications for enhancing the global influence of sports from various countries.

The role of sports anime in shaping cultural images is not limited to entertainment; it also helps establish a more three-dimensional and profound cultural image for sports, promoting the inheritance and development of sports culture. The creation of such cultural images helps inspire teenagers' interest in sports, cultivates more sports enthusiasts, and provides strong cultural support for the sustainable development of youth sports [4].

4.3 The Propulsive Role of Sports Anime in Shaping Japan's Sports Industrial Landscape

Sports anime have played a pivotal role in advancing the development of Japan's sports industry. Primarily targeting younger audiences, these works feature vibrant visuals, engaging storylines, endearing character designs, and humorous elements, serving as an ideal leisure medium for adolescents and overworked professionals. Through rich narratives and compelling plots, sports anime seamlessly integrate athletic themes into their stories, subtly conveying the spirit of sports culture and gradually becoming an effective tool for cultivating sports talent. Influenced by East Asian philosophical traditions, many works emphasize themes of "collective supremacy" and "patriotic sentiments." Protagonists often evolve from individual growth to collective development, embodying traits of resilience and perseverance. By immersing young viewers in these animated worlds, sports anime spark interest in various sports, inspire participation, and enhance collective consciousness [5].

The diverse sports scenarios depicted in anime - whether basketball, soccer, or baseball - offer audiences a wide range of athletic choices, actively contributing to the growth of mass sports. These works cultivate public enthusiasm for sports through visual and cultural impact, fostering national pride and deepening interest in athletics. This approach provides a novel and vivid pathway for promoting mass sports participation. Virtual

animated characters resonate strongly with adolescents, serving as cultural conduits that facilitate emotional connections to sports. By attracting talented youth to athletic careers, sports anime laid a robust foundation for talent development and sustained interest in sports.

Japan's sports industry has successfully expanded its reach by deeply integrating with anime, transforming societal perceptions of sports beyond professional domains. The diversification of sports development broadens their societal impact while enriching public understanding of various disciplines. Through detailed portrayals of different sports in anime, public fitness initiatives have become more multifaceted, encouraging audiences to actively engage in physical activities. This influence extends beyond entertainment, driving multifaceted growth in Japan's sports industry.

The success of sports anime in Japan, particularly those focused on soccer and basketball, has actively contributed to the global rise of these sports. Taking the performance of the Japanese soccer team during the Qatar World Cup as an example, we can deeply understand anime's influence. The team's remarkable achievements in the 2010 South Africa World Cup were partly attributed to the impact of popular soccer anime. These works not only ignited Japanese youth's passion for soccer but also nurtured a generation of dynamic and creative players. The heroic narratives and team spirit portrayed in anime became a source of motivation for real-life athletes. The success of soccer anime also injected new momentum into Japan's soccer industry. From youth training programs to professional leagues, the industry has steadily grown, reflected in both the elevated competitiveness of domestic leagues and the outstanding performances of Japanese players on the international stage.

At the 2010 South Africa World Cup, the Japanese team's advancement from the group stage was largely due to the exceptional performance of former national team captain Keisuke Honda. Twelve years after his World Cup debut, Honda demonstrated leadership and technical prowess. Notably, Keisuke Honda was a devoted fan of "Captain Tsubasa" and had repeatedly climbed onto goalposts as a child to mimic the "Sky Rocket Volley" move of the Tachibana brothers.

This case exemplifies the profound real-world impact of "Captain Tsubasa", a sports manga, on Japanese soccer. By emulating the manga's

techniques, Keisuke Honda honed his skills and became a key figure in Japanese soccer, illustrating how manga—as a cultural medium—transcends entertainment to shape societal values and individual behaviors. The symbolic "Sky Rocket Volley" embodies the heroism and camaraderie central to the manga, ideals that persist in Japan's soccer culture and inspire generations of players. The Japan Football Association's "2005 Declaration" further reinforced this philosophy, emphasizing the power of dreams to strengthen teams. This case reveals the deep infiltration of literary works into sports culture and their role in motivating young athletes. As part of Japan's cultural fabric, manga fosters a resilient and aspirational spirit, driving players to pursue victory and demonstrate team loyalty, thereby advancing Japanese soccer [6].

A similar phenomenon exists in basketball. Inspired by basketball anime, domestic interest in the sport has surged in Japan. With the popularization of basketball culture, Japan has cultivated a cohort of promising young players, boosting the development of its basketball league and enhancing its competitiveness in Asian tournaments. The impact of sports anime on Japanese soccer and basketball extends beyond entertainment success, playing a vital role in the domestic and international rise of these sports. This cross-cultural influence offers valuable lessons for other nations and provides compelling empirical support for the potential of digital art in the sports industry [7].

4.4 Strategic Implications of Japan's Sports Anime Evolution for China's Cultural Industry Development

The implications and lessons of digital art for China's sports development extend beyond technological innovation. More crucially, they provide profound insights and inspiration for advancing the diversification of the sports industry, enhancing the cultural influence of sports, and promoting national fitness initiatives. The innovative application of digital art offers diverse and vibrant forms of expression for the sports industry. Through digital art technologies, sports events can deliver more captivating visual experiences, intensifying emotional engagement among audiences. This approach provides new strategies to boost the appeal and impact of domestic sports events, stimulating spectator participation and driving the growth of the entire

sports industry, thereby offering robust support for elevating the cultural influence of sports [8].

By leveraging digital means, sports culture can be disseminated across broader media platforms, not only helping to shape China's international sports image but also profoundly shaping domestic sports culture. The use of digital art forms such as anime and games enhances the expressiveness of sports narratives, endowing sports culture with vivid imagery that sparks public interest and recognition. These methods also play a positive role in national fitness initiatives. Through digital games, virtual reality, and other formats, digital art integrates sports into daily life, igniting widespread enthusiasm for physical activity [9]. This helps break the temporal and spatial constraints of traditional sports, making athletics more accessible to the general public and advancing the in-depth development of national fitness programs. The enlightenment of digital art lies in its ability to empower the sports industry through innovative methods, amplify the reach of sports culture, and fuel public enthusiasm for fitness. This provides China's sports development with new pathways that not only facilitate industrial upgrading but also elevate the nation's overall athletic standards, offering far-reaching guidance for the future of Chinese sports.

5. TECHNO-MEDIA CONVERGENCE: DIGITAL SPORTS INNOVATION UNDER "PANIMATION"

5.1 Innovation and Application of Digital Art

With the continuous advancement of technology, digital art has demonstrated unprecedented innovative and applicative potential in the sports domain. The innovation of digital art is no longer confined to traditional animated works but has expanded into diverse fields under the trend of diversified digitization [10].

In sports venues and events, the integration of AR and VR technologies delivers immersive visual experiences to audiences. Digital art infuses sports competitions with vivid and dynamic elements, transporting viewers into virtual athletic arenas. This not only enhances spectator engagement but also enriches events with entertainment value, transforming sports into a visual spectacle. In sports training, digital art offers athletes novel methodologies. Through virtual training

environments, athletes can repeatedly simulate tactics and refine skills in digital scenarios. This innovative approach facilitates talent development by providing personalized and precise training experiences, accelerating the advancement of China's athletic standards. Digital art also plays a vital role in promoting national fitness. By incorporating sports into daily life through digital games, virtual reality platforms, and other forms, digital art has ignited public interest in physical activity. This not only popularizes fitness initiatives but also offers engaging and diverse exercise options, seamlessly integrating sports into modern lifestyles.

The innovation and application of digital art reveal immense potential in the sports sector. Such digitized athletic experiences elevate spectator participation and entertainment value, equip athletes with advanced training tools, and drive the widespread adoption of sports culture through national fitness programs. China's sports development should forge its unique path, fully harnessing the innovative potential of digital art in the digital era to inject creativity and vitality into the industry.

5.2 Entertainment-Intelligence Symbiosis: Neo-Media Sports Paradigms in the Digital Art Ecosystem

Under the convergence of technology and art, the application of digital art in sports is increasingly manifesting diversified and digitized trends. As a vast interdisciplinary field encompassing animation and anime, digital art has unlocked new possibilities for sports development, propelling it toward a unique developmental trajectory. Particularly with the support of emerging technologies and media, digital art has introduced novel experiential forms to the sports domain. Against this backdrop, the NIKE Shanghai Digital Interactive Sports Experience Center stands out as a compelling case study. This pioneering project integrating sports and digital art is not merely a commercial endeavor by an athletic brand but a vivid demonstration of digital art's exploratory potential in sports.

The interactive sports center utilizes digital technologies to provide participants with experiences transcending traditional athletic activities. Through AR, VR, and other innovations, users engage in sports within digitized environments, enjoying richer and more exhilarating interactions. This redefines the very

concept of athleticism, transforming sports into a spectacle of digital entertainment. The integration of digital art aims not only to enhance entertainment value but also to advance the symbiosis of entertainment and intelligence. Participants gain access to performance analytics, personalized coaching, and competitive social interactions in virtual arenas. This philosophy of entertainment-intelligence symbiosis organically merges digital art with sports, elevating physical activity into an intelligent, interactive social experience.

The success of the NIKE Shanghai Digital Interactive Sports Experience Center illustrates that digital art brings not just new forms of entertainment but a profound integration of intelligence and athletics. This model charts an innovative, technology-driven path for China's sports development, encouraging closer collaboration between the sports industry and digital art to collectively propel comprehensive modernization of sports in the digital era.

5.3 Transformative Impacts and Strategic Opportunities: Digital Art's Role in China's Sports Development

Amid the rapid development of the digital economy, profound transformations are occurring in modern human lifestyles, values, and consumption patterns. During this process, the demand for humanistic needs continues to grow, with digital art emerging as a significant force in China's sports development, demonstrating immense potential and innovative opportunities. Far exceeding traditional animation and anime, digital art as a vast interdisciplinary field encompasses diverse forms of creative expression and technological applications. Within this multifaceted digital art ecosystem, Chinese sports are poised to forge a unique path toward deep integration with contemporary trends.

Digital art has introduced groundbreaking visual experiences to sports events. The adoption of AR, VR, and the proliferation of mobile devices enable audiences to immerse themselves in novel digital experiences, enjoying richer and more captivating spectating engagements. These technologies not only attract larger audiences but also inject fresh entertainment elements into sports, enhancing their appeal and watchability. In sports training, the visual impact of digital art vividly presents virtual scenarios, allowing users to better comprehend tactics and techniques. Such digitalized training

methodologies not only elevate athletes' performance but also offer new pathways for mass sports participation and talent development, enabling non-professionals to experience authentic athletic activities through digital platforms. Furthermore, digital art drives the deep integration of sports events with new media. Through innovative applications, sports competitions can better adapt to mobile internet-era viewing habits, achieving multi-dimensional content presentation. This creates diversified dissemination channels, increasing the visibility and communication efficacy of sports events.

Digital art has brought unprecedented impacts and opportunities to China's sports development. By digitizing event presentations, innovating training approaches, and deepening synergy with new media, digital art infuses new vitality into Chinese sports, providing robust support for showcasing its unique appeal on the global stage. Moving forward, by actively leveraging the power of digital art, China's sports sector is poised to pioneer an innovative, era-aligned trajectory, achieving even more remarkable accomplishments [11].

6. CONCLUSION

The integration of digital art and sports through the "Pananimation" (Pan-Animation) Paradigm has profoundly influenced the future development of Chinese sports, driving innovation across multiple domains and enhancing virtual experiential capabilities. Amid the global wave of digitization, Chinese sports are encountering unprecedented opportunities, with digital art injecting fresh momentum into the industry. While China's current sports development showcases remarkable achievements, challenges remain evident—including shortcomings in talent cultivation, structural imbalances in the sports industry, and limited public sports participation. The convergence of digital art and sports, however, promises broader prospects for growth. Exploring and applying the "Pananimation" will bring innovation and breakthroughs to athletics. Digital art offers novel approaches to addressing existing challenges, propelling Chinese sports into an era marked by diversity and advanced virtual engagement. This transformation will not only reshape the sports landscape but also foster cultural and economic prosperity in Chinese society, creating new opportunities for the nation's athletic advancement.

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