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# Exploring the Value of Digital Media Technology in Stage Art

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## Abstract:
With the development of the times, digital media is widely used in the field of art. Digital media has outstanding advantages in practical application, including high cost performance, strong audiovisual feeling, scene immersion, etc., and is welcomed by most modern culture and art creators. Digital media has been developed in the field of stage art design, meeting the aesthetic requirements of the new era, effectively highlighting the aesthetic trend of stage design, conforming to the trend of modern art development, and meeting the communication requirements between the stage and the audience. China's stage art has a long history of development, and gradually become a certain important cultural force, combined with the current analysis of aesthetic needs, the public is no longer concerned about food and clothing, spiritual and cultural pursuits continue to innovate, with the expansion of communication channels to improve the overall aesthetic level. In order to reasonably develop digital media in line with the new era of artistic aesthetics, this paper is based on the perspective of stage art, comprehensive consideration of environmental design about the concept of space awareness, innovative understanding of stage art design, and actively explore new methods of stage art creation.

## Keywords:
Digital Media, Stage Art, Spatial Structure

## 1. Introduction

This paper mainly studies the effective application of various advanced digital media technologies in the creation of stage art design, and analyzes the importance of advanced digital media technologies for the creation of stage art in the new era, including the specific thinking of applying digital media technologies for stage art creation, the application of 3D creation technology creation, and the reference reference in stage art.

## 2. Development of Creative Thinking Based On Visual Narrative Interaction

### 2.1. Space for generating visual interaction

The application of virtual reality technology in stage art can provide the general audience with realistic three-dimensional space, while re-giving the relevant space definition. Compared with building an entity, virtual form technology is more effective and rendering power is more prominent. Although it is building an entity but not an entity, the overall image is more realistic, which can attract the audience to put their attention between reality and figuration, looking for differences and thus ignoring the value of the work. Based on this condition, under the visual narrative, the advantages of virtual reality technology are mainly to optimize the interaction experience.

### 2.2. Transformation of interaction objects

Interaction development needs to follow the trajectory of machine operation, through the tradition of inter-machine to choose the connection, to the external human intervention, constituting a unilateral interaction of human to machine, and the machine only feeds back and presents the human mind ideas. The interaction design supported by digital media mainly uses the machine as an intermediate medium to strengthen the multi-dimensional communication between human and human, to realize digital interaction, and to help the stage creator and the audience to break the stage wall smoothly with the help of audience, actors and related technical means. Strengthening communication and interaction in the whole virtual stage helps to draw closer the connection between the audience and the stage creator, so that artistic creation becomes some kind of virtuous circle.

## 3. Promoting the Application of 3D Holographic Projection in Stage Space

### 3.1. Definition of 3D holographic projection

3D holographic projection technology is called virtual imaging technology, which can support 3D vocal image projection. With the comprehensive promotion and application of 3D holographic projection technology, it further breaks the conventional physical space limitation, makes the image constitute some kind of animated image, fuses the image and the physical object to form a unified whole, which forms a strong impact on the audience from multi-dimensional senses. Three-dimensional image originally refers to the combination of interference principle to the real object for a comprehensive record and reproduction. Later, with the guidance of commercial propaganda and science fiction films, the concept of holographic projection was further expanded to include stage performances and exhibitions related to commercial activities. The word holographic is derived from the Greek word holo, the main meaning of which is complete information, covering phase and amplitude information within light waves. General photographic techniques are only able to record the intensity information of light and tend to lose the depth information. In holographic technology interference, different wave crests superimposed on each other are rising, and the wave valley crest superimposed on each other can be effectively sharpened, forming various irregular stripes of light and dark, transforming phase information into intensity information through light-sensitive materials for recording.

The current application of 3D holographic projection technology in art creation can support the effective application of various performance forms of technology, not only can virtually put a fixed image, but also can be integrated with real-time scenes,

in the interactive connection with the performance theme and performers to carry out performances through virtual scenes. It is widely integrated into various showroom buildings for product launches and displays, showing the results of interior design and other business activities. This technology can support real-time exchange of opinion information, and the person being displayed will have some influence on the work, enhancing the overall efficiency.

### 3.2. Status of 3D holographic projection application in performance stage

ERHARD ROME American modern choreographers recreated for the oratorio "Semele" in 2017 and brought it back to the theater stage with the help of 3D holograms as well as architectural projection scenery. Arab Sheikh applied a new ground light projection show in 2019 to celebrate the forty-fifth anniversary of the nation, with stage artwork that treats the sea vessel as a dynamic solid image, and the desert as well as the distant sky as a fusion of six ground virtual projections. Surrounding sound and virtual water curtain together constitute the natural landscape of Hongda, with the strong contrast created by the strength of technology to give the audience an immersive experience, highlighting the sense of theatrical immersion and the change of technological culture to the public.

Based on the analysis from the perspective of the function of digital media technology, in the level of using digital media technology to enrich the theatrical experience of the audience, the design of relevant works in China is relatively late compared to the international level. However, at present, China is gradually catching up in terms of the degree of cross-border, the breadth and depth of experience expansion, and so on, and from a certain level, it has good innovation. Cross-border expansion experience-based cultural tourism projects include "Fire Show", "See Dunhuang Again", "Dreams of the Old Country" and Universal Studios, which provide audiences with extended theatrical experiences and stimulate theatrical experiences across the board. For example, twelve projectors are set up in Blank Creation, and the 190-meter-long screen wall is divided into ten night screens and nineteen day screens with 7.2 million pixels, creating a new digital media program with the help of a visual design platform that facilitates digital media acting to further extend to a 3D holographic ring screen lift experience wall.

### 3.3. The uniqueness of digital media in space creation

Under the background of continuous innovation of digital media interaction and virtual reality-related technology, virtual reality technology can be used to fully display three-dimensional images, so that people can be placed in the virtual space and gain a sense of immersion, and then be substituted into a specific space, and can get a real feeling in the implementation of secondary creation for space. For example, modern people prefer online shopping, but because of the shooting angle and color difference and other factors will lead to the physical and picture does not match, further weakening consumer desire to purchase. Consumers can use virtual space to present a comprehensive picture of a specific product to help them make reasonable purchases. Virtual reality technology can support three-dimensional creation, three-dimensional display, and build a perfect virtual scene by integrating the part with the whole.

The application of digital media in spatial creation has a certain sense of virtual experience because digital media has the characteristics of virtual reality, breaking through spatial limitations with the help of advanced technical support and possessing

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a certain degree of virtualness, and the latter gets a sense of virtualness at the psychological level by detaching from the framework of real content.

# 4. It Generates More Modes of Thinking for the Creation of Space Art

The performance space is functional and artistic at the same time, and its core characteristic is artistic, in a specific performance activity environment, the whole time and space to achieve a high degree of unity, the audience can be in a specific space to feel the fantasy, while enjoying the thrill of time flow. For the stage layout, the traditional flat set is gradually eliminated, and the fixed decorative flat cloth within the electronic set is gradually marginalized. Reasonable space layout can effectively create an artistic environmental experience. From the operability level analysis, the stage art related expression technology and creation method, based on 3D projection technology, holographic projection can be applied to all indoor and outdoor spaces and various surface projection. Reference to the need to focus on the image structure distribution, production materials and layout scale, clear thematic background, choose the appropriate modeling methods, simulation of lighting, optimize the production of the theme image, through the rendering of film to support the placement. The use of new digital media technology can create a wirelessly spreading performance space from the visual level, deepen the stage depth, surround Dolby and three-dimensional levitation and other manufacturing effects into the choreography with good practice.

# 5. The Study of New Forms of Stage Art Creation

## 5.1. Transformation of fixed settings into instant interaction

The final presentation of the stage space before the need to do a good job of real-time dynamic communication, to promote the stage art to achieve positive development, belongs to the digital media technology under the basic skills requirements. The new stage art creation belongs to the innovative interactive art creation, which applies the interactive way to fully mobilize different skills in the space and optimize the functional division.

Based on the audience level analysis, interactive functionality means supporting objects for real-time interaction. The traditional mode of digital media technology applied to stage art creation is mainly based on advance recording, production, and choreography, and performers need to cooperate with stepping in the stage to deliver the one-way link to the audience. In the background of digital media development technology continues to accelerate development, real-time stage performance with traditional performance, promote real space and digital image real-time interaction, feedback to the audience, the audience to absorb the emotion after the interactive terminal feedback with the performer. This kind of technology requires high requirements from the terminal, which needs to have good timeliness. With the help of such measures to further highlight the expressiveness and artistry of the stage art, combined with the development characteristics of the stage art itself to form a form of game beyond the performance.

Under the art form of visual narration, the center and center of gravity of the senses is always vision, and digital-based means can promote the synchronization of other senses and vision. Digital media technology provides the stage art with a new creative

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art language based on the formation of a new mode of communication. This mode of communication effectively replaces the traditional rule set and plays an important role in the in-depth exploration of stage art. New media technology support gives multiple meanings to stage art, and the update speed continues to accelerate.

### 5.2. Transforming fragmented forms into all-round combined forms

In the initial application of digital media technology, the relevant application method is single, the presentation effect is fragmented and relatively rigid, such as in the concert and the Spring Festival Gala, only the application of digital media technology to play the introduction video and replace the background of the canopy. All kinds of simple applications and fragmented multimedia technology can only present a two-dimensional static form, lack of interactive links with the audience, while the creation of the relevant elements of the link is also required to refer to the venue technology to create, if the venue conditions are not enough, it is necessary to find other solutions. At this time, virtualization is mainly stagnant in external performance, failing to penetrate into the stage structure, new creative thinking can be integrated into the creation of virtual space performance, expanding space for the audience, from fragmented decoration towards the direction of comprehensive integration of stage art.

### 5.3. Transformation of side embellishment into multi-dimensional visual display

Based on the analysis of the application of digital media level in the choreography design, digital applications in addition to promoting the stage image to achieve the transformation of the surface image, but also need to intersperse the 3D animation projection of the programming software system within the real space structure. The stage art design innovates the original creation mode to create a profound content and large scale stage art style, using a variety of means and methods to effectively expand the space to withstand the range, with the help of digital media to regulate the visual, sound, light and shadow, through the change of track and lighting manipulation to present a variety of stage effects.

From the beginning to the end of the entire performance, it forms a strong audio-visual impact on the audience, which is more rapid and intuitive than feeling the emotions in the content. The sense of multi-surround experience enables the audience to experience the unique beauty of digital aesthetic products. Designers further expand the range of functional boundaries of the stage through the development and application of digital media. A single viewing in the audience is prone to visual fatigue, reducing the meaning of performance time and lack of emotional interaction, leading to the failure of the stage work. The integration of multi-dimensional senses can bring the audience back to the content of the performance from multiple perspectives, allowing the target audience to focus their full attention on the stage theme. Based on the support of digital media can promote the original single static stage art into a multi-dimensional dynamic development form. Thus, based on the limited physical space and time to convey a variety of emotions, enhance the timeliness and concentration of stage information transmission, optimize the quality of the stage.

## 6. Conclusions

This paper starts from the way of digital media application in stage art, incorporates digital technology to make the stage art rich in innovative thinking concept, and

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provides effective technical support for displaying multiple stage forms and styles. This paper combines interactive forms. Immersive experience, in-depth exploration from passive acceptance to active cognition and active choice, highlighting the ornamental nature of stage art, focusing on improving the audience's aesthetic concept and communication experience, also the traditional stage art does not have the advantage. With the technical support of digital media, we are able to implement innovative interpretation for the drama of thousands of years ago, and to meet the aesthetic needs of the new society with the help of advanced digital media technology to promote the harmonious development of contemporary society.

The application of digital media in various fields can be transformed into a new impetus, supporting the creators of art to continuously innovate the existing modes of thinking and technical means. The practical application of stage art forms a new audiovisual experience that can effectively attract the audience's attention. Although China has got good results in some of the digital media production stage art, it is still in the early stage of development and needs continuous in-depth research and excavation.

## Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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