Research on the cross boundary Integration of Scientific & Technological Innovation and Artistic Creation

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ABSTRACT

The art and technology have a natural relationship, it can be said that the history of art is also the history of science and technology. The development of science and technology has expanded the space for the development of art and formed a new interactive relationship between art recipients and art creators. Therefore, in the future social development, the interaction and combination of art and technology will give both sides infinite vitality.

Keywords: Art; Science & Technology; VR

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How to cite this article:
The revolution and progress of science and technology have profoundly changed the mode of production and way of life of human beings and exerted a great impact on human culture.\textsuperscript{1} Emotions move from inside to outside. The way of artistic expression has become more diversified, technology-based and formalized with the development of science and technology. Especially in modern art history, the development of art reflects the development of science and technology.

1. The development of science and technology creates new expression symbols and artistic representations

Take movies as an example, from silent to sound, from black and white to color, from traditional shooting to the present computer intervention in post-production of special effects, all of which are closely related to the development of media technology.\textsuperscript{2}

In today’s digital age, some artistic creations rely more on computers. By using plane and 3D image processing technology, artistic images can be drawn more quickly, conveniently and vividly.

For example, the flying fish scene in "Life of Pi" is inseparable from the cluster animation software Massive. The special effects director said that the basic number of flying fish was 40,000. Massive is like an artificial intelligence machine, as long as the programmer writes well. A program acts as the "brain" of the flying fish, then the brain decides which fish can jump out of the water and how long it takes to leap. If you find another block in front, you know how to avoid it. It is this advanced animation technology that has contributed to such an animated art.

2. The development of science and technology promotes a new concept of artistic creation

Take television as an example, from wireless to cable to satellite. From the earliest live broadcast to the later recorded broadcast to the present live broadcast, from analog to digital signal, from one-way reception to the interactive broadcast... What is changing is not only TV technology, but more importantly, the change of media technology promotes the constant change of TV art's own form.

Under the media mergence, TV from the traditional one-way receive into on demand interaction, with the help of Weibo WeChat real-time communication and other social media and the audience, prompting some TV shows in the process of production can be better absorbed the opinions of the audience, making programs while listening to opinions and improving the program to form an "interactive narrative" approach to TV program communication. This way of engaging users and improving user experience has also been greatly played in new media. For example, the H5 product "Quick Look, My Military Uniform Photo" launched by People's Daily in the "August One, Army Day" has been on line for several days and received over 100 million views.\textsuperscript{3}

Compared with traditional media, the development of science and technology promotes the highly interactive art communication carried by new media. Traditional media is generally one-way communication, and users' acceptance is basically completely passive. The biggest difference of new media is the interaction of aesthetic acceptance.

For example, The Tencent video simultaneous live broadcast of Bigbang concert, the audience can not only watch through the network synchronization, but also can comment on the feedback information in the reply bar, this kind of interactive brings the sense of presence and pre-
sence is incomparable to traditional media. Traditional media is an elite aesthetics created by a few people, while new media is different. The public is not only consumers, but also participants. This spirit of self-entertainment is extremely exerted on video.

For example, the humor series "Diaosi man", the self media Papi Jiang", "Chenxiang Liudian-ban" and so on, cannot be attributed to the development of video technology, which has brought about the reduction of creative costs, and also to the background of the desire for folk creation in the era of mass culture. It can be said that micro-video has largely become a way for creators with light and shadow dreams to seek self-existence.

3. The development of science and technology expands the performance of art

At the Apple conference held in September 2017, Apple demonstrated for the first time its achievements in VR/AR, such as face detection, facial features and image processing. The virtual reality technology laboratory of institute of computing technology, Chinese academy of sciences has conducted in-depth research on 3d virtual human modeling technology, motion generation and control technology, digital media and augmented reality integration. It can be seen that the combination of VR/ AR and art has become an important focus of technology companies and media organizations at home and abroad.

In 2016, during the "Tokyo 8 Minutes" of the Rio Olympics, digital artists showcased 33 Olympic events with AR special effects, wowing audiences. At the Tencent "WE" conference in November of the same year, the achievements of combining technology and art (including AR and VR) were displayed. Creative elements and contents were expressed through technology, allowing the audience to immerse themselves in the intelligent stage of AR + art.

Many VR video works combine artistic elements, such as the VR work "Xian Yuan" which USES VR technology to perform famous ballets, showing strong dramatic features and digital artistic features. "Xian Yuan" can be said to be an audio-visual feast for the audience. During the performance, the audience goes into a dream, and as the story goes cold and deep, they become princes who "seize" the eternal flower. Then I danced with the fairies in the center of the stage, and watched their beautiful and touching dance up close. The audience was immersed in the play, and even wondered whether to return the eternal flower. It is worth mentioning that the fairy dances in "Xian Yuan" are all from the real dance performances of ballerinas.[4]

The crossover integration of art and technology brings new aesthetic dimensions and enables the audience to enjoy the process more immersive, which is the second sublimation of art. The combination of art and AR/VR/MR technology will be put on the stage with good results, but the main challenge remains how to translate the technology into artistic language and integrate it into performance.

In the first half of this year, The Propaganda Department of the CPC Central Committee, the National Development and Reform Commission, the Political Work Department of the Central Military Commission, and the Beijing Municipal Committee of the Communist Party of China jointly sponsored a variety of presentations through the use of images, text, videos, models, hotspot interactions, extended reading, and interactive experiences. A large-scale online exhibition that comprehensively demonstrates the great achievements of the party's 18th National Congress. It allows people to visit the exhibition without go-
ing out of the house, which has won wide praise and become a permanent digital exhibition, representing the development direction of the new era. In order to strengthen the influence of the exhibition, expand the scale and coverage of the exhibition, so that more people can enjoy the exhibition conveniently, quickly and vividly, cctv.com has created a 3DVR exhibition digital online exhibition hall, presenting all aspects of the exhibition through H5 web technology. Panoramic views restore the live experience and create a never-ending, in-home online exhibition. Based on the new media platform, the online exhibition hall adopts 3D and VR panorama technology, multimedia interactive overlay graphics, audio and video hot spots and other embedded forms, and the exhibition site is displayed in 720 degrees of panorama, vividly reproducing all the features of "great changes -- celebrating the 40th anniversary of reform and opening up".

4. Art injects vitality into science and technology
The ultimate pursuit of artistic creation is the unity of truth, goodness and beauty. The reason why we like to watch high-tech images is not necessarily because of high-tech, but because of its convincing narrative plots and characters. Many aesthetes and artists attach great importance to the combination of truth, kindness and beauty in artistic creation. The truth in art is not equal to the truth in life, but to make the truth in life become the truth in art through artists' creative labor and refinement, that is, to turn the truth into beauty, which is reflected through artistic images. The goodness in art is not moral preaching, but through the artists' careful creation, the artist's attitude to life and moral evaluation into the works of art, that is, to turn the goodness into beauty, and to embody the vivid, touching and flesh-filled artistic images. Therefore, only when the high-tech effect in art is infused with human emotion can it appear its own status and value.
For example, "A Bite of China" breaks the traditional and monotonous way of documentary shooting. In the process of shooting, advanced hd shooting equipment and scientific and reasonable editing techniques are used to skillfully combine "people" and "food". But technology is only a means, the true, good and beautiful spiritual connotation of the film is its essence. The show serves Chinese food, but it eschews simple introductions to avoid being reduced to recipe video. Also abandoned the simple introduction of food nutrition, lest reduced to health programs. The creators plunged into China's extensive and profound food culture, looking for the profound cultural and spiritual context of food in the land of China in the streets, mountains and rivers. The film starts from the production technology and production process behind the food, and aims at the hard-working and simple food producers, expressing the warmth of life from the north and south of China. It is about food, but it is not just about eating. There is culture, emotion, and concern in the diet. Advanced macro photography and 4K camera technology are used in the shooting technique of the whole work, which enables TV documentaries to be shown in the dome cinema. It is a highly integrated work of innovative technology and art. No wonder it can arouse the resonance of the audience, making the post-80s and 90s who have left TV for the Internet come back to the front of the screen.
For example, the futuristic-tech film "Fast & Furious 7" is beyond imagination. In addition to the thrilling car racing, exciting and compact plot, and the filled with love and hatred in the smoke of war, the most memorable moment is probably
the touching last moment of the film. The ending is a layer structure of life. What Toledo said to O'Connor, “you will always be my brother”, is also the mourning of Dixel to Paul Walker in reality. If you watch "Fast & Furious 1" all the way, it happens to be a car owner, and think of Paul Walker leaving us, then you will burst into tears like me...[5]

Art seeks beauty and science and technology seeks truth. Therefore, only further standardizing the balance of media science and technology ethics and benefits makes art and technology truly blend and develop.

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