








Computer Aided Design in the Diversified Forms of Artistic Design

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Abstract. Scientific visualization design in the context of the integration of technology and art has become an effective way to present cutting-edge science because of its rational scientific connotation and sensual visual aesthetics. The cross-media dissemination of scientific information, both online and offline, effectively helps the public to know and understand complex science and technology, and therefore the cross-media dissemination of scientific visualization has become a feature and trend of science popularization. This paper firstly describes the concept, development and application fields of scientific visualization, as well as the visual presentation technology of visualization. Through analyzing the design cases of cross-border integration of science and art, it briefly describes the typical characteristics of scientific visualization, thus illustrating the inevitability of scientific visualization presented through the integration of science and art. Secondly, we describe the origin and development of cross-media, and discuss the unparalleled advantages of cross-media communication of scientific information for public perception of science, taking into account the current status and ways of media communication of scientific information. In addition, given that science museums are a centralized venue for the presentation of scientific achievements and cross-media communication, the article compares the exhibition contents, science education concepts, and cross-media use in science museums, and shows that the topic of this paper can help improve public science literacy and digital literacy. Finally, it proposes

a universal scientific visualization transmedia design idea and verifies its implementability through the author's design practice.

Keywords: Intelligent Computer; Computer Aided Design; Artistic Design; Web Interpolation

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1 INTRODUCTION

With the rapid development of science and technology and the in-depth implementation of China's science and education strategy, the dissemination of science and technology culture has become an important topic in contemporary society. 2019 National Report on the Development of Science Popularization Capability states that the scientific literacy of citizens has become an important indicator of the high standard of living of a country [1]. Therefore, how to effectively popularize scientific information, enhance the public's scientific literacy, and promote the overall progress of society has become the focus of research for science popularizers in various fields. Practice shows that visualization works of cross-border cooperation between science and art can effectively help the public understand obscure scientific concepts and cognize the original state of things, and become an innovative presentation form of science popularization, which is an important idea of scientific visualization design [2]. How to break through the traditional way and concept of science popularization, to promote the popularization of scientific knowledge, scientific methods and scientific ideas more appealing and influential, so as to effectively carry out to enhance the public's scientific literacy, has become a hot topic of discussion in the fields of science and art. In the field of computer science, visualization is a technology that enhances data cognition through the perception of human eyes. Xu et al. [3] proposed that visualization has a long history, from the medieval times when people used hand drawing to draw celestial maps and city plans to the use of computer technology to visualize various kinds of data, and has developed to encompass a number of visualization research fields, with scientific visualization, information visualization and visual analytics as the three main branches.

Nowadays, computer software and hardware devices are constantly improving and are widely used in urban planning, interior design, computer-aided teaching and medical treatment. Among them, new media art performance is also an important form of expression in virtual technology. In the interactive of virtual technology, virtual walking operations can be performed after keyboard and mouse. 3D interactive platforms such as 3Ds Max and VRP are used to study the interactive building process in virtual technology [4]. Virtual reality technology in the new media environment produces digital information and virtual world systems under the system of computers, which contains a variety of technologies such as computer graphics, computer simulation, artificial intelligence, human-computer interface, multimedia, and network technology by Taijun et al [5]. Through today's hardware and software equipment and auxiliary devices, it brings users a virtualized information environment that they can see, hear, feel, and also communicate and experience with each other. Virtual reality technology has been used in the military, education, architecture, civil engineering, entertainment and other fields with excellent results. Due to the rapid changes of the times, traditional concepts are no longer able to meet the needs of today's masses, and a digital technology revolution has ensued by Baran et al [6]. Technology leads the trend of the times, science and technology is constantly eroding people's thoughts and lives, making life more colorful, however, the form of art also changes along with the development of technology, and art displayed in technology becomes one of the latest forms of expression for artists. In the development of information technology, virtual technology is widely used, not only in film and television, games, etc. The construction of digital virtual will shorten the distance between people, not only for browsing, to give people who do not understand virtual technology to be able to close contact, and at the same time in the artistic expression of a lot more novelty [7]. With the development of the times, virtual reality technology has occupied the top of the technology, the three-dimensional space produced by

virtual design makes the experience immerse in it and feel the expression of the mind, so the two-dimensional art works become a little more traditional. Almassri et al. [8] proposed that the virtual world simulates all things in the real world, such as houses, greenery, cars, people, etc. In the augmented virtual reality technology can meet the experience of the process of the experience in the virtual space. Virtual reality technology can be used in a wide range of applications, and it is only due to the needs of people that the technology can be continuously improved [9]. The combination of virtual technology and art shows a picture that not only shows the beauty of dynamic images, but also does not lack the functionality of interactive by Decker et al [10].

In the information age, the reform of college education is the general trend, and the education reform must be more in line with the requirements of the times [11]. The development of the Internet is not only the development of information dissemination speed, but also an important driving force for the development of the whole society and economy. In the era of "Internet+", there is a broader network platform for reform and innovation. At present, although the connection between education reform and the Internet has begun to be practiced, combined with the concept of "Internet+", the diversified development of education is not only simple "education + networking", but also the organic combination of the two, so as to promote the development of education reform. For art and design education, the art itself is the most important element. For art and design education, art itself has rich connotation, if art and design education in colleges and universities is only limited to classroom teaching, it will be difficult to meet the needs of contemporary society for talents. For college art and design majors, in order to do a good job of teaching reform in the era of "Internet+", in addition to relying on the Internet, it is necessary to make good use of new media and other new platforms as the carrier of teaching, and really combine education with the Internet, so that education can develop in the direction of diversity.

2 SCIENTIFIC VISUALIZATION UNDER THE FUSION OF TECHNOLOGY AND ART

2.1 Design of Computer Visualization

With the growing interdisciplinary intersection of research fields, scientific visualization is no longer limited to the field of scientific research. In the context of visual culture, artists and scientists work together to create works that help the general public understand and cognize science from a visual design perspective. Science and art are two different disciplines with their own thinking and logic, science is a technique to understand the physical world, and art is a means to explore the cognitive boundaries, but they both share the same path in the purpose of cognition, influencing and integrating each other [12]. The program integrates science, art, technology, media and business perspectives, and deeply integrates art and design with science and technology. For example, the Center for Art, Science and Technology at the Central Academy of Fine Arts (CAFA) has been working with artists, scientists, and cultural scholars from home and abroad to integrate art, humanities, and science and technology to promote the practice of technology and art in China. Yang Shuzi, an academician of the Chinese Academy of Sciences, believes that "in the age of information technology, the frontier and innovation of social and economic development cannot be separated from the cross-fertilization of science and art." Science, technology and art have always been inseparable, from the ancient science of the Paleolithic era, the medieval science and technology and industrial revolution, the development of various sciences in the 18th and 19th centuries, the birth of modern science in the 20th century, and the information age in the 21st century, the development of science cannot be separated from technology to promote, and the innovation of technology to promote the advancement of science. Before the development of computers, manual drawing was the most primitive technique for scientific visualization. As early as the budding of diagrams in the 16th century, Galileo recorded the visualization of the moon cycle by hand.

In today's advanced information technology, there are still scientists and artists who specialize in drawing or making models to express scientific information by hand, a way that cannot be replaced by computer technology. Computer imaging technology is mainly used to simulate objective things

in two-dimensional, three-dimensional, or even thinking through computer software, which presents dynamic images in the form of graphics, images, and animations through computer imaging technology, as shown in Figure 1. For example, a 3D virtual reality video on the lungs of a patient with a new coronavirus infection released by George Washington University Hospital in 2020 used computer imaging technology. Computer simulation, also known as computer simulation, refers to the technique of using computer software to simulate abstract data and models of a specific system. For example, the LAVA Center (Lava Center) in Iceland uses computer simulation to recreate natural phenomena such as volcanic eruptions and earthquakes, and visitors experience the heat and vibration of lava in a highly immersive environment, thus feeling the extreme power of nature. Computer imaging technology and computer simulation technology are slightly different, with computer imaging favoring the presentation of objective things and computer simulation favoring the simulation of data.

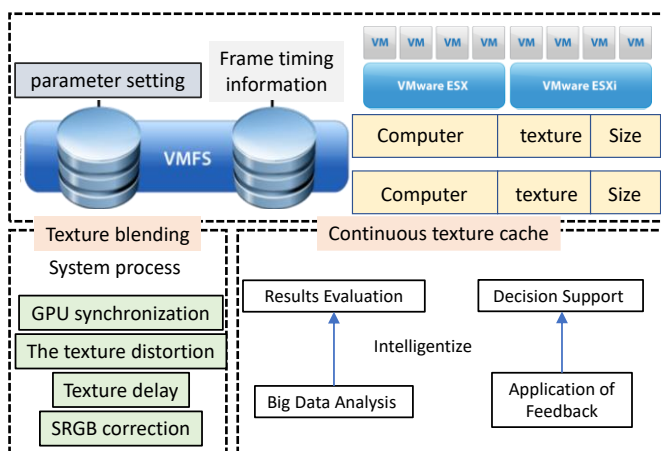


Figure 1: Computer imaging technology.

In artworks, "goodness" is expressed as a tendency to refer to the impact and meaning of the work on society. With the convergence of disciplines, the cross-border cooperation between science and art has gradually become a mature design model. By presenting scientific knowledge in a vivid visual way, the purpose is no longer limited to helping the public cognize science, but more profoundly to stimulate the public's interpretation and discernment of man, nature and technology. The philosopher and scientist Francis Bacon advocated that "knowledge is power" and believed that "the power of scientific and technological knowledge depends not only on the size of its own value, but also on whether it is disseminated and the depth and breadth of its dissemination." In 2019, a thematic exhibition titled "The Evolution of Things - Scientific and Artistic Views" was held in China, which is a cross-border exchange between art and science, in which the themes of the exhibition works are related to "life science", "material science" and "material science". The theme of the exhibition covers the fields of "life science", "material science" and "mathematics and computer science", etc. Five scientists who won the "Future Science Award" and five famous contemporary artists work together to "collide" art and technology. Five scientists who won the Future Science Award and five renowned contemporary artists collaborated to "collide" art and technology. The work "Gene Reconstruction Sequence No. 1" by artist Yang Qianhe and scientist Lu Yuming is an attractive work that uses fluorescent light and other integrated materials in its visual presentation by corresponding, synthesizing and reconstructing the 22 pairs of chromosomes that represent the genes of life and the 22 Hebrew letters that symbolize the genes of civilization.

2.2 The Artistic Expression of Virtual Reality in the New Media Environment

As we all know, science and technology, as the cornerstone of human advancement, lead the renewal of every aspect of society. And in the field of art, the artist's field of artistic creation provides prescient guidance in the innovation of science and technology. In the fields of technology and art, their influence on each other is mutual. In the process of changing times, the theoretical schools of thought change. This provides a process of development that can be seen in comparison. With the impact of the information technology trend, the environment people live in is encompassed by the digital industry, and because of the wide range of information content, the amount of information and the speed of information dissemination makes people no longer have any privacy among each other, from the fundamental search for small changes. In this era, new media art is created, as shown in Figure 2. New media art differs significantly from traditional art in both its creative approach and its form of communication. New media art reflects more of a fusion of technology and art, technology includes computers, video, Internet, etc. in the virtual environment to bring a different form of art, in the new media environment of many art forms is the most prominent is virtual reality art, virtual reality also contains many disciplines, virtual reality technology is particularly outstanding for the realism of human sensory feedback. Virtual reality technology does not only lead the trend of the technology of the times, but also exists in new forms of artistic expression, when art and technology fuse with each other to produce works that make the experience more beautiful and more comfortable. Virtual technology and art guide each other, complement each other, even if the virtual technology more to technology as a pavement to achieve, but the technology is like a pen in the hand, want in the picture, painting what look, or need art to set off, to be more beautiful, more easily accepted.

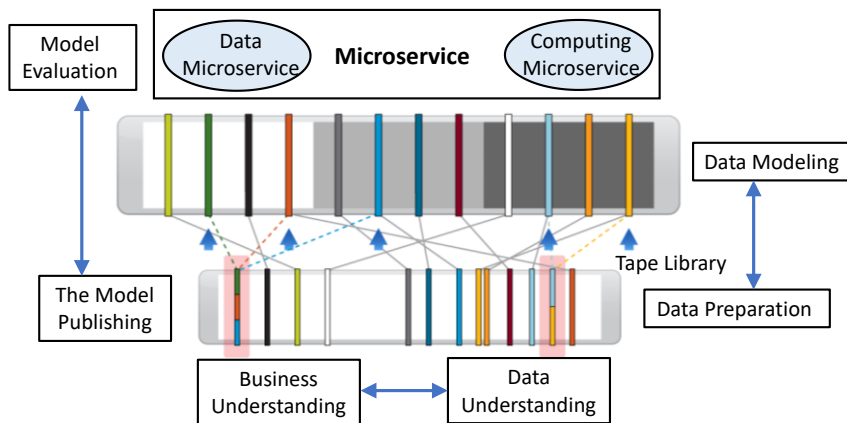


Figure 2: New Media Art-based Content Distribution.

In the 1990s, a new field was developed by combining multiple technologies such as computational graphics, artificial intelligence, computer networks, information processing, mechanical design and manufacturing, etc. The technical aspect is called virtual technology, which is reflected in the artistic aspect called virtual art, as shown in Figure 3. Virtual reality provides users with intuitive and natural experiences such as visual, auditory, and tactile sensations through computer equipment and some auxiliary devices. It allows the experience to reduce the burden of life and improve the quality and efficiency of work. In the art of virtual reality, artists and researchers work together to investigate new forms of interaction and interfaces between virtual space and remote control modes. Dating back to 1991, artists at the Banff Centre for the Arts in Canada were so active in their research that they produced a number of virtual reality installations within three years. Examples include Brenda Laurel and Rachel Strickland's "Placeholder" and Tony Dover's "Archaeology of the Mother Tongue".

The rigorous computerized statistics allow the experience to be deeply immersive and immerse the viewer in the work through a multitude of interactive techniques. The SIMLAB experimental institute at Carnegie Mellon University has also conducted many studies and experiments in the field of virtual reality and has achieved results in user interaction, with the number of users changing from one to multiple, such as communities of artificial agents controlled by the A-life program. A team of researchers from Carnegie Mellon University, in collaboration with Egyptologist Lynn Holden, conducted a simulation experiment of an ancient temple, creating a virtual ancient Egyptian installation: "The Temple of Horus", which was a physical examination and virtual modeling of the final realization of the ancient Egyptian temple, which exhibited a virtual environment, both inside and outside, that was awe-inspiring. At the same time participants can make their scenes change as well as music and map transformation by interacting with the data between them.

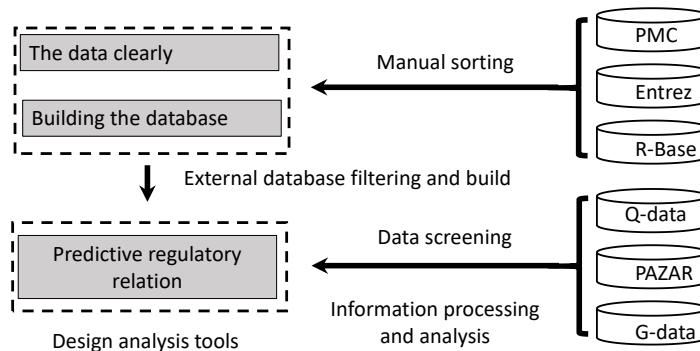


Figure 3: The Evolution of Computer Virtual Art.

When traditional art forms collide with digital media art, the artist no longer has the means to carry the main body of art, instead more network participants in digital media art assume the role of the artist, the generation of art today is not like the previous form, the goal of clear creation contains randomness and planning to generate out. Virtual reality technology has become the most fundamental cornerstone, becoming a guide for users to operate in virtual space, and it enables users to actively participate in the virtual environment, interacting and communicating with the virtual. The three elements of artistic image, compositional form and color organization that are expressed in art often have to be added to virtual art in order to express the range of art with digital colors. What virtual reality art shows is that the three-dimensional space cannot be compared with traditional art, the two-dimensional visual effect is not as good as the three-dimensional space effect, not only that in the virtual environment the user can be included in the overall work, the user in the three-dimensional space also becomes a creator with variables with the work. People's response to space usually requires feedback from external things, that is, the division of light, line and surface. Through a more detailed arrangement to the visual senses of the human perspective, so that the experience better feel the three-dimensional sense of space. For example, the head-mounted VR game "Rhythm Lightsaber" uses the familiar Star Wars lightsaber to cut through the three-dimensional space scene, and through the head-mounted glasses and handle, will allow the experience to feel more realistic objects to their own front impact and thus experience the effect of virtual reality and three-dimensionality. In the environment of virtual art, the experience can see the image of the plot, the theme of expression of ideas, etc. have a visual sense. In addition to the experience of their own emotional expressions, can make the images seen more image, concrete and vivid, and in the scene of the inner performance will be more profound than when a viewer's feelings, the emotional changes that can be reflected and interaction generated by the scene changes, to promote the user's immersion. From Life, for example, is a new presentation of the artist's work through VR technology. Whether it is a reinterpretation of a previous work, VR technology changes

the way artists create and display their work, while also enriching the sensory experience of the viewer's participation in the art.

Virtual reality technology is a form of art expression, art is generally from life but above life, so virtual reality can also be considered a type of abstract expression, virtual reality art is different from traditional art, virtual reality art has a high degree of immediacy, even if the user takes the initiative to experience life, but all the scenes that occur can become their own. A film, such as a film has two different effects, one is the viewer's third-person feelings, and one is the experience of those involved in which only they understand the feelings, both of which are recorded indiscriminately, seemingly virtual reality is just something that can be touched or not touched in real scenes, allowing users to embody it more truly in their hearts. For example, Yu Hong's work "She Was Here" is divided into four scenes in her artwork, one of which records the process of a woman¹⁰ from birth to childhood, to middle age and then to death.

3 CROSS-MEDIA DESIGN IDEAS AND PRACTICES FOR SCIENTIFIC VISUALIZATION

3.1 Maximizing Scientific Information

Scientific visualization is the presentation of scientific knowledge, so the scientificity, accuracy and rigor of conveying knowledge is the primary purpose. Designers need to effectively collect original data as creative materials, such as pictures, text, images, etc. Content is king, emphasizing that designers need to start from the perspective of public awareness and understanding. Through artistic rendering and visual processing, designers not only make the data more vivid, visual and beautiful, but also the core content is to let the audience know what the science is, and more importantly, why and how to do it. The LAVA Center is a volcano museum located between five Icelandic volcanoes. The project includes more than 20 interactive installations in four auditoriums and four corridors, each based on recorded data and real-time generated data from Iceland's leading geological institutions and universities, presenting the most realistic scientific information to the audience. The real data allows viewers to experience the realism of earthquakes and even hear the movement of magma within a volcano. Inspired by the museum's exhibition content, the theme of art creation can come from the six fields of natural science, i.e., starting from astronomy, chemistry, physics, life science, earth science and mathematics, so that the profound scientific knowledge can be expressed graphically with exhibition content full of knowledge, science and fun, which is more easily accepted by the audience, so that the audience can receive scientific knowledge faster and more comprehensively, and understand the connection between human beings, science and technology. The exhibition will enable the public to establish a correct concept of resources, environment and ecology in a subtle way.

The experimental creations of scientists, artists and technologists bring more fresh blood to the field. The open, experimental and exploratory nature of multi-party collaboration has led to cross-border collaborations as a win-win way to create inspiration and spread culture. NASA's Scientific Visualization Laboratory aims to promote better public understanding of Earth and science through visualization, animation and imagery, while working closely with scientists, astronomers, artists and engineers for better visualization to bring scientific theories, designs and concepts to users in an accurate and compelling visual way. data Lens project is NASA Goddard Space Flight Center's way of explaining NASA's scientific data to users from a new, intuitive and multi-user interactive visual interface. Visitors can gain a deep sense of the interrelationship with Earth from the unique and fun graphic design and content of the real-time interactive digital experience, where adults and children alike learn how Earth's air, water and biological systems work together through a digital touch wall. The Data Lens transforms daunting scientific data into an engaging, accessible, and even entertaining experience that conveys a clear understanding of the precarious natural balance that defines our planet, creating a sense of awe and protection for the planet. Interdisciplinary integration is increasingly known in a wide range of fields, and as with the holistic educational philosophy of STEAM, design practitioners can create interdisciplinary work from science, technology, engineering,

art, and mathematics perspectives in addition to research as an idea, breaking down barriers between disciplines and creating more options for science communication from scientific, collaborative, artistic, and experiential perspectives.

3.2 Diversified Expression of Art Design

As special science educators, artists tend to educate the public about science in the form of informal education. In the process of scientific visualization, transcreation prefers to graphically and graphically represent straightforward data. Technology artist Refik Anadol is particularly adept at transforming plain, straightforward data into immersive experiences. The work *Bosphorus*, for example, is a kinetic data sculpture image inspired by high-frequency radar data on sea surface activity collected by the Turkish National Meteorological Service over a 30-day period (Figure 4), transforming straightforward data into a poetic visualization experience on an LED media wall. Art has infinite possibilities, and when science meets art, it often produces unexpected visual experiences. The artist science is the source of inspiration for art creation, and the infinite creative nature of art gives new life to science. The microscopic world, such as cells and viruses, which cannot be seen by the naked eye, is presented to the audience through artistic creation techniques. Through graphic images, photography, 3D modeling and other forms of display.

In virtual reality technology, interactivity is the soul of the virtual. There are many forms of virtual reality technology that can be used in areas such as gaming, military, education, etc., and there are some successful systems that have been in practice for many years. In the virtual reality works, the interactive form of the entire work, only through the user to interact with the operation to complete the work. Traditional interaction is only superficial, more involved than necessary. In virtual roaming, interaction is the core concept, and only the nature of interaction can really show the unique characteristics of virtual roaming. The same can also let the user feel with the artist to complete the work together. This paper will illustrate the unique characteristics of virtual roaming technology through the concept of interaction. By using an artist's form to consider and recognize objects, it is possible to expand the way of thinking so that the thing under consideration is the main form of thinking and is studied in depth. The artist carries the identity of the thinker giving soul to the work, and under the guidance of the technology, new types of artistic expression are constantly revealed, and the process of artist creation is created with new forms of change. Changes occur in the new media environment, and lifestyles have changed the way people understand and think, hence the emergence of interactive modes of thinking. Times change, and science and technology continue to emerge as new forms of art.

As many forms of technology, such as web technology, virtual technology and interactive technology, become the means by which artists create their work, people begin to eliminate the passive acceptance of art and demand interaction with it. For example, dialogue, communication, etc. The emergence of interactive art forms an interactive art form through the combination of art and technology, in which the work is closely related to the viewer, the author and the viewer. Interactive media, interactive television, interactive video, interactive games, and interactive installation art on interactive platforms are all new forms of interaction. The artist and the virtual art composition later, virtual reality art in a sense is also a kind of "ornamental art", virtual art through the image created by the virtual space, so that the user to experience, the artist through the virtual space to create the process of conveying ideas, the pursuit of social meaning. The emergence of virtual reality technology has led to a new period of economic development and consumer culture, and the products expressed in virtual reality art have become part of life, allowing for a variety of communication and interaction, thus establishing a new relationship between the artist and the virtual roaming artwork and giving the user a new aesthetic experience. The process of artists' creation in virtual space not only enhances the aesthetic value of the artists themselves, but also enhances the viewers' own cultivation. Interactive art encompasses the experience and participation of virtual technology and enables users to touch or non-contact two forms of media that trigger various interactive functions, for example, controlling spatial scene changes or sound changes

through sound in virtual space according to the technology of artificial intelligence, as shown in Figure 5. The artist of virtual reality art under the domination of interaction concept has two different identities of artist and designer in the process of work creation. The artist needs to complete the decoration of the virtual space and the design concept of the work through his own creative power and thinking, and master the relationship between art and design, while the designer needs to consider the more practical, how to use the virtual art work as a The designer needs to consider how to realize the design concept of "system" and "interactivity", and transform the original idea into a real work that can be touched and interacted with.

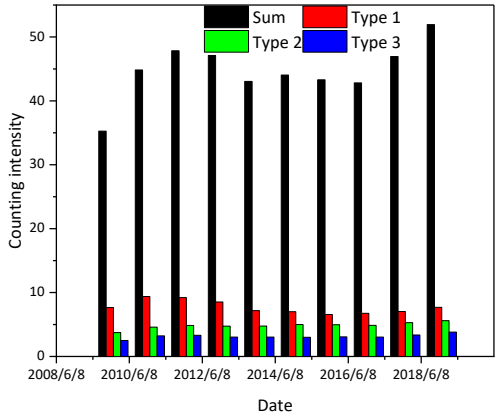


Figure 4: Radar Data Representation.

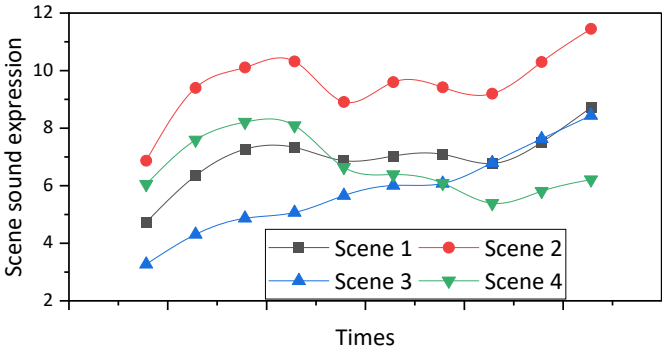


Figure 5: Scene sound expression.

Design can never be separated from the two users, one is the designer, one is the user, the designer is the user's needs in real-time form, the designer and the user in the virtual space belong to the common design, with the user as the leading designer for the construction of works, virtual reality works is a new platform for artists to create art, in the virtual space carries the human spirit and aesthetics. Therefore, what people feel in the virtual space is not only the surface they see, but also the inner value. Virtual space, as a showcase for virtual reality technology, has no space limitation. The designer is different from the artist, but the artist can be the designer. In the virtual roaming design among the designers through the existing software design and secondary development, design itself is not only a form of artistic expression, the same design is a certain logic, through some form of splicing and assembly finally formed works. Because the earliest design works are practical as the main idea of design. For example, when the Internet first came into China, people did not feel how badly the websites designed on the Internet looked, but they were more concerned

about the interaction between people and the Internet to improve the distance between people. In the early days of virtual reality technology, it was not artists but scientists who emerged as researchers to study the convenience that new things could bring to people (Figure 6). Virtual reality technology continues to be refined. It was only with the use of large numbers of people and widespread promotion that the user began to have the right to choose, and it was the artist who enhanced the aesthetics of the art in the product, not just the application but the aesthetics. From this point on, virtual reality technology and art works decision makers - designers, the first thing to consider is how to perform virtual reality art, to make users feel more real immersion, for different content for the users, in the virtual design to have different design positioning, virtual reality technology needs to be logical, so that the design in the creation of the same time to The virtual reality technology needs to be logical so that the design can be created while using the equipment to produce the work better. Interactivity is a necessary stage in the development of virtual reality art. Although virtual reality technology has come into the market and has a large number of products, but all products have many limitations, but through future research and development, designers will produce more and better products to reflect the concept of interaction for users to choose.

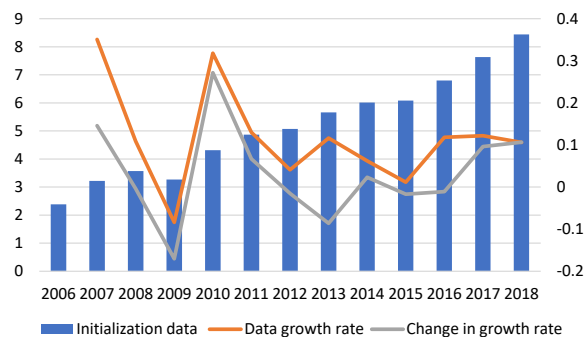


Figure 6: Initializing Data.

The thinking of interaction in virtual reality art creation and practice runs through the whole process, and the process reflects the importance of interactive virtual reality art, while the participation of users is needed for the art itself to possess value. With the development of the times, new media interactive art has also embarked on a golden age. Virtual reality interactive art has developed even faster with the information transmission of the Internet. The virtual environment is simulated through real scenes of life and makes the art work fully functional. The virtual reality environment not only enhances the artistic aesthetics of the virtual environment, but also enhances the aesthetic value of the user, thus giving the new media interactive art a distinct virtual character. Virtual reality has a simulation of reality, according to the laws of physics, objective laws, the implementation of all real scenes of reality natural scenes, and generate interactivity, as shown in Figure 7. For example, the Louvre in Paris, France, uses virtual reality technology to constitute a virtual museum, the art works in the museum through the form of modeling to build and add interactive mode to make the virtual art more complete, based on Internet media technology to show the virtual Louvre real, so that people around the world through the computer immersed in the virtual atmosphere of the Louvre art, experience the long history of European art atmosphere, so that users feel The virtual environment is an immersive one.

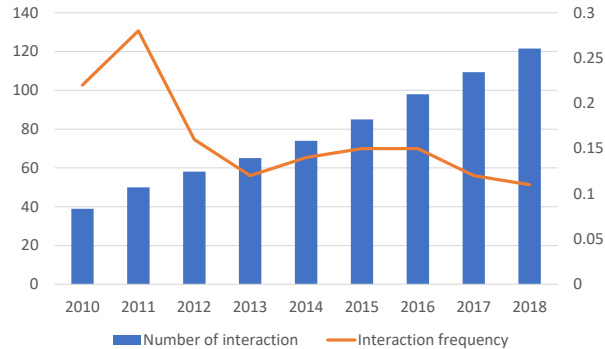


Figure 7: Interactive Data Representation.

Users create and immerse themselves in virtual reality technology, and their cognitive and exploratory abilities are reflected in virtual environment applications. Virtual reality art opens up the user's macrocosm and microcosm, bringing the user into the vastness or subtlety of the virtual world to gain the aesthetic value and sensual awareness that virtual art brings. For example, in the aviation industry, the terrain on Mars can be scanned and plotted, and the data can be collated and aided by equipment to provide a realistic understanding of the various conditions on Mars. The user experience provides data for the implementation of the interactive concept in virtual reality technology. The interactive nature of the product mainly comes from the basic needs of the virtual roaming artwork and user feelings, such as the product lacks interactivity, it loses the original virtual entertainment characteristics, reducing its own value, while not being able to be loved by users, interactivity is the core of virtual roaming design, is to become an important part of the artwork. The interactivity of virtual roaming art itself has the nature of two-way transmission, that is, the communication and feedback between users and products, products and designers, designers and users. In the virtual roaming environment, everything has been user-led, through the user and the virtual objects in the scene of direct or indirect contact, the feelings and influence. The user can be immersed in the virtual space full of imagination and reach the realm of forgetfulness. The images, images, colors and textures felt by the five senses bring the user a sense of true and false art, allowing the user and art to integrate with each other. Interactive virtual roaming art, the user through different ways as the interactive departure signal, such as touch, space movement, sound, etc., the final realization of the interactive nature of the virtual.

4 CONCLUSION

When technology and art are intertwined, there is always the topic of research content. In this paper, we take the interaction study of virtual roaming design and art as the main research direction, and analyze and study the characteristics brought by virtual roaming, interactivity, immersion and imagination, the three main characteristics. When technology and art meet, it always brings infinite thoughts, and art itself relies on its own perennial accumulation. The traditional form of art has been diluted by the trend of the information age, and should be able to better play its own value with the help of technology, so it is especially important that art and technology combine with each other. At the technical level, through multi-sensory and interactive, participants create a false scene that is indistinguishable from the real and the fake, and the feelings experienced in the immersive art are very different from the traditional experience. In the virtual scenes, the real feelings of the experienter promote the expression of emotions and the ability to feel the immersive changes in all aspects, which allows the experienter to participate in the artwork and at the same time reflects the importance of traditional art, which is also a unique feature of virtual reality, and also under the role of interactivity allows the user to generate a lot of imagination, full of all kinds of curiosity, in the

user's active emotional expression and The combination of the user's active emotions and the artistic atmosphere of the work itself makes the user feel more profound in the process of participation.

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