

Research on the Digital Multimedia Technology and Urban Landscape Design based on Multimedia Art Perspective

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Abstract

21st century is the era of information technology, in this context, form and expression form of art also changed accordingly. The application of multimedia technology can enrich the morphological characteristics and color of different factors. In this paper, we research on the digital multimedia technology application in the urban landscape design, with the rapid development of computer technology, more technical conditions are provided for the multimedia interactive devices. In the design of urban landscape, the use of multimedia technology has also changed the past audio-visual experience, thus creating a novel landscape style. At the same time, we also analyze the computer assisted multimedia technology as CAD, 3D MAX and GIS, these soft wares can help the designer to complete the landscape design more effective, and under the condition of a virtual visualization .

Keywords: *Digital multimedia, 3D landscape, GIS, Urban landscape design, Multimedia Art*

1. Introduction

In the background of globalization of economy and technology, culture, modern network media is omnipresent, permeates every corner of the world, "information" has become the people daily life increasingly needs and need to face and deal with the subject. Intelligent computer technology, information technology, digital technology has a profound impact on people's daily life, human life and thinking mode has also produced tremendous change, and will create a completely different way of life and way of communication [1]. Information spread will reconstruct people's daily life, daily life produces new content; new information dissemination mode changes are more prominent interaction between individuals and groups [2]. Information technology in promoting the development of human social progress has been shown and the potential of a huge role is the fundamental cause of the formation of the global digital wave. Digital information technology on people's cognitive environment and results, the existence of people have great influence and social ideology and economic basis, bring people into a new era of information era with the characteristics as dematerialization, demobilization, mass Customization, intelligent operation and soft transformation [3]. All in all, our daily study, work, entertainment, entertainment and other life style in the information. Human society has entered the information society.

Multimedia technology is a rapid development of integrated electronic information technology, it gives the traditional computer systems, and video equipment has a revolutionary impact on the mass media have a great change. Multimedia technology will accelerate the computer into the family and all aspects of society, to the people's life, work and entertainment to bring a profound change. The application of multimedia technology is one of the characteristics of the times in 1990s and the development of the computer, and it is also a revolution in the history of the development of the computer, it

is no longer a simple composite of various media, but the text, graphics, images, animation and sound and other forms of information together, comprehensive control and processing through the computer, to complete a series of interactive operation the information technology [4]. The development and application of multimedia technology has changed the use field of computer, the computer by special products laboratory, the office became a common tool of information society, is widely used in school education, industrial management, commercial advertising, public information consultation, military command and training field, and even family life and entertainment.

2. Multimedia Technology and Urban Landscape

2.1. Multimedia Technology

21th Century is the era of information technology, in this context, the art of the form and performance of the corresponding changes has occurred. New multimedia interactive device art is in such a background, based on computer technology, a new form of artistic expression; it marks the arrival of a new era in the field of communication[5-6]. With the rapid development of computer technology, the art of multimedia interactive devices provides more technical conditions for the development of the art of multimedia interactive devices has brought a broader space. In this context, multimedia interactive installation art gradually embarked on the design stage, through interactive mode, through the digital signal will be interesting, high-tech, perfect fusion of art in the age of information together, to create a new design way[7]. Human beings should use all kinds of information carrier in information communication, refers to a variety of information carrier forms and transfer mode, however, such a "media" concept, its meaning is still a bit narrow, in fact, the meaning of "media" is quite extensive. "Media" has the following five categories:

- 1) ***Sense of the media:*** refers to a direct effect on people sense organs, can make people directly feel the media. Such as music, language, all kinds of sounds in nature, all kinds of animation, graphics, text, *etc.*.
- 2) ***Express media:*** Media that refers to the media that is intended to convey the sense of the person's feelings. With this kind of media, it can be more effective to store the sense media or to transfer the sensory media to another place far away. Such as language code, telegraph code, bar code, *etc.*.
- 3) ***Display media:*** refers to the communication between the electrical signals and the feeling of media generated between the conversion of the media. Such as output and input devices: mouse, monitor, keyboard, printer, *etc.*.
- 4) ***Storage media:*** refers to the media used to store some kind of media. Such as paper, tape, disk, CD.
- 5) ***Transmission media:*** refers to the media used to transmit certain information. Commonly used in such as telephone lines, cables, optical fiber.

Multimedia refers to the acquisition, processing, storage, editing and display more than two different types of information media technology, the information media include: voice, text, graphics, images, animation, and video [8]. From this meaning, we can see that multimedia is ultimately attributed to a technology. In fact, it is because of the substantial progress of digital processing technology and computer technology, that we have the ability to deal with multimedia information, which makes the multimedia become a reality. Therefore, we say multimedia does not refer to a variety of media itself, but mainly refers to the application and processing of a complete set of technology.



Figure 1. Multimedia Technology

2.2. Multimedia Landscape

Multimedia art is the twentieth Century birth of the art form, including computer, digital technology, video and film technology are combined to complete the works of art, it is a kind of pure art, is one of the commonly used means of film and television, advertising and music picture. Taking the information technology as the basis, using video, voice, video, photography, installations, interactive and other comprehensive measures to create "the multimedia art" in recent years, the rapid growth in various fields of art, especially art caused social attention, but also caused widespread concern in the education sector. Compared with the traditional art, multimedia art uses the technology of television, film, Internet, photography, and forms its own unique artistic form. The progress of modern science and technology has made great efforts to promote the development of multimedia art, so that it has the distinct characteristics of the times and timeliness. Multimedia art is kinds of art form which can make people produce many associations. It establishes a person's attitude towards art and technology environment.



Figure 2. Multimedia Art in Street



Figure 3. Multimedia Art Museum

In the rapid development of computer technology, the advent of the information age, the multimedia technology more and more penetration into our life, also caused the contemporary landscape designers have to reform the traditional landscape conception in landscape design, their bold use of multimedia technology as building landscape design elements: metal, glass, plastic, rubber, fabric new materials, paint spraying, irrigation and landscape lighting, new technology and new materials processing and other new methods, greatly expand and enrich the methods and concepts of landscape, the modern landscape works with a new look. In this kind of background, the multimedia technology outward presents the character, the culture and the image of a city in another way. In the design of urban landscape, the use of multimedia technology has also changed the people in the past audio-visual experience, thus creating a modern urban landscape in a novel landscape style and style.



Figure 4. Water Curtain Movie

3. Computer Assisted Multimedia Technology

With the application of computer technology in the landscape design, the role of computer in drawing, modeling, performance, management, information storage in the query and other fields is important for R. At present, the modern landscape design work is based on the digital design tools, the use of information and communication network to

achieve the exchange of information, the original drawings physical exchange is gradually replaced by digital information exchange. The application of computer aided design tools in landscape design mainly includes the following three aspects:

- 1) **Drawing and 3D view:** the original computer technology is used in the drawing and three-dimensional view, instead of the traditional paper drawing, has the advantage of saving time and effort, but the application of this aspect of the actual design process is not very big.
- 2) **Design evaluation tool:** In this regard, the application of computer technology is mainly used to evaluate the design, including the design process and the completion of the design process. Use more in foreign countries, especially in the construction design, such as the material consumption of the building design, ventilation lighting, etc., but the current use of little in the landscape design.
- 3) **Computer aided design generation:** it is currently limited to a lot of designers to study the field, has not been in the design practice to achieve the desired results.

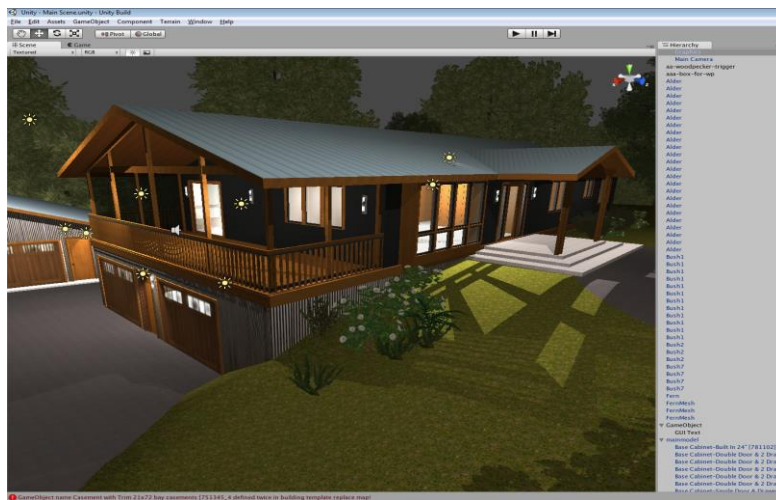


Figure 5. CAD Software Mapping

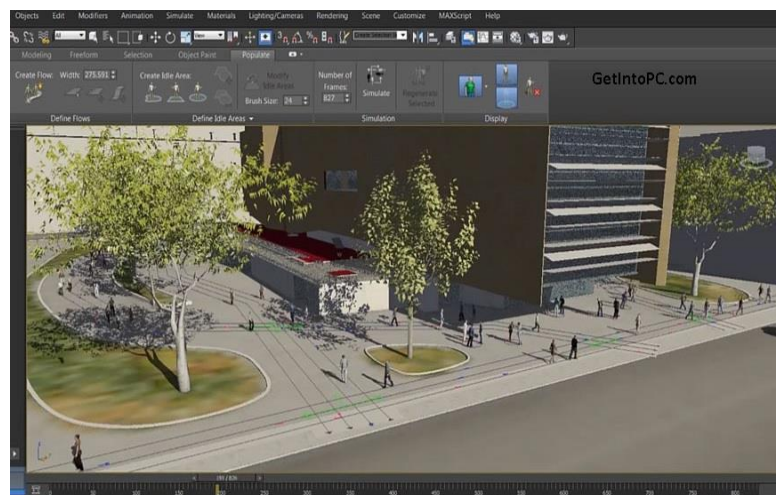


Figure 6. 3DMAX Software Modeling

Computer aided design to the landscape design innovation, mainly reflected in two aspects of design and design tools. In the modern landscape design, the traditional technology has many disadvantages, such as the planning and design based on the larger scale, if the use of traditional technology is very difficult. And if the use of computer

technology, artificial site survey complex basic data can be transferred to the GPS, GIS and RS and other high-tech computer technology acquisition. The actual in landscape design, the designer can use the auxiliary design software with complete functions, get rid of the traditional manual drawing, and compared to the traditional model of physical, virtual 3D model and 3D animation software produced more vivid and close to reality. In addition, a variety of subjective evaluation of the landscape environment can be replaced by a variety of computer models of rational and objective analysis. The increasing development of network communication technology makes it possible to communicate and collaborate across countries and across regions. The computer aided design system with virtual environment, 3D model and global information network, which makes the traditional design method can convert computer information and freedom, but also can realize the communication through the network transmission and exchange, these have created favorable conditions for the design of technology innovation of contemporary designers, also brought hitherto unknown innovation for the landscape design. Computers have many advantages in this special form of multimedia. In general, the computer provides a more realistic, more advanced and new experience for the landscape. It is more interactive, real-time and dynamic. In addition, the traditional design method is difficult to deal with the technical problems, such as surfaces, curves, *etc.*, the use of computer technology will be very simple. The realization of color, light and material and so on will be more delicate than the traditional way, real, more able to reflect the true state of the performance of the object.

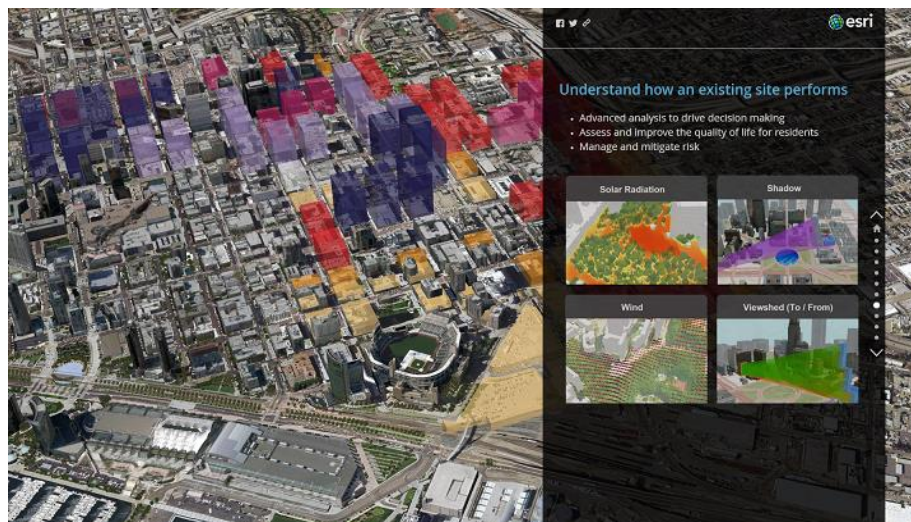


Figure 7. GIS Computer Aided Design

The application of virtual digital technology in the modern landscape design has the following four characteristics:

- **Get the whole picture:** In general, the traditional sense of expression can only pass a part of the landscape information, and is a single scale of the landscape information. However, through the use of virtual digital technology, the designers to express the information accurate and complete performance, and performance breakthrough single, the audience can enjoy the landscape roaming, close contact personally on the scene.
- **Convenience:** The landscape architect in the design process, through the virtual environment, by experience and observation of their own design works, the material, color, light and other factors, this approach can discover the problems in the design, and real-time design works to modify, you can better help the landscape

designer inspiration design, innovation, grasp the design process also can better ensure the smooth completion of the design work.

- **Remote viewing and communication:** In the process of landscape design, landscape designers often need to maintain constant communication with the construction side, the two sides put forward ideas and suggestions on landscape design works. Designer's virtual works can be released to the Internet through the VRML, the construction side can be remote browsing through the network, and remote communication and communication through the virtual way.
- **Public participation:** In the landscape design and construction process, the designer, the construction side, the decision makers and ordinary people play different roles, in order to ensure the successful completion of the landscape design in a timely and effective manner, so they must try to reach a consensus, cooperate effectively. Virtual digital technology can make these units and individuals better accept the idea, understand each stage of landscape design and construction process, and then by the public timely questions and suggestions, participate in decision-making, as the design participants.

4. The Combination of Multimedia Technology and Modern Landscape

In the modern landscape design, the main elements of the landscape architecture, plants, water, pavement, sketch, *etc.*. According to different design requirements and actual site, landscape architects plan and combine all kinds of elements. The use of multimedia technology can enrich the morphological characteristics of different elements and colors, therefore, whether starting from the functional requirements or artistic value demand, multimedia technology is the modern landscape design to build a broader platform. With the help of modern information technology, there are many types of display applications in the architectural design, more colorful and creative. The constant introduction of large-scale software systems to control the precision of the image, there is a further impetus to the construction of innovation.



Figure 8. Square LED Landscape

The multimedia application in practice cannot be separated from all kinds of conventional design materials, which can enhance the use of multimedia technology. However, due to the use of these materials or through the basic photo to display all kinds of images, images and text effects, so if you want to use this means a lot of media technology, must take these materials and landscape elements together, which means in the construction of new exploration means.

- **Lighting and display screen based on LED Technology:** With the appearance of LED, the theory of lighting design also has the advantage of LK. The first is the scene lighting, that is, to design the lamps and lanterns with the demand of the environment. Second is the emotional appeal, that is, people's demand to design lamps. Mood lighting is the starting point of human emotions, from the perspective of people to create an artistic conception like light environment. Mood lighting and scene lighting is different, the mood is dynamic, and can meet the spiritual needs of people lighting, make people feel there is emotional appeal;
- **Interactive multimedia technology:** The sensor used is mainly through the auxiliary induction technology, when certain landscape elements are subjected to external force, combined with LED lighting, as light and shade show out, so the landscape elements interact with lighting effects. In addition, LED lighting can be combined with some of the entity material with light transmission, which can change the texture properties of raw materials.
- **Projected multimedia technology:** At present, in a variety of multimedia tools, projection should be the most common and most convenient, is the use of the building wall as a backdrop, then with the projection, the whole landscape space in the atmosphere will change with the content of projection. In recent years, we have seen the projection design, from the quantity to the combination, both in the rapid development. Through the precise design, software control, graphics synthesis, meditation production image combination, more and more become an important way of expression of landscape information. Now, 3D projection technology has been out of the laboratory, with the decline in technology and the price of the mature, it will bring more powerful holographic image experience and experience.

Multimedia technology used in the modern landscape design, including LED display, LED lighting, projection technology and a variety of sensor based technology, and so on, the landscape of the form is mainly based on these technologies. But in the future landscape design using more advanced multimedia technology, mainly refers to the new computer technology, network communication technology, automatic control technology, image display technology, automatic control technology, large scale integration technology, the use of specific types, including a variety of new laser projection system, lighting system, all kinds of intelligent materials, electronic display system and other interactive multimedia devices, and the use of the multimedia technology landscape will become more diversified. In the urban public landscape space, the use of multimedia devices, can also play a role in the promotion of commercial, cannot be ignored economic benefits. For example, LED large screen display system can publish commercial advertisements or information in real-time, with eye-catching display effect in the mass transfer within the first time, provides advertising effect for businesses, at the same time display at this time to be fully play its advantages of video function and color performance, at the same time to beautify the environment, improve the environment facilities, implementation of the a win-win.



Figure 9. LED Advertising

5. Conclusions

The mass media in the information age, the landscape architect's way of thinking, aesthetic values and living space needs are changing, new values, aesthetics, technology concept and design theories will stimulate and promote the contemporary landscape design to continue to absorb a variety of nutrients to enrich themselves, to create a new landscape space through the multimedia technology is a new study direction. The multimedia technology in the modern landscape is not a blind worship of technology, but technology development is the landscape has its profound social background information as support; but more importantly, integration of multimedia technology and landscape construction is in fact to explore a more positive way to echo the needs of humanity the people demand for landscape space needs, all kinds of information on the needs of the community; to explore a new way of communication between people and people, people and landscape on the basis of multimedia technology, it can provide a new source of inspiration for the contemporary landscape design, and multimedia technology is now being used as such communication means and new media.

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