Research on the Method of Landscape Creation Based on Virtual Reality

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Abstract. The landscape creation process based on the concept of virtual reality, the landscape creation as a dynamic process, from subjective and objective two aspects discusses the evolution history of landscape creation, system creation process model. Based on the concept of process method, this paper summarizes and puts forward the concept and form, rules and operation, output and result oriented process method and related technology import mode. The overall analysis of the whole process of the innovative landscape creation has formed a comprehensive, innovative, holistic and process of the system creation method, to provide overall guidance for the further research of landscape space and form creation method. This paper discusses and analyses the application of VR technology from the aspects of landscape creation and landscape expression. On the one hand, the application of virtual reality technology in landscape creation can promote the diversification of design thinking and creation process, stimulate the multi direction thinking, further emancipate the creative thinking and improve the design quality. On the other hand, the virtual reality technology has created a more powerful expressive force with its vividness, interactivity, authenticity and accuracy, and expanded the content and meaning of the architectural expression. In addition, the author also discusses the landscape design and the essence of landscape in the virtual reality era.

Keywords: Virtual reality; landscape design; process design; digital landscape; form creation

1. Introduction
Because of the digital technology to extend and expand our ability to understand and transform the world, provides a clear and efficient information management and analysis of information channels and global sharing for people gradually evolve to become a technology premise and foundation of the information society and the knowledge economy, the various fields of human production and life, learning, work, entertainment etc. become a "digital survival" mode. Virtual community, electronic commerce, distance education, SOHO and a series of new service concept of knowledge updating and emerge in an endless stream, service than any technological revolution in history are more rapid and profound. At present, digital technology and digital business gradually developed by the traditional one-way communication of digital interactive communication and fusion gradually replaced, communication tends to be more interactive and interesting way. In today's society, the public
individual has a strong expression of their views, and others seeking emotional cognitive consistency, desire, and interactive communication just to make this wish can be realized by the public, accept the information passively to actively seek information according to their own needs, to become master of the master of information, the real implementation of the public accepting the emotional appeal of individuality, not only created a sense of security and get along with people's sense of balance, but also can keep up with the pace of development[1]. The change of this subversive way of information dissemination, the public acceptance also carry out a gradual transition and produced new features appear odd and change and music psychology. The digital generation mode provides a free, open and equal communication environment. Digital art products and services are also rising in geometric series, the vast amount of information as a commodity waiting for the public to choose. From the point of view of commodity economy, whether it is tangible goods or intangible services, the public has no doubt become the real meaning of "commodity users". Therefore, to achieve effective communication too seriously face changes in public demand levels, in the face of the "from the recipient to pass", "from the spectators to the participants, from acceptance to interactive" accept psychological multiple changes. With the development of digital technology and information communication technology, the concept and technology of virtual reality are gradually integrated into people's lives. In fact, virtual reality is not only a new comprehensive information technology, but also a dream that people have been pursuing since ancient times. As a concept and technology of human cognition and the transformation of the world, virtual reality is actually an intermediary system or a system of ability means for human beings to realize the specific activities. Since ancient times, human beings have a desire to explore the unknown world and possessive, this desire will generally appear in the form of a dream, so there is a religion, mythology, poetry, songs and other forms of art. Although the words and symbols is also an important medium of human communication and the carrier, but the performance ability has great limitations, people cannot have more experience and feel personally on the scene, the need for experience in abstract thinking[2]. Therefore, in order to break through the limitations of human experience, start many attempts and efforts, such as the primitive cave paintings, sculpture, painting and other art Terracotta Army, form and perspective painting, painting, painting, illusion panoramic stereogram, film, television and so on, can be understood as lower order virtual reality prototype. Virtual reality technology has obvious advantages in the aspect of system management, comprehensive analysis and result prediction, but its application in landscape creation is not yet mature. The practical application in the design of landscape design is also less, so we need to explore its advantages and connotation. Therefore, it requires us to put forward the method of combining with the traditional landscape design software and the specific application to the actual landscape creation process. Now, virtual reality technology began to emerge in the aspects of architecture, landscape, cultural heritage protection, virtual roaming, landscape reproduction repair new creation and display way opens up a new way for the cultural landscape heritage protection, so that people can show the value and effect from multi angles and the interpretation of historical and cultural landscape architecture. Re description and analysis of artistic value that the landscape and architecture, the virtual concept has been recognized. Landscape design is a cross of natural science and social science based disciplines applied, in recent decades, with the development of science and technology, especially in the promotion of digital technology with computer technology as the core, and the policy landscape creation new method slightly began to sprout and development, theory and the traditional practice caused some impact and even challenge. Virtual reality and other digital technology for landscape design have injected new vitality, not only to expand the new field of landscape creation, but also extend the designer's creative thinking. The digital life style make people the concept of information interaction is increasingly involved in increasing awareness of the landscape requirements are more and more focus and personalized, it is both opportunities and challenges for the landscape design profession[3]. On the one hand, the process and methods of landscape creation due to involvement of new technology, there are different degrees of innovation, but also have some problems, such as heavy display technology and ignore the connotation and essence of landscape, heavy and light experience and feelings rather than cognitive science and rational thinking and so on;
on the other hand, due to the development and transformation of technology the media, landscape designer creative concept also appeared some transform, way of thinking and the mode of information processing is also showing some changes, which are integrated into a more interdisciplinary, humanized and sustainable development concept, outstanding work level is not poor, but there are only in order to cater to the tastes of the public and the lost natural landscape the work of designers, landscape design and virtual reality technology diagram as shown in Figure 1 is based on a typical virtual reality based on the views of landscape design renderings of Figure 2 As shown.

![Figure. 1 Landscape design based on Virtual Reality Technology.](image1)

![Figure. 2 A typical landscape design renderings based on virtual reality.](image2)

The development of a virtual reality between concept and contemporary landscape creation system of computer technology and digital life style influenced contemporary landscape designers creative thinking, also inspired some avant-garde landscape designer's inspiration, so there is a large number of outstanding landscape works reflect the concept of virtual reality technology and features. But everything should one divides into two. evolution and development of technology, often accompanied by blind and follow the application, from the landscape works are also found application and touted one-sided, surface and extreme some of the technology, the lack of comprehensive thinking and system problems. In addition, at the theoretical level, the practice of virtual reality and the combination of philosophy and landscape creation still remain at the operational level, the research on the concept of thinking and the concept of the lack of systematic summary and summary. The concept
of virtual reality based on the comprehensive study of landscape and technology process oriented method into the traditional mode of landscape creation process mainly refers to the designer on the basis of professional knowledge and have creative ideas and habits, combined with the environmental conditions of the site, and the analysis of the needs of users, the formation of the overall concept and design landscape creation, then attached to the concept of sketch, plan, elevation, profile, perspective and other forms of aerial view of the whole process of project output, can be summarized as the basic data collection and input, internal process operation and processing, output three stages, need to establish and adapt to the overall orientation method and technology model[4].

2. Theoretical elaboration and key technical analysis

2.1 Landscape theory

Landscape as a highly complex organic system, covering a wide range of content, including buildings, outdoor devices, and other objects, and sometimes will become the landscape itself. Artificial landscape elements are mainly cultural relics, cultural sites, landscaping, art pieces, trade fairs, construction of buildings, squares, etc. These landscape elements provide abundant materials for creating high quality environment of the city, but to the formation of a unique city landscape, must carry on the system of organization of various landscape elements, and the combination of Feng Shui to form a complete and harmonious landscape system, space form and orderly. Geographers regard landscape as a scientific term, defined as a table of sight, or integrated geographical area, or is known as a type of units, such as the city landscape, grassland landscape, forest landscape and the landscape artist; as the object of expression and reproduction, equivalent to the landscape architects to landscape as background a building or background; landscape ecologists have defined as ecological system and ecological system; tourism landscape resources as a scientist; and the more common is the landscape city beautiful movement and developers who are equivalent to the city street facade, neon lights, in the real estate landscape sketch, and fountain style[5]. A more extensive literature and the definition is "can use a picture to show, in a point of view can view the scene. Landscape architecture has close relationship with architecture and urban planning, municipal engineering design, environmental art and other disciplines, and landscape design concerns the land and human production outside the space problem {this alone is the main difference in architecture and city planning it} in the modern sense is drawn landscape design is the planning and design of physical space, including physical space planning and design of the city and region, and the city planning the main focus of social economy and the city's overall development plan. Although China's urban planning profession is still mainly in the city's physical space planning and design, it is because of the development of China's landscape design lag. Because, only at the same time grasp the natural system and the social system of knowledge, know how to coordinate the relationship between man and nature of the landscape designer, it is possible to design a harmonious relationship between man and city. Landscape design content according to the different starting point is very different, a large area of the river basin governance, the overall urban planning is mostly from the geographical, ecological perspective; theme park design medium scale, street landscape planning and landscape design often from the perspective of small area; city square, greenbelt, and even residential the courtyard is from the perspective of detailed planning and construction; there is no doubt that these projects involve landscape factors. Usually come into contact with the consideration of landscape factors in the planning and design process, usually divided into hard and soft landscape (hardscape) (soft-soaped). According to my understanding of hard landscape refers to artificial facilities, usually including pavement, sculpture, pergola, seating, lighting, garbage and so on; soft landscape refers to artificial vegetation, rivers and other natural landscape such as imitation, fountain, pool, compressive turf, manicured trees etc. From the perspective of urban planning, landscape design goal is to provide a comfortable environment, improve the regional (commercial, cultural, ecological) value. So in the design process should grasp the key factors, put forward the basic ideas. For example: Tianjin clothing street, already fading as a commercial street, in the process of reform should focus on the reconstruction of the street and the
surrounding areas of the business environment, in accordance with the commercial pedestrian street scale, supplementary commercial auxiliary facilities necessary, provide a suitable atmosphere and environment for the garment industry characteristics; problems need to be solved in the design the people should be organized, rest place arrangement, establish commercial atmosphere through soft and hard landscape, and the detail and overall coordination; through to solve these contradictions, we can achieve the purpose of the first (but unfortunately the most difficult in the design itself, but the time and money, the final intention, reflect the design is not clear and the final construction of the ground just resurfaced again, and paint the facade, as far as the performance technique, the domestic patchwork drawings is very common, that is sweeping The photograph is put together on the plan, it is not the real performance[6]. The real performance is not a beautiful picture, but a full expression of the design intent. The performance of the landscape, hand-painted than computer performance in terms of effectiveness, but also on the expression of intentions are more favourable. In brief, the plant landscape type is the external representation of the plant group. For example: the jungle for Dorian linear, isolated trees, shrubs and hedges, by lawn, glasses and so on. Design selection and layout of plant landscape types is such as the jungle, for Dorian, linear isolated trees, shrubs, hedges, ground cover, plant landscape types of lawn and so on instead of individual plants as design elements of space configuration, designers need to consider what parts of the layout of what type of plant landscape as a whole, landscape design schematic diagram shown in Figure 3.

![Figure 3](image-url)

**Figure 3** Schematic diagram of Constructivism Learning Theory.

### 2.2 Virtual Reality Technology

Virtual reality technology is a computer simulation system can create and experience the virtual world, it is the use of computer to generate a simulation environment, a simulation system of 3D dynamic interactive multi-source information fusion, the visual entity behaviour and users immerse in the environment. Virtual reality technology is an important direction of simulation technology; simulation technology is a collection of computer graphics and human-computer interface technology multimedia technology network technology sensing technology is a challenging subject of cross technology and research field. Virtual reality technology (VR) mainly includes simulation environment, perception, natural skills and sensing equipment. The simulation environment is a computer generated, real-time dynamic three-dimensional realistic image. Perception is that the ideal VR should have the perception of all people. In addition to the visual perception generated by computer graphics technology, there is auditory, tactile, force, motion perception, and even smell and taste. Natural skill refers to the rotation
of the head, eyes, gestures, or other human behaviour by the computer processing and participants of the action and adapts the data, and the user input to make real-time response and feedback to the user's facial features respectively [7]. A sensing device is a three-dimensional interactive device. In contrast, the use of computer models to produce graphics is not too difficult. If there are enough accurate models, and enough time, we can generate accurate images of various objects under different lighting conditions, but the key here is real-time. For example, in the flight simulation system, image refresh is very important, and the image quality requirements are very high, coupled with a very complex virtual environment, the problem becomes very difficult. People around the world, due to the different position of the two eyes, the image is slightly different, the image fusion in his mind, the formation of a about the world around the whole scene, the scene includes distance information. Of course, the distance information can also be obtained by other methods, such as the distance of the eye focal length, the size of the object, etc. Binocular stereo vision plays an important role in VR system. The user's two eyes to see the different images are produced separately, displayed on different monitors. Some systems use a single display, but the user wearing special glasses, only one eye to see the odd image, the other eye can only see the even frames between odd and even different frames is produced stereoscopic parallax. Virtual reality headset head motion tracking in computer graphics technology in the traditional view, the change is realized through the mouse or keyboard, visual motion perception system and the users of the system are separated, and the use of head tracking to change the image from the perspective of visual system and motion perception system users can connect. Feel more realistic. Another advantage is that users can not only through the binocular stereo vision to understand the environment, but also through the movement of the head to observe the environment.

In the interaction between the user and the computer, the keyboard and the mouse is the most commonly used tools, but for three-dimensional space, they are not suitable for. Because there are six degrees of freedom in three-dimensional space, it is difficult to find a more intuitive way to map the mouse's plane motion into any movement in the three-dimensional space. Now, there are already a number of devices that can provide six degrees of freedom, such as 3Space digitizer and Space Ball space ball. In addition, some of the best performance of the device is a data glove and data jacket. The artist through the application of VR and AR technology can be used as a natural means of human-computer interaction control works in the form of shape not more immersive art environment and reality to achieve the dream, and gives the process of creating a new meaning. Interactive channels such as interactive system with the property of VR can be set to the audience through multiple sensory and through the device, the artist can use the software and hardware of the smooth cooperation between participants and works to promote communication and feedback, to create a good participation and manoeuvrability; can also carry out motion capture through the video interface, the storage of visitors the behaviour of fragments, in order to maintain awareness of the participants as the basis, a simultaneous screening enhancement effect and re shaping, the processed image; through augmented reality, mixed reality and other forms of digital world and the real world together, the audience can control their actions through text projection, such as data glove can provide force feedback the moving scene, 360 degree rotating sphere space not only strengthened the work of immersion, but also can make the view The audience enters the interior of the work, operates it, observes its process, and even gives the audience the opportunity to participate in the recreation. The greater challenge of virtual reality may be how to interact with the target in the virtual world. Oculus Rift tracks the user's head, but does not track the rest of the body. For example, the player's hand action cannot really simulate. "Input is able to give the user the most important and obvious experience, if you cannot simulate the action, the user will always find his hand in where." Luckey representation. How to enter virtual reality game developers and hardware manufacturers are currently very troubled. Although the Xbox has been able to handle the PC controller, but in practice, there are still some lack of experience. Other control devices, such as Razer Hydra and STEM systems, although they are given a lot of promise, but still cannot simulate the user's hands. There is no clear way until the specific implementation of virtual reality technology in the tracking of gestures. "We all know that something is not right, they've got in the way of our communication with the virtual world."
Luckey said. Oculus seems to be still in the development of their own input devices, but there is not much success, virtual reality technology schematic shown in Figure 4.

![Figure 4](image)

**Figure 4** Schematic diagram of virtual reality technology.

### 2.3 View of virtual reality for Landscape Creation

Based on the real world to the virtual world and the concept of expression, has always been a real change in the real world and the source of artistic creation. With the development of computer and digital transmission technology, the ability and power of human being have been improved in essence. Production and application of virtual reality technology is a result of development of virtual concept, the concept of virtual reality this paper refers simply to the application of virtual reality technology and not the ideas and concepts, but with human generated for the virtual world and the pursuit of exploration concept, virtual creation or virtual assisted composition and related technology the application of the concept of the formation of internalization and ideology. The yearning and pursuit of the illusory world has always existed in the process of the struggle between man and nature and the transformation of the world. When the low level of productivity, the corresponding production technology and production work is relatively backward, virtual ideology often only in the hands of painting, poetry, music and art form of expression symbol class or wander off, while the virtual feeling is often limited by the background knowledge and experience, which also determines the perception and artistic experience the virtual is a few "game". Now, with the development of the information age and the innovation of technology, people can not only through the carrier of information symbols to achieve the kind of "spiritual", can be directly through the immersion experience, highly interactive control, perception to realize communicate and interact directly with the illusory "real world" external equipment, "spiritual" threshold down to a very low, become a part of people's life [8]. Technology development speed and extended range of people cognition of the real world, continue to meet the aesthetic needs of people increasing, completely subverts the cognitive reality's attitude and the way of virtual interactive demands is stronger than ever, because it can bring people inside the "transcending reality, beyond the dreams of the impulse becomes visible, can smell, touch, and sense of the reality show. Facing the change of virtual technology development and experience needs of all walks of life, production and processing, production method and so on to further improve, in order to make the change and adapt to the needs of the social product, the field of landscape creation is no exception. The thought and technology of virtual reality is not the sudden or heaven whim, virtual cognition relies mainly on its origin in the philosophy. As early as ancient Greece began to explore the virtual world, which is the most representative of the Pythagoreans “all is number theory. He broke the milesian school seat all the college physical limitations, from feeling representation of abstract things as the origin of things, the logarithm of imitation, derived from the prototype symbol since thinking beyond the perceptual mode of thinking of abstraction and conceptualization, which can be described as virtual western thoughts of the bud. For landscape creation, under the influence of the wave of diversification, in a more relaxed social and cultural atmosphere, the new landscape form began to
sprout and develop prosperity. The diversity of culture has led to the emergence of a variety of landscape styles, and the diversity of landscape design style reflects the increasingly diversified values. On the contrary, new forms of art bring new cultural ideas. Virtual reality has become a key word in modern society. The emergence of related mature technology has brought people a new philosophy, thinking mode, life style and aesthetic taste. The whole society is in the process of rapid development. With various cultural phenomenon, showing a diversified development trend. This situation is exciting, but also often confused and puzzled. Hyperlink concept deeply affects people's way of thinking, direct communication through nonlinear shortens the distance between people, communication is very easy, far away, but in front of the flow of information showing a non-planar and three-dimensional reticular structure, and no center, no edge. The world has become a "global village", the globalization of human culture communication and resource sharing pace, hand fuzzy region culture difference; on the other hand also cause in the process of communication is different. The level of education, people affected by culture, social experience, social status, occupation, economic and other aspects of the pursuit of ideals are not the same, objectively determines the different attitudes, desire, emotion, mood, even subconscious mental state held their appreciation of the landscape, a landscape or joy, or hate or, resonate, or completely indifferent. Because the audience in an unfamiliar landscape, often by the cultural and psychological structure, expectation effect, vision and psychology. So, if you want to create easy receivers and familiar with the landscape, but also to pay attention to the audience's acceptance psychology research. The audience for the dissemination of information dissemination of the five landscape receiving method, receiving the most intuitive visual, and technology innovation for the traditional people's visual impact is most obvious, people's consciousness and thinking form along with profound changes. With the rapid development of virtual reality and interactive landscape construction technology, landscape design has gradually flourished, changes in this subversive in the audience to carry out a gradual transformation, the acceptance of audience produced a new feature in the role of the "unconscious", as a designer must be fully aware of the importance of audience centered consciousness. Although we should pay more attention to the audience's standard consciousness, but for the audience consciousness we must dialectical analysis, after all everything has two points. The audience as the center is only a manifestation of industry maturity, not to say that it is the focus of different stages, based on virtual reality technology landscape design schematic diagram shown in Figure 5.

![Figure 5](image-url)

**Figure. 5** Schematic diagram of task based teaching method.

3. The method of landscape creation based on virtual reality

3.1 Overview of landscape creation methods
In general, activities with data input to the output of the results can be regarded as processes. A large process can be broken down into a number of small processes, that is, the stage of the process. The process of landscape creation is the transformation of the basic information of the site environment,
social culture, and the designer's experience into the activities of the landscape works. Therefore, the landscape is the result of the process of landscape creation, and the process method is the general way or law of landscape creation. Landscape design is a practical project for creative activities, with the general engineering works have many similarities, it is not only the objective process in the history of landscape construction by social division of labor and engineering industry internal division of the decision, but also by the creative subject under certain social background under the guidance and transcendental conception according to a certain mode of thinking the formation process of subjective creation scheme[9]. From the evolution of landscape creation with the objective background of social historical development, landscape creation has experienced the modern professional designers produced before the industrial era "process of evolution stage, two important development stages and professional designers produce professional design stage. The last century since 60s, with the application of information, digital and virtual reality technology, although each stage of landscape creation are affected to a certain extent, caused the innovation and thinking of practitioners of creation, but not on the basic landscape creation process and main contents of each stage have the basic influence and change. With the development of technology and social division of labor, the process of landscape creation has been completed and developed. So far, the level of technology and social development under the different landscape creation as a project for the production of creative behavior and reality, and other engineering practice mainly through the industrial society before the process of "evolution" and contemporary professional designers after "professional creation" of two stages. Nowadays, the application of modern information transmission, digital, virtual reality technology is changing some stages of the creative process, affecting the development of new models in the process of landscape creation. Therefore, in a sense, the history of the development of landscape architecture is the history of the social division of labor promoted by science and technology and the development of the main industry. The intuitive experience first select an open, stable and Xiangyang flat, and then determine the specific address, thus completing the work site. Then, the ground will be cut into a variety of snow brick, from the basic part of the round up masonry, each layer of a layer, a little shrinkage, and finally the formation of hemispherical dome. After the south into a small window, a ski out of the window, which can reflect the low angle sunlight into the room, and can prevent the snow into the room, finally dug to a dome below the channel in the window, and the dome below dug into the pit, so the "igloo" is built. In the whole construction process, the Inuit directly face the specific material in the ancestral experience and experience from the practice of the completion of the construction process, the igloo ". In the process of construction, the creative part is directly integrated with the construction part. Many similar igloo together, forming the original natural landscape. Before entering the industrial society, the construction of daily necessities and engineering are small scale production in the primitive style and construction reflects the general characteristics of the traditional product design and engineering, which is the industrial society before the main features of the landscape design of small scale of. The western society since the Renaissance, along with the development of painting technology and handicraft industry and Commerce increased, especially in the perspective of the invention, a lot of engineering and technical personnel began to use the drawings and models to study problems in architectural design. In Da Vinci, Blue Nellis and some other architects in the drawing of mechanical and engineering drawings, it is not difficult to see that the drawing of the system drawing has the ability to guide the construction of the project. Prior to the industrial revolution, the drawings were also systematically applied. But when the creation was not called the modern sense of creation ", is just the rehearsal stage of engineering practice and production before. This is mainly based on the work of the designer to define the state. The engineering and product designers are mostly involved in manufacturing and construction process; in addition to solve design problems, they will help solve the construction and manufacturing of all kinds of structures, construction organization, construction and technical problems, until the completion of the construction process. Many of the problems in the initial design did not solve the problem, but also through the construction phase of the construction side of the design solution. Therefore, they are by virtue of ancestral experience and direct reference to the precedent design designer almighty. At the
same time, due to the construction of the evolution of the pre-industrial society through the evolution of long, long time, landscape and architecture industry has formed the characteristics of highly stylized, generally only the image of the painting, building plane and profile control and a few that can construction and manufacturing. Thus, the design is also difficult to be considered as a complete creative process, the whole process requires designers to participate in the construction process. In addition, because the scientific knowledge has not yet been widely used in engineering construction, small handicraft products based on the wound can satisfy the need of production at that time, did not have a clear division of structure designers, and other engineering division in product manufacturing and engineering production division, also has not been separated from the production and construction works have the relative independence. At that time, the landscape design was also included in the scope of the project, and other engineering and product design conditions are basically similar. Compared with the construction and other projects, it is less involved in scientific computing and equipment problems, most of the landscape creation by artists and architects tend to focus on the art to complete it. At this time, many architects are engaged in the construction, but also engaged in landscape design, there is no distinction. In short, no matter from which of the above situation, before entering the modern industrial society in pre-industrial society, the designer is generally involved in the production and construction in the ancestral experience and experience of engineering practice under the guidance of the design and construction of the production side edge and generally involved in project construction. At this time, in the construction of large Royal, religion and government engineering, design and construction drawings appeared very early in the morning, and in the late feudal society development systematically and fully, fully embodies the mental and physical labor division, the creation of independent construction and development, become a relatively independent stage of creation the trend. In the process of the renaissance after production and construction, science and technology have been introduced into the engineering practice, the professional designers have internal division of labor further produce a sense of modern designers may. But because the mechanized production did not come, the application of science and technology in engineering practice is not systematic and adequate, so most of the designer's work is not divorced from production and construction directly, as in the work of designers also experience under the guidance of the builders, rather than the designer, landscape design process of the general process of Figure 6 shows.

![ENTIRE VILLAGE]

**Figure. 6** General flow chart of landscape design process.

### 3.2 The method of creating process based on virtual reality

Under the influence of the concept of virtual reality and the role of technology, the innovation of each stage of the traditional landscape creation can obtain innovative landscape design results. From the modern landscape design and construction of the virtual reality, it is difficult to see the difference
between the results; it is difficult to find the specific methods to form these results. Only from the perspective of the specific process of the landscape architect's creation, we can find out the mode of design innovation and the value of landscape design innovation. Although the actual landscape in the process of creation, the creation process of concrete designer is not completely different, but the key content to a certain stage of the creative process of change, the formation of landscape creation methods and results of innovative is similar. From the general pattern of landscape creation process, landscape designers will change the data naturally or half unconsciously the input stage, the internal operation stage, output stage of the process or landscape creation. Therefore, this section focuses on the basic process of landscape creation, and further discusses the basic mode of landscape design innovation. In the stage of input data, the landscape architect is generally in the many different disciplines, social historical and cultural background, with the creation of complex virtual reality technology in-depth understanding of landscape form based on creation. Complex formation and application of virtual reality technology concept of interdisciplinary and realistic environment often become the designer's background knowledge and change the realistic goal, there is a specific way to change the input stage, also including the influence of the specific background and form of the concept of consciousness under the creative concept of change. The change of the internal operation phase of the creation process is mainly reflected in the change of processing and generating rules. The results of the output changes, mainly embodies the digital technology involved in the creation of a realistic environment [10]. Therefore, in order to change the stage for innovation on the landscape design process, can also be called the concept and form oriented process innovation model, by rules and operation oriented process innovation mode and result oriented and output oriented process innovation mode. In the traditional landscape creation process, in effect a priori knowledge of the structure, landscape designers generally first through the actual project background and the actual social culture, technology and art of problem investigation, gradually formed the initial concept and initial meaning creation like, thinking, operation and evaluation of other stages and then into the design, design output to some achievements. At present, with the cross discipline and other complex problems in landscape design of science and philosophy of science, the virtual reality technology has for the analysis and the ability to deal with complex problems and form, each stage has been gradually used landscape creation, and changing the landscape architect prior knowledge, were formed with complex shape from the complex problems of scientific and philosophical concepts, to environmental background for the input image, the data input stage of the landscape design content for the changes of landscape creation process innovation model object. In this mode, the development of science and technology and philosophy caused morphological changes caused changes in value and application of virtual reality technology have become the landscape design of the background knowledge, and research the process of creation and practice in the combination of designers involved in the data input stage. In the process of creation and form of the concept of innovation model to oriented, prior background knowledge of new concepts and new form in the designer's landscape is mainly caused by the power of innovation, enter the content free form create a virtual reality technology and the cause of the new concept of form creation will often be some designers of landscape creation, finally perfect the landscape creation method to form and concept oriented. In their creations: some will input the original after the formation of a new scheme through the thinking process of the unconscious, to model and sketch the form of performance, then input the model to adjust the formation of computer output scheme; some of the original information input, the thinking process will unconsciously directly combined with computer, by directly combining the design output thinking and computer modelling operation process; there is the information input stage to a new concept and form the input for the prior information, and then through the computer operation in response to environmental conditions, the formation of output program. In the process of innovation, the application of virtual reality technology based on digital technology and information technology is only a tool to assist in the formation of new concepts and new forms. Although, this caused more obvious changes in the landscape design of the input stage of the design process, but the impact on the whole process of innovation landscape change is weak. This change in prior knowledge background input stage
designers as the main content, to change the concept of creation and form is the main direction of the landscape creation process model innovation, is mainly embodied in the creation process of general landscape designer. A European style atrium landscape design SU schematic diagram shown in Figure 7. The application of virtual reality technology and virtual reality caused by the concept has become the important historical and cultural background, not only changed the structure of the landscape design background prior knowledge creation, affects the concept and material handling the data input stage of the creative process, the designer is also changing the formation process of operation mode and creation rules the scheme changes the nature of the content creation process to a certain extent, the creation process has undergone a qualitative change[11]. In the process of changing the internal operation, and because the degree of different landscape designer to change the internal operation methods and rules are different, they cause the landscape creation process change varies.

3.3 The creation method of landscape space based on virtual reality
For a long time, people's cognition of space is based on the combination of point, line and surface based on traditional classical geometry. Under the influence of the virtual reality technology and the concept, the landscape space is no longer confined to the designer and the objective geographical environment, and the boundary of the landscape space is gradually blurred and integrated, and it is changed from static to dynamic. In the contemporary landscape design, the basic functional elements are no longer separate from each other, more is the transformation and integration of each other, the boundaries between each other is no longer clear. On this basis, the design thinking based on the virtual reality of the space through the multi-functional processing to create a clever sense of space, so that the complexity of space, randomness and functional variability of organic integration. Effect of interface on space more directly, and the relationship between the position of the interface and the relative height of the impact on the overall environment of space is large, the change of interface form and limited content will lead directly to the space changes. The traditional landscape design according to the enclosure material deformation degree and the content of different forms are divided into three kinds of interface transition interface, the center is hard and soft interface between the two (also known as the "grey" interface). With the development of the development of network technology and virtual reality, the great change of the traditional landscape space, constitute the two class system of digital cyberspace to enrich people's daily life, and affects people's way of life. The design of the initial environment in the light and shade of the limited position, so that the light can be adjusted with the changes in the atmosphere, and then produce a variety of light and shadow effects, to bring the experience of the season and the visual perception of time. With the experience of the seemingly irregular movement of the position, the image is constantly changing, to create an unexpected visual experience of the experience, causing the experience of the illusion of the illusory dream, so that it produces an infinite landscape. With the development of the technology and the diversity of the media,
the inherent attributes of the interface have changed a lot, and more and more nonphysical and flexible interface concept has been introduced into the landscape creation. From the perspective of painting to virtual reality, the ultimate goal of interface design is to make people "forget" the existence of the interface in the space, and regard it as part of the activities to be arranged. The virtual reality technology and the concept of influence, but also to promote the design concept more specific and feasible. Macross concept of virtual reality view of the original static and hard landscape space in the interface is strain softening and liquidity characteristics, which is mainly manifested in the dynamic transformation of fuzzy partition elements and softening, light and sound and other non-material elements, but also surreal creation based on this for cross. Because of the uncertainty of the interface, the author promotes the exploration of the unknown and changing world. The change of time and space and subversion, make people feel a greater impact. In the space full of experience and interaction, the interface will change with the change of the behavior of the experiencer, resulting in the visual experience of the psychological resonance of the space artistic conception effect. In the traditional sense, the scale of the building space is relatively fixed, and the scale of the landscape space varies from person to person. The size of the spatial scale generally depends on many factors: the area of the landscape and the surrounding area, the use of space, as well as the physical and psychological needs of many subjective and objective factors. The landscape spatial scale can macro, meso and micro three levels to distinguish between: the macro level mainly refers to the city living space, city space refers to the view of his view, and microcosmic refers to individual communication space. In today's society, the virtual space, network technology, multimedia technology, control technology and other information technology for the re definition and division of landscape space, and on the basis of the virtual space. Virtual space and physical space interact with each other. The information network and the network space in the human survival environment are interwoven into a scale, without any infinite domain to the world, in this domain, people's production and accelerating the pace of life, thinking are diversified and personalized development, experience increasing demand. Virtual reality and information technology have broken the traditional way of interpersonal communication, but also changed the people's living conditions, development path and the development of landscape space. As a result, the scale of landscape space has been changed. Some small scale, can only meet a few people feel the space type of use, with the development of society will exit the stage of history, replaced by a large amount of information can contain resources, meet the people space to imagine some of the new large scale open space landscape. Such as large-scale theme parks, playgrounds, natural landscape ecological park, landscape Avenue, Garden Expo Park, high-tech ecological agriculture park, Green Square, etc. In addition, there is a new change cannot be ignored, because of the quickening pace of life, time and space and leisure experience is less, therefore, in the face of this change, young people tend to experience the convenience of the Internet, in the network of the landscape is without any limitation of time and place. Many incarnate into an infinite scale landscape space, fuzzy architecture and landscape diagram as shown in Figure 8.

Figure 8 Schematic diagram of fuzzy architecture and landscape.
4. The method of landscape form creation based on virtual reality

At present, the development and application of technology to promote the development of the society, great changes have taken place in people's ideology, life style tends to be digital, people have become accustomed to a life filled with digital virtual elements, Internet, mobile phone terminal, intelligent sensor technology has been accepted by the people's life and work and integration of the outside world new cognitive style has been gradually formed, the concept of the virtual reality is not strange, things of virtual reality has been basically known form, form the traditional concept and the nature of change in the digital way of life under the background of the superposition of virtual form and integration, but also changed the human spirit the level of role. The comprehensive effect of new changes in external morphology and psychological landscape of the new people, for landscape creation should be established from the new cognitive structure of the new system, in the form of generation and regulation should also introduce the concept and creation of new technology and methods, to adapt to the new changes. Through the guidance of virtual reality, the landscape form of logic, experience and image is to construct a new cognition of the three aspects, also introduces the method of generating chaos, distribution and emergence of three kinds of nonlinear generation methods, are derived from the folding, soften, force three deformation, injected new elements to the landscape form creation. Change from the traditional one-way mode of curing mode for dynamic interaction, experience, circulation, especially under the influence of virtual reality technology and the concept of the people, for the outside world cognitive is further extended in the virtual world, the multivariate perception, and alternate, interactive and object aesthetics, meanwhile, cognition the world reacts to the landscape and landscape creation, which also produces multiple changes. Therefore, a deeper understanding of the new cognitive construction of landscape patterns will help to better understand and accept the new form of the landscape, so as to further complement and improve the traditional methods of landscape patterns. In the light of the new changes of the current landscape pattern and the creation mode, the cognition has changed greatly in three aspects: logic, experience and image. Logic is a kind of abstract thinking pattern in the process of human cognition, and it is a habit of thinking about analysing things [12]. The new logic construction of landscape morphology does not mean that the form must be logical, but to explore a kind of logical thinking and reasoning from the start, select the appropriate form of creative thinking, mode and method, this is the ideological basis of form creation. The construction of the form logic under the influence of the virtual reality concept includes three kinds of thinking logic, which are the formation and optimization of the form, the function of the form and the complementary of the pattern. The process form preferably by initial conditions, defined by the generation algorithm and the rules of the form of interpretation, finally obtains the optimized shape more fit; form function reasoning mainly refers to the experience and data of the creators of the feedback mechanism, the numerical on functional logic and make analysis, the final shape and function of the optimization process. Morphological pattern complementarity refers to the choice of the appropriate combination of patterns according to the actual needs, in order to adapt to the overall requirements of the space environment and experience. The selection process often involves many factors, many aspects such as the creation of the target, the role of the landscape and function, environment and experience more generally, in the process of selection, in the face of some optional things, and can quickly make optimization. The best logic is how to make the most suitable and the best choice in the shortest time. However, if one of the more subjective factors, analysis and lack of objective quantitative indicators, so in the selection, selection will be shilly-shally, perhaps will lead to wrong selection objectively, but also caused by the uncertainty of the subjective. Virtual reality view selection under the logic is based on the experience of design thinking basis, through the target more clear subjective experience and objective evaluation of the quantitative, comprehensive function in technical analysis and design concept of the selected relatively suitable scheme. Optimization of logical form is a kind of application logic, permeated with the bottom-up process concept, form generation process in dynamic changes in the variables will close, the formation of functional traits similar to the relevance of different forms of adjustable. However, because the landscape is a complex system, because of the different point of view, the concept and scope of which is different, therefore,
the application of parametric technology in the landscape and monomer for the parametric sketch, the whole landscape also need to continue in-depth and practical introduction. Nevertheless, its technical ideas and logic in landscape creation is indeed for reference and reference. The core logic preferred lies in scientific quantitative analysis and subjective experience of the creative thinking, and the parametric design can be two organic and fully integrated generation and thinking process can also be visualized graphic processing, morphology and landscape design diagram as shown in Figure 9.

![Figure 9](image-url)

**Figure. 9** Schematic diagram of landscape design.

5. Conclusion

The application of virtual reality technology in various fields provides the technical support for the improvement of virtual reality. Virtual reality based on the development of virtual reality technology and application caused by the concept as the core, based on system construction, explains and summarizes the main connotation of the landscape, the phenomenon under the complex virtual reality view, proposed process oriented method and technology creation into the model, under the guidance of this in-depth analysis and put forward the specific method of space and form creation and the new aesthetic and cognitive meaning, constitute a relatively complete system of creation method. The concept of virtual reality just because the development of virtual reality technology and the current generation is not, but has been accompanied by human beings for the unknown world of longing, yearning and pursuit, and continuous development and improvement, is a virtual creation, virtual assistant and related application technology etc. the complexity of concept and internalize the ideology. Virtual reality oriented landscape creation concept mainly involves three aspects of the operation paradigm, derived from three related thinking: the technical level, the concept of virtual reality can be regarded as the way of constructing digital technology, is the awareness and perception technology extension demands, including human-computer interaction technology control concept, technology media interface view and multiple ablation technology the fusion of integrated view; the artistic level, it affects space-time and constructs the people the traditional view and view of matter, reverse extended the scope for the understanding of the world; the aesthetic level, it subverts the traditional relationship between subjective and objective, and formed a benign interaction, derived from the scene generation concept, the actual perception of multiple alternate mood cognition and the interactions between the aesthetic experience of world view, given the new connotation of construction.

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