Virtual Nature Art Creation in Cities Simulacre and Simulation for New Media Natural Artistic Design

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Abstract. This paper focuses on the representation of the natural environment through new media art. Technology has made it ordinary to create works of art that depict nature. Simulacre and simulation are the two categories into which the article divides the production of new media art in the natural world. Through using the virtual nature created by new media art, we study the relationship between humans and the actual natural world by starting with the relationship between nature and humans.

Keywords: Virtual nature · New media art · Urban natural design · Simulacre and simulation

1 Introduction

Imitating natural forms has been an important way of creating art in human societies since ancient times. Digital and virtual reality technologies, as well as other developing technologies, are frequently used in the field of art as a result of the widespread use of the internet and the growth of science and technology. One of the means of artistic expression is now the technological replication of nature. Throughout one's life, one must maintain and take into account the interaction between nature and humans. People often intuitively crave for and pursue the natural environment in today's urban life, yet they frequently ignore the numerous barriers. There is a lack of creativity in individuals 's perceptions of the natural world, that new media art can hop in in aiding. Instead of telling people what to do, new media art that simulates natural habitats and is presented in urban areas connects your senses, body, and mind to the outside world. [1].

2 Virtual Natural Art

Virtual nature art is the artistic presentation of natural scenes through the technological means of new media. This paper focuses solely on the conditions in which natural elements like water, soil, territory, and climate develop. An interdisciplinary research

project called Virtual Nature creates interactive installations and immersive experiences for art installations by using the philosophy of nature-inspired systems. [2] Exploring creative virtual nature art systems to realise the potential of art uses interaction and immersion as important components. [3] The design of a skilfully displayed work of virtual nature art obviously stimulates the viewer's senses and mind, evoking deep feelings towards the natural world in individuals who live in urban areas far from it.

Assume that it is part of human nature to admire, worship, and be in awe of nature. In that situation, the imitation of nature in contemporary artistic creativity is not only a continuation of the veneration and study of nature that dates back to antiquity, but also includes a hint of affection and longing. In contemporary art, nature is constructed using new technology tools and virtual objects to mimic social environment's impact and as a form of modern creativity. Its illustration is rather established based on the artist's perception on nature, instead of the audience's. Aside from its beauty and creativity, such an artwork carries a certain level of social feeling, which allows the viewer to empathise with the piece and move the viewer's heart.

However, the exhibition of digital nature art in urban settings also acts as a wake-up call and a reminder. City dwellers are still mostly cut off from the natural world. Since they lack the ability to relate to actual natural events that they haven't personally experienced, they become overwhelmed when faced with natural difficulties. In order to instil a sense of appreciation for nature in people's hearts, virtual nature art can be useful in this situation. Eliasson and the Japanese TeamLab art team are two names that must be brought up when discussing virtual nature artworks. Their numerous new media artworks frequently incorporate the expression of nature. This typical occurrence incorporates the concept of Eliasson's art, allowing viewers to contemplate the connections between nature, civilisation, and humanity across all cultures. TeamLab's works are mostly interactive new media installations with a large number of natural elements, often projected digitally onto the site to create an immersive virtual space. The images are not projected as recorded videos but are portrayed using interactive technology that is constantly changed in real-time by computer programmes according to the movements of the viewer. [4].

3   Simulacre and Simulation

Symbolic Exchange and Death (L'Echange symbolique et la death), which Baudrillard published in the middle of the 1970s, remained heavily influenced by Saussure at the time, but it prompted him to expand on this topic in the 1980s. An extensive and ground-breaking critique of the mass media and the latest digital technologies followed. Three categories of simulacra (trois ordres) [5]—the first being contrefaçon, the second being production, and the third being simulacra—were mentioned by Baudrillard in the introduction to his book Symbolic Exchange and Death. These simulacra are the fundamental methods of realising the hyperreal. [6].

The theory of hyperreality's departure aims to take postmodern media and consumer culture into account. In which its replicas of reality have supplanted their originals and its visuals have surpassed physical reality in realness. These media representations are overproduced, and they have brought civilisation into a new era of third order simulation.

A third-order simulation is one in which indicators just conceal the lack of reality rather than representing it. The loud family, a 1971 American variety TV show, is one real-life example of hyperreality. Like other variety shows across time, Cameras are installed around the set towards the American family casts, claiming that they behave inconspicuously while being observed. It is contended that as viewers, the audience begins to perceive them not as fictional characters but as reality, leading the perception of this is a real-life demonstration. When expressing the natural environment through new media art, as mentioned above, the real natural environment is symbolised and then recreated with new media technology to create a virtual reality scene, which is not a super-real scene. This phenomenon can be found in several virtual nature artworks.

3.1 For Artistic Design

Simulating a process or system's behaviour over time is known as simulation. [7] In the process of creating virtual nature art, real-world natural elements or environments are first extracted. Next, technology is used to replicate natural occurrences like rain, fog, fire, climate, and other phenomena. Finally, through artistic redesign and creation, these phenomena are transformed into the form the artist wishes to express, and a virtual reality of nature is presented to the viewer in an immersive and interactive restoration beyond the real. This is how the majority of virtual nature artworks are produced, as illustrated in the examples below.

3.1.1 Simulation

The simulacre of virtual nature art simulation is embodied in the symbolisation of real natural environments, which are then recreated in a hyper-real realisation through new media art design. Simulation, Baudrillard claims, is the current stage of the simulacrum: all is composed of references with no referents, a hyperreality. [5] (Fig. 1).

Japanese artist Fujiko Nakaya debuted her first fog sculpture at the Expo' 70 world's fair in Osaka, Japan. The Pepsi Pavilion was surrounded by artificial fog as part of this temporary art project. Experiments in Art and Technology (E.A.T.), a group devoted to supporting and promoting collaborations between engineers and artists, provided the technology used to create that first fog sculpture. She uses technology to replicate actual fog in her works of art so that the visitor may see the real aspects of nature. The first person to use fog as a medium for sculpture was Fujiko Nakaya. This is not to argue that she manipulates the medium to suit her own ideas; rather, her method involves a quiet partnership with time, water, atmosphere, air currents, and other natural elements. Her ephemeral and experiential fog sculptures share some similarities with conceptual and land art but yet mark a significant turning point in the development of both art and technology.

Her artistic representation of the virtual nature is an anthropomorphic figure that uses science and technology to symbolise and represent natural components. By pushing the limits of conventional art installations, they enable a deeper interaction between viewers and the work, a more sensory-rich encounter with nature through sight and touch, and fresh perspectives on and connections to the natural world.

Fig. 1. Fog Sculpture (1970) by Fujiko Nakaya at EXPO '70, Osaka

3.1.2 Immersive

The immersive nature of virtual nature art allows for a more in-depth experience of virtual nature and gives viewers the chance to see another "actual" natural scene that will make an impression. The theory of immersion was first put forth by Mihaly Csikszentmihalyi in 1975. According to him, immersion is defined as "a mental sense of full-body attention, a process of development, change, and transition from one state of mind to another, characterised by a reduction in one's emotional distance from the concrete object on display and, consequently, an increase in emotional involvement in the current situation. [8] In order to extend the human body's natural senses of sight, hearing, and touch as well as to simulate the environment's temperature, humidity, and physical state, new media art encourages viewers to come in close contact with the artwork through various electronic sensory components. This close contact creates a novel overall impact on the piece. After the encounter, individuals find some relief or enlightenment in their bodies and minds, which is another appeal of art (Fig. 2).

People can have an immersive experience with new media art by simulating and replicating actual nature in all of its facets.

The Weather Project, a new media artwork by artist Olafur Eliasson, was displayed in 2003 at the Tate Modern in the UK. It simulates the natural environment by using hundreds of yellow light sources to produce a foggy effect inside the gallery and a virtual sunset view of London outdoors. This natural art landscape was shown in a facility that was essentially cut off from the outside world in a breathtaking live performance. The piece depicted what a sunset would appear to be; it expressed the natural scene through

Fig. 2. The Weather Project (2003) by Olafur Eliasson at Tate Modern, London

Fig. 3. Rain Room (2012) by rAndom International

the artist's recreation; it used virtual nature to communicate actual nature; and it gave viewers a surreal simulation of nature. As many visitors sprawl out on the ground to take in the sunset, they integrate themselves into the work, forging a connection with nature while also taking pleasure in this artificial recreation of nature. [9] Through The Weather Project, Eliasson aimed to bring a piece of London into the museum space and hoped that the experience would allow the audience to return the artwork to the city (Fig. 3).

Fig. 4. Waterlicht (2018) by Studio Roosegaarde

The Rain Room (2012) by Random International is an immersive space with continuously falling water that pauses once a human body is detected. Visitors get the chance to experience something that would otherwise seem impossible: the capacity to regulate rain. The reprieve from daily life and chance for sensory contemplation within a supportive relationship are provided by Rain Room. The construction of simulated rain is still adored and accepted because rain is a meteorological condition that frequently occurs in the natural environment. Through an art installation, people can encounter rain in a way that differs from how it occurs in reality. People can experience the romanticism of walking in the rain without getting wet by using sensors. Additionally, it serves as a means of getting people to reflect on the relationship between actual heat and people by getting them to consider the rain and other natural components.

A dreamy scene about the beauty and poetry of water, WATERLICHT. WATERLICHT simulates a flood to show how high the water could rise. The purpose of WATERLICHT is to raise awareness of the value of water innovation and the effects of climate change. LEDs and lenses work together in WATERLICHT to generate a virtual flood that changes constantly and is affected by the wind and rain. The WATERLICHT podcast features tales about water's effects and potential. This piece of art uses the natural scenario of rising sea levels to illustrate the problem we are currently experiencing. Humans are affected by many other natural catastrophes, but because they are not typically exposed to them, people do not focus on or think much about them. The WATERLICHT enable users to fully immerse themselves in a digital recreation of the natural world. This is an illustration of how virtual nature artworks link people to the natural world. These pieces of art demonstrate how immersive new media art can bring to life actual natural world settings. When compared to the genuine thing, people occasionally prefer virtual representations of nature artwork. They can, however, unwind, appreciate, and experience works of art, think more deeply about nature, and become attracted by it (Fig. 4).

The most crucial aspect of immersive art is that it can transform from the static, remote city aesthetic mode of the past to a dynamic, zero-distance immersive aesthetic experience by removing the distance between the viewer and the work in traditional art, both in terms of psychological distance and physical space. Both reality and illusion have a stronger emotional component.

Fig. 5. Universe of Water Particles on a Sacred Rock (2017) by teamLab

3.1.3 Interactive

Virtual nature art can inspire an emotional exchange between humans and nature, fostering a closer relationship between them. The visitor finally turns into a participant because the complete presentation of the artwork necessitates the designer to create the artwork and wait for the audience to gradually improve the entire piece. The participants can now enjoy themselves and look for the artistic worth and meaning of the entire experience thanks to the change from participation to ownership. The author provides the medium a unique aesthetic vocabulary and use it as a means of communicating concepts to the audience. TeamLab specialises in building digital natural settings that explore fresh connections between people and the environment. The lines between the work and the spectator are blurred by new media interactive technology, enabling the viewer to actively participate in the work's situation and more fully comprehend and interact with the author's representation of the natural world. Mifuneyama Rakuen Park, which covers 500,000 square metres, was established in 1845 at the close of the Edo era. The Digitized Nature project by TeamLab investigates the artistic potential of nature. The idea behind the project is that nature can be transformed into art without being harmed by digital-based non-material technology. The artworks examine how these forms' very existence might be used to forge a space where we can transcend the line dividing our perception of time's continuity and feel life's incredibly lengthy continuation. Individuals can experiment with expressing this endless continuous life even today and continue to amass meaning in this location by using these existences that embody lengthy spans of time in their current state (Fig. 5).

In 2017, the universe of water particles on a sacred object is created. This work of art makes use of a real large rock. Water was simulated to fall onto the gigantic rock, which had dimensions of 3 m in height and 4.5 m in breadth, and the movement of that water on the rock's form formed the waterfall. A little shrine is surrounded by a group of boulders that are arranged in an almost mystical way next to the large rock. The interaction between the water's many water particles is estimated and expressed as a continuum. The line is drawn according to the behaviour of the water particles. The

Fig. 6. Massless Clouds Between Sculpture and Life (2020) by teamLab

cumulation of lines that represent the waterfall are then "flattened" in line with what TeamLab considers to be ultrasubjective space (Fig. 6).

Floating Clouds A participatory installation is called Between Sculpture and Life. Like life, an order of energy is formed in the space of the artwork. A vast white mass emerges and rises. This could be viewed as a visualisation of an energy or order. The sculpture, a huge white mass, floats between the floor and the ceiling of the room, its form shifting endlessly as if it were above the concept of mass. People can completely submerge their bodies in this floating sculpture because there is no clear distinction between it, the surrounding environment, and the viewer's body. The sculpture naturally fixes itself like a living creature even when people push through it and break it. But just like living creatures, when a sculpture is damaged beyond what can be repaired, it is unable to restore itself and crumbles. It is impossible for anyone to push or move this floating sculpture through the air. The cloud will break if they blow the wind about, and the viewers' would come to understand that this sculpture cannot be moved by a simple gesture.Moving freely and establishing links and relationships with nature, individuals comprehend and perceive the environment through their body. The body therefore has its own sense of time. Different thoughts can affect one another and occasionally merge together in the mind since the lines separating them are blurry. Virtual artworks by TeamLab are made up of interactive environments where individuals can interact. They can use real locations to produce new media art or display virtual ones in space with actual ones. People can picture nature and develop a greater sense of concern for it through this strategy.

4   Conclusions

As urbanisation accelerates and modern urban life takes place, people need more spaces to relieve stress and relax, and a way to balance nature and society emerges. In the traditional pursuit of nature, individuals don't give much thought to whether or not their

actions hurt the environment. People may find a new way to appreciate nature through virtual nature art. Nature used to be too far away for us to even perceive its power. Virtual nature, as it is shown in new media art, is a recreation of genuine nature that encourages contemplation and respect for the natural world. The future of virtual nature art will provide people with more natural landscapes, such as climate, natural disasters, natural ecosystems, etc., similar to the art in the article. People will be able to connect with nature more deeply as a result of it.

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