

A Case Study on Morten Lasskogen's Cloud Series - Based on 3ds Max and Unreal Engine Technology -

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Abstract

Digital art creation has become an indispensable part of today's society, but traditional digital art production methods have been difficult to meet the growing creative needs of artists. Therefore, this study takes the cloud series works of artist Morten Lasskogen as an example and explores the application value of 3D Max and Unreal Engine in digital art created by analyzing the lighting effects in the works of art. This research aims to form reference materials through actual case analysis and provide artists with more efficient ideas for digital art creation.

Keywords: *Unreal Engine, 3ds Max, Real-time Rendering, Digital Art, Morten Lasskogen, Efficient Production*

1. Introduction

In the digital age, digital art works are getting more and more attention and love from people. From the earliest computer painting to the current digital media art, digital art works have become an important part of today's art field with their unique visual effects and forms of expression. The creation of digital art works requires the help of various digital software tools, among which Unreal Engine and 3ds Max are the two most widely used tools in the field of digital art creation, which are of extremely high value and importance. Unreal Engine is a powerful real-time rendering engine. With its excellent rendering effects and real-time editing functions, it has been widely used in game development, film and television production and other fields. 3ds Max is a comprehensive three-dimensional modeling, animation and rendering software, which can meet the diverse needs of digital art creators. Unreal Engine and 3ds Max are two extremely important tools in the field of digital art creation, and their application research in the field of digital art creation has attracted much

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attention. Therefore, this article aims to deeply explore the research on the application of Unreal Engine and 3ds Max in the field of digital art creation, so as to provide digital art creators with more comprehensive and in-depth digital tool selection and creative direction.

2. Theoretical Background

2.1 Changes in the way authors create

With the widespread use of Unreal Engine and 3D modeling software, the way digital artwork is created has undergone major changes. In the past, digital art works were mainly presented in the form of static pictures, but now digital artists can use various media and technologies such as virtual scenes and interactive installations to make their works into dynamic and interactive works of art. This transformation enables digital art creators to express their creativity and opinions more freely, and at the same time provides audiences with more colorful visual and experiential feelings. The real-time rendering technology of Unreal Engine and 3D modeling software provides powerful support for the dynamics of digital artworks. Through real-time rendering technology, digital artists can present the light and shadow, material, animation and other elements in the virtual scene in front of the audience in real time, which greatly improves the expressiveness and interactivity of digital art works.

2.2 Renderer Application Analysis

Before the emergence of Unreal Engine, there were many kinds of renderers used in the field of digital art, mainly including the following:

Table 1. Renderer Classification Chart

Software	Key Features	Applications
Mental Ray	Ray-tracing renderer providing high-quality rendering effects.	Film, animation, visual effects.
V-Ray	Powerful rendering capabilities with flexible parameter settings.	Film production, advertising, architectural visualization, etc.
Arnold	High-quality renderer specialized in rendering realism and details.	Film, animation, visual effects.
Render Man	Advanced rasterization renderer used for generating high-quality rendering effects in film and animation.	Film, animation, visual effects.

These renderers were all state-of-the-art and high-quality rendering at the time of their introduction, but with the advent of Unreal Engine, workflows and techniques in the digital art world have changed a lot. Now Unreal Engine has become one of the most popular renderers in the field of digital art, and its rendering effects and functions have been continuously improved and improved.

Real-time rendering capability. Unreal Engine is famous for its powerful real-time rendering capability, which can present the lighting, materials and special effects in the scene in real time, so that artists can see the effect instantly. Compared with traditional offline rendering, real-time rendering greatly improves the efficiency of workflow and accelerates the creative process.

High-quality graphics. Unreal Engine delivers exceptional expressiveness and realism in graphics rendering. It supports functions such as advanced lighting model, physical material simulation and particle system, which can generate high-quality, realistic images and visual effects, making digital artworks more immersive and expressive.

Powerful tool set. Unreal Engine provides a rich tool set, including scene editor, material editor, and animation editor, providing artists with a comprehensive and flexible creative environment. These tools give artists precise control over the organization of scenes, the creation and editing of models, the adjustment of materials, and more, resulting in more detailed and personalized artistic creation.

Real-time interaction and iteration. Unreal Engine's real-time rendering and interactivity enable artists to adjust scenes, camera angles, lighting effects, etc. in real time, quickly iterating and experimenting with different creative solutions. This instant feedback dramatically speeds up creation and enables artists to better explore and develop ideas.

3. Analysis of Art Works

The artworks of *Morten Lasskogen* naturally dominate. Artists complete the creation of works by depicting nature and real objects. Whether it's plants, water, or clouds, the artist brings life to the things he sees every day, thus forming a unique style of artistic creation. The series of works with the theme of "cloud" is the most representative work of *Morten Lasskogen*. This series of works has diversified expressions from multiple angles such as lighting and scenes. Whether it is the clouds that can be seen when you open the door, the clouds that bathe in the sun indoors, or the clouds that lie in front of the window and look into the distance, they all express abstract things concretely, and then convey the artist's inner emotions.

Therefore, this study takes light as the starting point, divides the series of works into natural light effects and artificial light effects, and conducts a more in-depth analysis and comparison.

3.1 Natural Light Analysis

When using natural light, the lighting effect is more real and natural. Natural light usually refers to light from the sun or the sky, which is affected by natural factors such as the atmosphere and clouds, so it can present more delicate and realistic light and shadow effects. This is because natural light is calculated and simulated based on the principles of reflection and refraction of light sources and objects in the real world, so it can more accurately reproduce the lighting conditions in the real world. Digital artwork that uses natural light is often more realistic and natural, because they don't use artificial light sources to create lighting effects, but simulate the process of natural lighting. For example, in an outdoor scene, the direction, intensity, and color of natural light are affected by factors such as weather, time of day, and season. By using natural light, digital artists can better simulate these factors and make the work more realistic.

The use of natural light can also improve the efficiency of digital artwork. In some scenes, the calculation of natural light can be accelerated by the pre-processing function of the rendering engine, thereby speeding up the entire creative process. Additionally, natural light typically requires less adjustment and optimization than

artificial lighting, which saves digital artists time and effort.



Figure 1. Natural Light Contents - Indoor

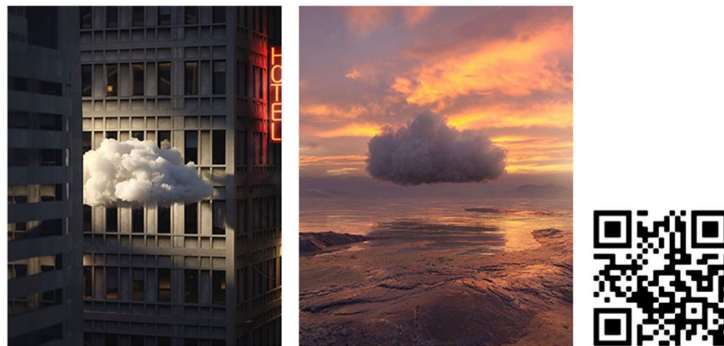


Figure 2. Natural Light Contents - Outdoor

The outdoor contents have undergone significant changes in terms of their scenes, transitioning from indoor to outdoor spaces. The first piece portrays a “cloud” emerging amidst city skyscrapers and utilizes a diminished natural light effect, creating a tense and oppressive atmosphere that expresses the competition and challenges present in workplaces and society. The second piece creates a more expansive natural setting, using warm lighting to shape the natural landscape. The juxtaposition of the towering urban scenery and the natural scenes highlights distinct styles, offering *Morten Lasskogen* a new means of expression free from the constraints of traditional norms and limitations, resulting in the creation of highly imaginative works.

3.2 Artificial Light Analysis

Unlike the previous set of artworks, this new series expresses the abstraction of concrete objects, such as using “clouds” as lighting fixtures in rooms or showcasing them as prized exhibits in galleries. These artworks also share a common theme of being created within enclosed spaces. The focus of this series lies in the shift of thinking patterns and the utilization of inspiration.

When using artificial lighting in artworks, artists have precise control over the position, color, intensity, and projection of each light source in the scene. This allows artists to create unique atmospheres and emotions, unrestricted by natural light. The use of artificial lighting can also emphasize specific areas or elements that the artist wants to highlight, guiding the viewer's gaze more effectively.



Figure 3. Artificial Light Contents

Furthermore, the use of artificial lighting can help artists create special effects such as projections, shadows, and reflections. These effects enhance the realism and visual appeal of the scene, making digital artworks more vivid and captivating. Using artificial lighting in Unreal Engine is a powerful tool in the creation of digital artworks, enabling artists to craft distinctive visual effects and emotional experiences, enhancing the expressiveness and allure of the digital artworks.

4. Discussion

In the development and production of scenes, Unreal Engine provides real-time preview of scene effects, eliminating the need to wait for rendering time. This allows artists to see the changes and effects of the scene in a timely manner during the creative process. Furthermore, it supports custom scripts and plugins, enabling customization and secondary development according to individual needs.

For scenes with a large number of models, it is possible to use 3ds Max to create complex models. While Unreal Engine is a powerful game engine, it may not excel in modeling compared to 3ds Max. By combining these two software tools, one can use 3ds Max to create intricate models, import the 3ds Max files into Unreal Engine to set up the skybox and environmental lighting, and then render the virtual scene in real-time. This integration greatly enhances the efficiency of creating digital artworks.

From a creative perspective, this approach breaks free from environmental limitations. In traditional digital art creation, if one wishes to express the theme of clouds, a photographer would have to wait for suitable environmental conditions, including weather and lighting, which can restrict the artistic possibilities. On the other hand, expressing such artwork through painting may not achieve the desired clarity and strong realism. The combination of Unreal Engine and 3ds Max transcends spatial and temporal constraints. *Morten Lasskogen*, using 3ds Max's modeling software, creates highly realistic spatial models, allowing doors, windows, and other elements to be designed according to personal vision. This approach saves time spent searching for physical locations and grants artists complete control over the creative process. They can freely create and combine various shapes, colors, and textures, enabling more complex and intricate designs that align with their imagination and artistic intent. Moreover, highly realistic objects and scenes can be created, with accurate representation of details, textures, and lighting, enhancing the realism of digital artworks.

Additionally, in terms of post-production editing, traditional art forms like photography and painting are difficult to modify after creation. In comparison, digital artists can make changes and adjustments to their models and scenes at any time to achieve better results. Unreal Engine's advantages lie in its control over

environmental lighting and real-time rendering. Within Unreal Engine, *Morten Lasskogen* can precisely control the direction, intensity, and color of lighting in the scene, achieving optimal visual effects. By simulating real-world lighting, the artist can quickly test the effects of different light sources, eliminating the tedious process of manual light adjustments and improving production efficiency. This enables the realization of more creativity and diverse expressive techniques.

5. Conclusion

In this study, we have explored the applications of Unreal Engine and 3ds Max in digital art creation. Our findings demonstrate that their utilization significantly enhances the quality and efficiency of digital art pieces while expanding the possibilities of digital art creation. Specifically, 3ds Max excels in model design and scene construction, thanks to its flexible and efficient modeling and material rendering functionalities, which effectively meet the diverse requirements of digital artworks. On the other hand, Unreal Engine offers powerful real-time rendering and interactive capabilities, enabling digital art pieces to present more realistic and dynamic scenes.

In conclusion, the implications of employing Unreal Engine and 3ds Max in digital art creation are substantial from both practical and academic perspectives. Practically, these software applications provide digital artists with a broader creative space and novel avenues for expression. The integration of Unreal Engine and 3ds Max enables the creation of high-quality and visually captivating digital art pieces, thus enhancing the overall quality and efficiency of the artistic process.

Furthermore, from an academic standpoint, the applications of Unreal Engine and 3ds Max contribute to the advancement of artistic techniques and methodologies. They offer researchers and scholars innovative platforms for exploration and experimentation, facilitating the development of new artistic approaches and pushing the boundaries of digital art.

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