

3D or not 3D- Why Experiments in 3D Animation Will Become a Future Trend?

Abstract: This article critiques the increasingly formulaic trend in mainstream 3D animation, a trend that has been deeply influenced by commercial logic and the abuse of intellectual property rights, especially evident in the works of major animation companies. Although these patterns once guaranteed box office success, they now show signs of creative fatigue. The success of *Flow* at the 97th Academy Awards, however, indicates that 3D animation still holds strong and untapped artistic potential.

The author contrasts the experimental roots of 3D animation with those of 2D animation, noting that 3D animation developed after the principles of animation were established, reducing the need for formal experimentation. High technical barriers, production costs, and team dependencies further limit the artistic risks of 3D animation, reinforcing commercial constraints.

This article proposes several innovative paths: current ones include adopting cinematic cinematography and narrative logic, integrating digital art and abstract visual techniques, and combining 3D and 2D methods, as seen in *Spider-Man: Into the Spider-Verse*. In the long term, open-source tools, modular assets, and decentralized production will reduce the production costs of 3D animation and empower individual creators, enabling 3D animation to move towards richer experimental creation, greater artistic diversity, and sustainable development.

Key Words: 3D Animation; Animation Industry; Experimental Art

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Introduction

When we talk about 3D animation, the first thing that comes to mind is a commercial, large-scale, Hollywood-style script paired with brilliant character animation performances. This is a beautiful model, but it is almost all of the current 3D animation. In the past, these two points could ensure the box office success of 3D animation, but in recent years, they have shown signs of fatigue. When we look at Pixar's concept designs and storyboards (Amid and John, 2011), we enter a beautiful world that has not been successfully replicated by the 3D animation model. Repeating the same model has turned 3D animation into a tiresome formula. Disney and Pixar no longer launch new series but instead produce sequels to their previously successful animated films. IP, rather than content, has become the main source of income for the current 3D animation industry. At the 97th Academy Awards, *Flow* won the Best Animated Feature Film award and was nominated for Best International Feature Film (Wikipedia, 2024). This animation did not rely on a large animation company; instead, it came from a small animation studio in Latvia, and its production quality was slightly rough. However, it stood out with its refreshing artistic quality. This shows that 3D animation is not limited to formulaic works, and its potential is yet to be fully explored.

Literature Review

Compared to 2D animation, experiments in 3D animation are rarely mentioned. From

the perspective of world animation history, 2D animation originated from the research of static frame special effects in films by artists in the late 19th century. The first static frame animated character appeared in the film *Matches: An Appeal* (IMDb, 1899) by Arthur Melbourne Cooper from the UK in 1899. The research on static frame special effects included the drawing of static frame characters and abstract paintings on film, and these two fields later evolved into character animation and abstract animation (Stephen, 2011). The birth of 2D animation and its experimental nature cannot be separated. However, 3D animation was born when the principles and techniques of 2D animation were already mature, allowing it to avoid the exploration of animation forms and directly apply existing experience. Experimental abstract 2D animation usually employs the principles of plane composition, which was a challenge for early 3D graphics technology to achieve.

Reason in 3D Animation Industry

From a technical perspective, a three-minute 2D animation can be completed by one person within a few months, requiring only basic drawing knowledge and animation theory. To complete a 3D animation of the same quality, the producer needs to master different software knowledge related to modeling, texturing, animation, special effects, and rendering, especially the software in the special effects and rendering fields, which have extremely high learning costs (Don, 2008). Even though there are numerous online tutorials, it is difficult to become a 3D generalist. Therefore, 3D

animation often requires the collaboration of experts from multiple fields, resulting in higher average production costs and longer collaboration periods compared to 2D animation. The production team has to carefully consider the cost-benefit ratio of 3D animation when initiating a project, which in turn makes the artistic expression of 3D animation more constrained by commercial factors. Take director Tim Burton as an example. Despite his talent in art and animation, Disney chose to limit his control over the works and fired him as a character designer until his art was repeatedly proven feasible by the market. Only then did Disney resume its cooperation with him to produce *The Nightmare Before Christmas*, which made significant contributions to Disney's artistic reputation and revenue (Sisu, 2023). Although commercialization is a safer option for production and distribution teams, for audiences, 3D animation sometimes lacks an irresistible appeal that can only be achieved in 3D, which in turn poses a potential threat to the sustainable development of the 3D film industry. .

Feasible approaches to jump out of the box

Despite the limitations in type experimentation that 3D animation faces, it still holds the potential for innovation, allowing creators to explore new possibilities as early as 2026.

One approach is to transform the stage play-style shots centered on character performance into film-style shots focused on plot logic. Unlike 2D animation, the production logic of 3D animation is closer to that of film and television, with camera

movement being unrestricted except for potential glitches from certain angles. This leaves room for experimentation with camera language. This idea has been adopted by many game developers to create interactive movie games, such as Sony Entertainment's *Detroit: Become Human* (Wikipedia, 2019), Kojima Productions' *Death Stranding* series (Wikipedia, 2019), and the recent *Marathon* game trailer (IGN, 2025). These works employ more serious scripts and film-style storyboarding, presenting animated fantasies with realistic camera language. This includes using motion capture and optimization workflows, deliberately shortening the duration of individual shots, adding camera shake effects, and placing cut points on plot and atmosphere changes rather than complete character performances.

Another approach is to incorporate digital art into 3D animation production. 3D software shares the same set of computer vision coding principles, making file transfer and plugin usage convenient. The usage logic among these software is also quite similar. For instance, once a creator becomes proficient in Blender's nodes, they can quickly adapt to using Touchdesigner without spending as much time as a beginner. Digital art's application in 3D animation lies in the digital processing of models, such as making the point cloud of a model move according to certain mathematical rules, and directly achieving effects through digital art. These techniques are particularly helpful for expressing abstract concepts. Through editing and changing 3D models at appropriate points, emotions can be conveyed. For example, in the music video *ZZZZZZZZ* by Kanoguti (2018) from the Design System

Department of Musashino University, he used the fragmentation of model surfaces to match the Glitch effect of the music, depicting the gradual chaos of the real world.

Furthermore, the production process of 3D animation should not be confined to 3D animation alone. Utilizing 2D animation for technical assistance on top of 3D animation can also create refreshing artistic effects. For instance, special effects can be drawn in the post-production stage, and the presence of lines in the picture can be enhanced to create a visual effect that is both 3D and non-3D. A typical example is the 2023 release *Spider-Man: Across the Spider-Verse* (IMDb, 2023), which employed hand-drawn textures and 3D-to-2D rendering techniques, and hand-drew special effects on the flattened 3D characters during the compositing stage. This approach maintained the fluidity and logic of 3D while incorporating the randomness of hand-drawn art and the aesthetic of flat composition. This technique has also earned high praise for the film's art director, Alberto Mielgo, whose work on *Love, Death & Robots* episodes *The Witness* (IMDb, 2019) and *Jibaro* (IMDb, 2022) also utilized 2D backgrounds and digital painting compositing techniques. This style has gradually developed into a distinct school within 3D animation.

The long-term trend - the fragmentation and experimentation

But in the long run, the modularization and experimentation of the 3D animation industry are gradually becoming the future development trend.

On the one hand, the production cost of 3D animation is getting lower and lower with the popularization of 3D technology. Blender

The spread of open-source software such as Unreal Engine has removed the financial barriers to the dissemination of 3D technology, and 3D technology education has gradually been popularized among younger children and members of society.

Digitalization has become an inseparable part of contemporary life. The number of "3D animation generalists" is unprecedented. Even an individual, with just a computer and sufficient time, can become a 3D animation director without having to hire an entire team. Under such circumstances, 3D animation workers can choose to work for large companies, studios, or individuals, just like 2D animation workers. The production capacity of 3D animation will gradually shift from being centered around large companies to becoming atomized. This means that animators can follow their own aesthetic preferences more closely, whether creating independent short films or producing a feature film, without having to adopt the so-called mainstream and safe artistic styles.

On the other hand, 3D animation can adopt a different attribution system from 2D animation, forming a new type of cooperative relationship. In 2D animation, every item or effect must be completed by the animator due to differences in artistic style, drawing angle, and camera movement. 3D animation is formed by rendering with a camera, and animators do not have to pursue the original creation of every asset. For some non-plot-critical common assets, they can find and purchase those that match

the overall style on the Internet and add them to the animation. When animators cannot afford the cost, they can directly contact asset designers and obtain usage authorization through attribution commitment. This is a new type of cooperative model that does not employ a full-time workforce but integrates completed digital works of artists into a larger digital work. Moreover, digital assets are replicable, making it possible to produce 3D animation at a low cost and in a relatively short time. Additionally, through the regulation of the attribution system, a "reference relationship network" can be formed among digital artists, which is conducive to the organization of digital art assets and thus beneficial to research and innovation in this field.

Conclusion

Overall, 3D animation is constrained by the lack of experimental history, high costs due to technical barriers, and the integrated industrial structure, forcing it to follow a standardized creative model. This leads to audience fatigue in terms of aesthetics and poses risks for the future development of the industry. Currently, some studios are exploring the artistic potential of 3D animation by using cinematic camera language, digital art integration, and developing unique visual styles based on 2D animation.

With the widespread adoption of 3D technology, 3D animation can be said to be in an important transitional period from commercial formulas to diverse experiments. The 3D animation industry will become atomized, and the 3D animation industry will

become "decentralized". Individuals and small teams will gain greater creative productivity and freedom. Independent 3D animation becomes possible. At the same time, the licensing of 3D animation assets can help develop new author attribution mechanisms and artist collaboration methods. This new model can help 3D animation reduce costs and promote research and innovation.

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