



Application of Low Polygon Style in Fashion Design

HeFei Tu and Jian Xiao(✉)

Dalian Polytechnic University, Dalian, China
497524298@qq.com

Abstract. This topic takes the low polygon style as the research object, and analyzes the development history, artistic style, expression form, cultural connotation, era significance and other aspects of the low polygon style. Combining low polygon style with children's clothing design, this paper discusses the creative ways of low polygon style and children's clothing design, and provides a new design direction for the application of low polygon style in modern clothing design.

Keywords: low polygon · fashion · design

1 Introduction

In recent years, the low polygon style has become popular. This style uses a large area of block surface to complete the modeling design. It is simple and lively. It is usually composed of polygons with clear lines and is represented by simple and pure colors. With the development of information society, information exchange becomes more and more complicated and fragmented, and complex designs emerge in endlessly. The huge and complex information network makes people yearn for simple and pure communication. Therefore, the low polygon style came into being, which meets people's aesthetic needs of pursuing simplicity, and is also a reflection on the aesthetic fatigue caused by complex design. It combines the low polygon design style with people's current living conditions and aesthetic pursuit, and seeks more possibilities for the development of the low polygon style [1].

With the superior living conditions, the sales scale of children's clothing market is expanding. But in recent years, children's clothing gradually tends to be adult, losing the innocence of children. The simple design of low polygon style coincides with the core design concept of children's clothing. Through the design form of low polygon, children's aesthetic orientation and psychological characteristics can be expressed [2].

In the 1980s and 1990s, with the popularity of computer games, digital art began to appear. As a brand-new design style, digital art has influenced all fields of art design and produced many new art forms and art design styles. For example, digital installation art form, electronic network art form, Millennium art style, Y2K art design style. It also promotes the interdisciplinary research of many art disciplines and computer disciplines. The low polygon style first appeared in 3D modeling in computer games, and was later

replaced by exquisite lifelike digital works. In the continuous development of society, the low polygon style reappeared in people's vision and became one of the most popular art design styles at present. Low polygon style is widely used in computer design, product design, sculpture design, painting design, animation design, clothing design, game design and other different fields.

2 Materials and Methods

The low polygon style is a new aesthetic tendency after the flat style, and it is a kind of nostalgia for the style of computer games in the 1990s. The low polygon style presentation is composed of several triangles with distinct edges and corners and different sizes. It is mainly completed by computer modeling. It has the visual characteristics of simplicity and abstraction. The low polygon style first appeared in the 1970s. Computer games have just become popular. Due to the immaturity of 3D modeling technology, simple lines appear on the game screen, and the game screen is stiff and not smooth enough, forming a unique visual effect. This is what the low polygon style first appeared in the public view. The early low polygon style only existed in computer modeling and was not widely used due to technical constraints. Due to the continuous improvement of computer development, this rough artistic style was gradually replaced by exquisite models and gradually faded out of the public's vision [3].

However, with the continuous development of society, the unique modeling characteristics of low polygon style have gradually returned to the public's vision, and are favored in various art and design fields. Using less design language for more design performance conforms to the design principle of "less is more" put forward by Mies van der Rohe, a designer in the Bauhaus period. The re popularity of low polygon in game products has proved that in the intelligent era of the rapid development of the network, low polygon has become a new aesthetic definition through continuous deconstruction and reorganization with its simple visual characteristics [4].

Low polygon style is mostly used in sculpture, painting, product design, game design and other fields. The application of low polygon art style in the field of art design abroad has a large number of works, among which the representative figure is Timothy j.reynolds, a 3D illustrator from Milwaukee, the United States, who has made the visual art form of low polygon his own unique design style. Tencent released a new version in July 2014, and its login interface adopts the low polygon style. Rauwolf brand and Issey Miyake brand have successively launched low polygon style handbags. The sculptural work "pressure" by artist David Mesguich, British artists Solorzano and white, studio estudio guardabosques in Argentina, and German art wolframkampf fmeyer all use the low polygon style.

Nowadays, the development of low polygon style has sprung up. The shadow of low polygon style can be seen in various design fields, and it has gradually attracted extensive research at the level of knowledge theory. By searching the "general library of online publishing of Chinese Academic Journals", consulting relevant contents and documents, and reading articles on low polygon design style, the authors Li Jun and Wang Jing published the article "evolution and development trend of low polygon style" in the magazine art science and technology. Through the analysis of low polygon style

art works of digital artists, it is concluded that how low polygon style has not developed, Can not be separated from abstract and extremely simplified conclusions; Song Liu published the article “Research on the” low polygon style “in digital art of edges and corners in countercurrent” in the journal “art hundred” in 2015. This article expounds the development process of low polygon style and its impact on the field of art design, and believes that low polygon brings art back to the truth - that is, what art needs is more expression; The article “the modernity of the cross-border integration of cubism and graphic design” published by AO Lei analyzes the characteristics of low polygon design style, emphasizes that this design style can provide more possibilities for art development, and expounds the innovation of low polygon style; In 2017, Zhang Bingyi published the article “Research on the Gamification design of low poly style fitness app”, which integrates the fitness app with the low polygon style, and increases the user stickiness of fitness app through the emerging design style of low polygon, indicating that the low polygon style has gradually been integrated into all fields of art design.

The characteristics of low polygon art style are very obvious. Many young artists are more and more inclined to use low polygon style for artistic design. As a continuation of the flat style, the low polygon style has the visual characteristics of graphic art design. The low polygon picture is simple, clear, simple color, and has two-dimensional visual characteristics. The low polygon style contains a new concept for the development of art and design. It is also a tribute to the digital art of the 1970s and the embodiment of the retro trend of design. In the history of art development, there are many examples similar to “low polygon style”. For example, after the prevalence of European neoclassicism, people began to have aesthetic fatigue towards neoclassicism. Impressionist style abandoned the principle of realism and began to pay attention to the expression of inner emotions. Therefore, Impressionism prevailed. It can be seen that the prevalence of Impressionism and the popularity of low polygon style are similar. Both of them are a reflection on the past realistic art style.

3 Results and Discussion

- (1) Classify and sort out the different performance characteristics of low polygon art style, compare and analyze the art works in different art design fields and different periods, and summarize the different representation characteristics, cultural connotation and era significance of the development process of low polygon style.
- (2) Explore the cultural significance behind the low polygon style from a multi-dimensional perspective. This paper analyzes the formation and development of low polygon style from different angles, such as the direction of social development, the aesthetic needs of the public, the development of art and design culture and so on. On the basis of multi-disciplinary knowledge concept, this paper explores and compares the creative ideas of low polygon style and the spiritual connotation conveyed.
- (3) Explore the artistic style, expression form, color characteristics and the cultural connotation behind the low polygon, integrate the design knowledge concept of modern children’s clothing, and integrate the low polygon style with children’s clothing for innovative design application.

From the perspective of visual perception theory, the re popularity of low polygon style is not an accidental phenomenon. Visual perception theory is often used to deal with the problems of art theory and practice, which has a very important theoretical reference value in the field of art design. The theory of visual perception refers to that after the eye receives the information, it transmits the visual information to the brain, which distinguishes and processes the information. Low polygon style works of art have sharp edges and corners of the outer contour shape and high saturation color, which will attract the attention of the audience. In the era of rapid information transmission, this simple, direct and visually powerful information will produce cognition and imagination of object form. By observing the simple design of low polygon style, the audience can imagine the appropriate blank left by polygon outline and cell color in their brain. Therefore, people will leave a deep impression on their minds and have sufficient imagination space after they see the design works with low polygon style.

At the beginning of the rise of computer games, game pictures are usually presented with polygons or even fewer faces. The overall picture is angular, lacking roundness and stereoscopic degree. The picture is not exquisite enough, and can only appear in an abstract picture image. As the computer 3D modeling technology and the processor core are not perfect, and the technology is limited by software and hardware, once the complexity of 3D rendering scene in the game screen increases and the display details increase, the computer will run slower and the frame rate will also decrease. People will feel stuck and not smooth during the game experience, and the sense of game experience will be reduced. Under the same engine kernel processing conditions, in order to ensure the normal operation of computer games without jamming, we can only choose to shorten the rendering time, reduce the polygon faces in the scene, and complete the picture presentation with fewer polygons. Therefore, the low polygon style appears [5].

The development of low polygon has extended many similar design styles, such as long shadow lattice, low pixel and other two-dimensional graphic design styles. Now it has also been applied in computer interaction design and art installation design. The early simple style of low polygon was an innovative thinking on artistic expression at that time. However, with the continuous development of computers, the low polygon style was endowed with the concept of science and technology. First of all, the development of design is inextricably linked with production technology. The development of society will promote the development of design. Now the society has moved towards an intelligent era, and people's aesthetic and needs have also changed. The low polygon style came into being in the computer, and it has its own label of digital art. Although many later works were not made with computer software, they are still classified as digital art. It can be said that the low polygon style is a synonym for digital art and sense of science and technology.

Polygon has a very distinctive artistic style. Now if you open some avant-garde and fashionable websites, you will see that there is an artistic design style dominated by geometric shapes on the homepage of the website, which seems to be a new trend. Young artists are increasingly inclined to use low polygon style for artistic design creation. As a continuation of the flat style, the low polygon style has the visual characteristics of graphic art design. The low polygon picture is simple, the outline shape is clear, and the

color is simple and abstract, which has the characteristics of two-dimensional vision. Low polygon style contains a new concept for the development of art and design, and it is also a nostalgic feeling for the budding digital art in the 1970s. Therefore, low polygon is not only in line with the simple concept of art and design, but also in line with the recent rise of New Retro trend. In the history of art development, there are many examples similar to the “low polygon style”. For example, after the prevalence of European neoclassicism, people began to get tired of the complex and realistic neoclassicism, Impressionism appeared, abandoned the principles of realism, and began to pay attention to the expression of inner emotions, so impressionism prevailed. It can be seen that the prevalence of Impressionism and the popularity of low polygon style are similar. Both of them are a reflection on the past realistic art style.

From the perspective of visual perception theory, the re popularity of low polygon style is by no means an accidental phenomenon. Visual perception theory is often used to deal with art theory and practice, which has a very important theoretical reference value in the field of art design. The so-called visual perception theory refers to that after the eye receives the information, it transmits the visual information to the brain, and the brain distinguishes and processes the information. Low polygon style works of art, whether in the field of animation design or graphic design, its angular shape and high saturation color will deeply attract the attention of the public. In the society of rapid information transmission, this simple, direct and visually powerful information has attracted the attention of the public. The strong visual experience stimulates people’s brain, and through the strong stimulation of visual transmission, they can produce the cognition and imagination of object form.

In a narrow sense, the low polygon style refers to the polygon structure that reduces the picture due to the technical limitations of the computer. It means that the object is composed of fewer polygons. The generalized polygon style is a reflection and challenge to the past art development and classical aesthetics, and it is a new aesthetic trend. Low polygon has become a word used by designers to describe a certain style, no longer simply referring to the screen in computer games. The purpose of the early low polygon style is to reduce the rendering tasks of game pictures. It is forced to form a low polygon style, and the low polygon task is only to complete the smooth progress of the game and assist the perfection and development of the game. The design purpose of modern low polygon style has become a reflection on the past virtual simulation. The modern mainstream aesthetics still pursues truth and tries to restore truth. However, no matter how computer technology develops, it cannot restore truth and nature. Fundamentally speaking, imitation and simulation can never surpass reality. The core idea of modern low polygon style is to give up imitating reality, no longer pursue restoring reality, pay attention to the inner feelings and design ideas of designers, and seek the diversified development of art. The low polygon style has developed from a single idea in the early days to an innovative idea on the mainstream aesthetics today, guiding designers to seek a unique artistic expression [6].

Low polygon style design has been widely used in our life. We can see low polygon style environmental sculpture, and we can also find low polygon style special effect filters in mobile phone software, which shows that low polygon style has developed from minority art to popular art. The re popularity of low polygon is no longer just for

the public's nostalgia for a certain digital art, but to create a new artistic style and visual experience for the public.

4 Conclusions

The low polygon style was bred from computer games and developed in the digital art style. With the development of the information age and the global cultural exchange, the low polygon style is bound to continue to develop. The artistic value of low polygon has been reflected in various types of design works at present. It allows the design to express emotions, and establishes the spiritual connection with the audience through the abstract and concise artistic style of low polygon. It represents the common aesthetic interest and artistic thought of the designer and the audience. The re popularity of low polygon is not accidental. It is the inevitable result of the development of society and art. It shoulders the responsibility of connecting the preceding and the following, inherits the historical experience, and affects more artistic styles step by step.

References

1. Huang, F., & Li, C. Discussion on the method of creating low polygon model in 3ds max. *Pilot Forum*, 98.
2. Zhang, B. (2017). Research on Gamification design of fitness app in low deploy style, Shanghai Jiaotong University.
3. Zhang, X. (2018). Artistic expression of low ploy style. *Theatre House*, 125.
4. Jialebin, X. (2018). The resonance between Hui Style roof language and low polygon style in product modeling. *Art and Design*, 161.
5. Guoxianlun. (2019). The application of surrealism in low polygon style AR dynamic illustration — a case study of dreamer, p. 3. Zhejiang University of Technology.
6. Huang, F., & Li, C. (2018). Analysis on the evolution and development trend of low polygon style. *Literary Criticism*, 153.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

