

# The Application of Geometric Figures in Logo Design

Yi He

College of Art and Design, Wuhan textile University, Wuhan 430000, China

**Abstract.** In social production and communication activities, signs are used as a special visual language symbol to convey specific information and meaning to the public in its concise and concise form. As an abstract figure, geometric figure has the characteristics of simplicity, easy identification, easy memory, and strong visual impact. The use of geometric figures in logo design not only enriches the shape of the logo design, but also helps express the specific meaning of the logo. This paper studies the methods of reconstruction and combination of geometric figures used in various signs. The combination and reconstruction of geometric figures makes the logo more concise and clearer.

**Keywords:** Reconstruction Graphics; Geometric Logo; Logo Design Form.

## 1. The Concept of Logo

Logos (also called emblems or logos) are represented by clear and accurate shapes and numbers. They not only have simple indicators of the existence of things, but also the object, content, nature, character and propositions of things, and overall psychological performance. As a special form of intuitive interpersonal relationship, it not only participates in all social and production activities, but also exhibits its unique functions, which are vital to national interests, social groups, and even individuals. Logo design is not only a practical design, but also a graphic design. It has similarities with other ways of expressing graphic art, but it also has its own artistic laws. In logo design, the use of geometric figures affects and influences people in a very common and symbolic way, guides people's recognition and choice, enhances people's impression and self-confidence, and does not perform any operations. Play non-interchangeable roles in social life. A logo is a special visual text and graphic symbol that intuitively conveys certain meanings, emotions and instructions to the public in an accurate and concise image, and has a powerful visual information transmission function. From a design perspective, a logo is a symbol that contains spiritual content and has symbolic and communication functions. It conveys specific information in a refined image and communicates people's emotions. It is used in all aspects of social life, such as digital product logos, Transportation instructions, international conference emblems and sports event logos, etc.

## 2. Functions of Common Geometric Symbols

An overly complex design can cause communication barriers, so simple graphics should be used as much as possible in the logo. For example, Apple's original logo is complicated and troublesome, and it is not helpful to people. Today's logo, a simple image, can also leave a deep mark on people.

### 2.1 Graphics with Circular Signs

The circle represents protection or infinity. They restricted the contents but did not allow them to enter. They represent completeness, communication, realization and completeness. The rings seem to move or roll freely, and their sense of movement reflects energy and strength. The completeness of the circle involves infinity, unity and harmony. The round shape is also very beautiful. Their curves are usually feminine, symbolizing warmth and comfort, but giving people a sense of sexiness and admiration.

### 2.2 Graphics with Square Logo

Squares and rectangles always represent consistency, calm, stability, security and equality. They are familiar and reliable forms that express honesty and credibility, and their views represent order, mathematics, common sense, and form. Rectangles are the most common geometric shapes, and most

of the text we read includes rectangles or squares. Squares are sometimes boring and usually do not attract attention from others, but when they are tilted, they can produce unexpected feelings.

### **2.3 Triangle Logo Graphics**

If the steering angle, the triangle represents stability, it represents tension, conflict, dynamics and aggression. Triangles have unlimited energy and power. Based on different viewpoints, they may have different feelings about sports, and their dynamics may show different sense of conflict or stability. Triangles are characteristics that represent men and can be used to make progress, direction, and purpose. They are considered to be symbols of law, science and religion. On the one hand, triangles can be used to represent familiar themes, such as pyramids, arrows, and monetary gifts. On the other hand, they can represent the religious trinity, self-discovery and enlightenment.

## **3. Use Geometric Design Methods**

Different techniques and styles must be tested in the logo design to express the same creativity or theme. This can not only enrich your creative style, but also make your design closer to the theme. Everyone's geometric design and ability to construct features are different. Different aspects of the design system should be considered when designing to make the design effect different. However, it should be noted that although the geometric mark is intuitive, it lacks the text function of a text mark. Therefore, you should select graphics with label content to facilitate understanding and storage of all graphics when selecting geometric graphics.

### **3.1 Copy Method**

We can copy an image to get a new visual effect. For example: the Olympic logo, with five circles, indicates that the five continents are closely connected. Take the photo as the basic image, then use the copy method as well as rotation, reflection, translation and other images to create a new pattern effect, and finally add a background effect to get a better effect. Regular reproduction can produce rhythm and uniform beauty, easy to visually recognize, make people clear and quick, and can deepen the appearance of visual activities and increase the number of people.

### **3.2 Destruction Method**

Sometimes, overly complete graphics can make you feel sleepy. We can use the deletion method to intentionally delete part of the graphics so that the logo not only changes but also makes a deep impression.

### **3.3 Collage**

The use of elements in the logo will make the logo more monotonous. At this time, we may wish to use a collage method of many factors to produce new effects. For example, the sun god Apollo (Apollo) logo is composed of a circle and a triangle; the Neptune logo is composed of a circle and three diagonal lines; I Antiana Pharmaceutical Information System Co., Ltd. is composed of a circle and an isolated line. These cartoons are very simple, full of power and dynamic, and have an international image.

### **3.4 Abstract Summary Method**

The abstract generalization method refers to starting from the real thing, using methods such as simplification, refinement, generalization, and exaggeration to abstract and transform it to make it artistic. There are a combination of simple geometric shapes and a combination of structural design shapes. For example: California wine uses 30 dots to represent grapes, and the image composed of dots represents a wine glass full of wine.

## **4. Definition and Characteristics of Trademarks**

### **4.1 Logo Interpretation**

The logo is a symbol of public relations. It describes specific meanings in a concise and easy-to-understand form so that people can convey any specific information, meaning and content of the thoughts they want to express to help thinking and socializing. The icon is not only a graphic, but also a language with the language characteristics of a graphic icon.

### **4.2 Performance Characteristics**

Signs are people who use specific symbols to express some special meanings. Its expression form is symbolic expression form, abstract expression form and expression form. The characteristics of these expressions are as follows.

#### **4.2.1 The Formal Characteristics of the Visual Graphics Used in the Logo Design**

There are many explanations for graphic images, including the number of people, animals, plants, tool pictures, and natural graphics. These leading visual symbols can be simple, intuitive, clear and accurate to produce related business and its meaning. Using metaphorical images as the company's logo in logo design can not only convey the company's characteristics intuitively, but also prepare to express the company's nature.

#### **4.2.2 Formal Characteristics of Abstract Graphics Used in Logo Design**

Non-abstract graphics mainly focus on some rational numbers. A specific shape is the basic feature of the object that represents the geometric shape of the shape (such as points, lines, surfaces and objects), and intuitively describes its own meaning and stronger visual impact, easy to identify, easy to reflect, and easy to reflect the company's vision shape. Culture and other functions.

#### **4.2.3 Formal Use of Characters and Graphics in Logo Design**

The text graphic is a company label formed by converting the text. Compared with the logo, the picture is slightly worse, but the expression ability has been significantly improved. It can do many companies. And directly state the name of the event, such as the Shanghai World Expo logo.

## **5. The Definition of Geometric Figures and Their Representation in Logo Design**

The geometric figures are simple, easy to identify, easy to remember and have a strong visual impact. These key functions play an irreplaceable role in the current logo design, thus promoting the development of logo design.

### **5.1 Explanation of Geometric Figures**

Geometric figures use points, lines and planes to help people express the visual world objectively. They are usually developed from certain parts. They are usually divided into flat graphics and solid graphics. Flat graphics are in the same image on the plane; 3D is a picture that is not on the same plane. Geometric figures usually appear in abstract form. It is easy to identify. In today's logo design, the appearance of the logo is gradually increasing. Rising slowly, but also played an active role in the logo design.

### **5.2 Geometric Image Representation in Logo Design**

In logo design, geometric images use dots, lines and plane layouts to form a single logo. What is the shape of the geometric figure in the logo design? Separate abstract figures are more focused on geometric figures. In geometric images, three-point elements (line and surface) are used to illustrate the complex image world.

### 5.2.1 Points

It can be said that it is a simple source of all styles. In fact, this point is not limited by the size of the shape, but in visual design, this point is a relatively small element. When the point expands to a certain extent, it will form a geometric ring, which can also be called a circle. That's why we always remind us of things like rice cereal, sunlight and water droplets...Because of its small size, its structure is very simple, it is easy to attract people's attention and cannot be seen, Therefore, it plays a key role in label design.

### 5.2.2 Line

The line is actually a feature formed by connecting traces by points and connecting multiple points. Simple lines can be combined into simple geometric images, triangles, squares, rhombuses...

### 5.2.3 Surface

The surface is the magnification of dots and the close arrangement of lines. At the same time, the up and down, left and right movement and rotation of the line will cause a variety of different surfaces. The surface can simply be a ring. In short, the representation of geometric images in logo design uses the three elements of points, lines and planes to form the final logo. Focusing on the point and center of the core, the line is hard, cold, straight, stable, stable, stable, stable, heavy, soft and soft, and the surface is also included, safe and swelling. The combination of these elements can create many creative characters. At the same time, the image in the design becomes deeper, allowing people to better understand the meaning of the sign itself, and it can be clear.

## 6. The Characteristics of Common Geometric Signs

First, round signs are generally divided into round signs and oval signs. The circle has a single center point, which can concentrate people's visual attention to form a visual center. The completeness of the circle signifies infinity, unity, harmony, etc. Common circular signs such as BMW logo, Pepsi logo and so on. Second, square signs, mainly square signs and rectangular signs. Adjust the side length and angle of the square to make it into a rhombus or trapezoid. The square is directional, representing stability, security and equality. Square signs such as the Bank of America logo, Meiling Electrical Appliances logo, etc. Third, the triangle logo. Triangle signs are mostly equilateral or isosceles triangles, which are mainly represented by two types: regular triangle signs and inverted triangle signs. The regular triangle appears stable, while the inverted triangle appears to have a sense of movement, tension, and conflict. Common triangle signs such as the Peak Sports logo. Fourth, the polygon flag. A polygon is composed of two or more basic geometric shapes. Polygonal signs often adopt design methods such as cutting, combination, and juxtaposition. Line design, novel form, full of changes, and rich content. For example, the HSBC logo is a combination of multiple isosceles triangles, revealing the philosophy of "accumulate less and make more", vividly showing the functions and characteristics of the bank, with a unique form and strong visual appeal.

## 7. Analysis of the Composition of Geometric Figures in Logo Design

In-depth and detailed analysis and research on the composition of geometric figures in logo design is beneficial to the more flexible and convenient application of geometric figure elements in logo design. Summarizing the structural characteristics of geometric figures in logo design can provide necessary methods and creative thinking guidance for logo design. First, the decomposition and composition analysis of geometric figures. Decomposition composition refers to selecting a complete basic geometric figure, using a certain decomposition method, such as simply decomposing the selected geometric figure with a line type with a certain width or angle, and then decomposing the two or more parts after the decomposition According to certain rules, a method of recombining a complete and beautiful logo. The basic decomposition methods include separation method, displacement method, flip method and rotation method. Second, the analysis of the grouping

composition of geometric figures. The grouping composition specifically refers to the grouping composition of the same unit geometry, which is a method of forming two or more of the same unit geometry according to a certain organizational arrangement to form a regular, complete and unified logo graphic. When using the grouping method to select the unit shape, simple geometric figures should be selected, the length and width of the unit shape should have a certain ratio, and the size of the angle should have a certain law. The basic composition method of group composition uses the "skeleton" in the plane composition, such as repetition, gradual change, radiation, etc. When using the group formation method, it should be noted that the unit shape should not be too much to highlight the concise characteristics of the logo. Third, the composition analysis of geometric figures. Combination composition refers to the method of freely combining two or more geometric figures with different characteristics to form a complete and unified logo figure. In the specific application and performance, the basic characteristics of each geometric shape should be retained as much as possible, while the balance, contrast, rhythm, and uniform laws in the design should be considered.

## 8. The Creativity of Geometric Figures in Logo Design

Language features and advantages As a completely abstract figure, geometric figures have the characteristics of concise and lively, strong three-dimensionality, and easy to identify. When used in logo design, they can not only express the theme meaning of the logo, but also better Showing the geometric beauty of the logo itself is more in line with the aesthetic concept of modern people. First of all, geometric figures are a highly abstract and summary of people's long-term understanding of the objective world. It is a visual choice, with a sense of abstract graphics and a sense of visual order, in terms of structural modeling. Rich in rhythm and rhythm. Applying geometric figures to modern logo design will enhance the visual impact of modern logos and make the image of the logo easier for people to recognize and remember. Secondly, geometric figures are constructed by the formal rules of points, lines, and surfaces, which are highly standardized and easy to design and manufacture. It has specific standards and production methods, and the rules of form are easy to use and master. The use of geometric figures in logo design adds a design thinking and formal method to logo design. Finally, as a kind of abstract graphics, geometric figures are used in logo design to form meanings and easily trigger associations and imaginations. For example, the linear shape is thick and strong, solid and stable, which reminds people of the solid and reliable quality of the product; the curve shape is beautiful and full of beauty, which reminds people of the beauty and dexterity of the product. 1 The application of geometric graphic elements in logo design In today's era of rapid economic and technological development, the design and application of logos have been paid more and more attention by people. The graphic design of logos is directly related to the development of enterprises, and geometry is consciously added. Graphics can make the visual appearance of the logo more influential and persuasive. In the 21st century, when the global economy and technology are taking off, people use more and more graphic languages in their daily life and learning. Traditional text languages can no longer meet the needs of today's society. As a new type of expression, graphic languages In many ways, it has replaced the text language. It has some more intuitive and concise characteristics that the text language does not have. The primitive society relies on graphics to convey information. After the appearance of text language, although there are new ways of transmission, the transmission of graphics is still better than text. It is intuitive, such as the national "national emblem" is the best way to say it. In this case, we, as designers, should pay more attention to the application of geometric figures in the logo. From ancient times to the present, the inheritance of signs is something we cannot ignore. People who want to know more about history must rely on these iconic graphics to calculate the current social situation at that time, so signs have gradually been valued by people. Nowadays, signs have been used as various This is the core part of corporate image publicity. The development of a company is inseparable from publicity. They not only promote their products, but also their own brand. This brand is the logo of the company; for example, the "Coca-Cola" brand logo, its brand The price has exceeded 100 million. It is not difficult to see from this point that the

logo is also a tangible asset of the enterprise. The logo design has various forms, and the unique and innovative logo is the best way to promote their products. Businesses use their own logos to carry out Promote vigorously to increase the visibility of your company. Nowadays, all businesses, if they want to have a more competitive advantage in the same industry, must have their own distinctive and innovative logo. Symbols are used by countries, companies, and even individuals. They are the best way to spread to themselves. The appearance of geometric graphic elements has injected new blood into the logo expression technique. Compared with the previous logo design, it can make consumers shine and attract people's attention. In design In the logo process, for the reasonable application of geometric elements, geometric elements can quickly and accurately express the information conveyed by the logo itself. For consumers, geometric logos are more convenient for them to recognize and remember. In logo design, geometric graphic elements are us The three elements of point, line, and surface that we know and understand in daily life are subjectively processed to produce some graphic elements. It is precisely because of our processing of these geometric figures that we can better understand what these geometric figures themselves can show The meaning of when we are doing logo design, proper processing and use of geometric figures can not only express the theme meaning of the logo, but also better show the geometric beauty of the logo itself, which is more in line with modern people's aesthetic concepts. This logo, which has been processed and processed many times by us, is more and more adapted to today's society. In the field of modern society, the use of geometric graphics language is ubiquitous. Designers deliberately decompose and combine these geometric graphics to make them different. The beauty of the world, and apply it to various fields of society. The application of geometric figures in modern design is extremely wide. It involves products, packaging, picture albums, space, architecture, urban planning, interior decoration, etc. and a wide range of Design scope. In the past, the application of "points, lines, and planes" was often mentioned in design teaching. Now you may think that this kind of expression is too artistic, so you have rarely heard this expression in designers, and replaced it with words. It is "overall, atmosphere, style, temperament" and so on. The dots are very flexible, can be gathered, can be scattered, and give people rich associations. They are often used in logo design of science and technology. In logo design, they are often used When it comes to addition and subtraction, addition refers to enriching the expressiveness of the logo by adding some auxiliary lines, borders, and peripheral decorations to make it look heavy and authoritative. This method is often used in school emblems, club logos, and clubs. In the design of signs, etc., the subtraction rule refers to In the design, use the least pen and ink to express the maximum artistic conception. This is the method of conformal and borrowing in logo design. Conformal refers to two letters or strokes sharing one part. This is both yours and mine. Separate each other. It means that one part borrows another part to represent a figure.

## **9. Reconstruction of Geometric Figures**

### **9.1 Representation of Text Symbols**

The writing technique is the combination of English, Chinese, Arabic numerals and other characters or numbers into a visual whole. This whole is used as a visual graphic, making the text a symbol that is easy for people to remember and has a convention. At the same time, it is a long time. The text inherits history and brings infinite resources to the design. In the five thousand years of civilization in our country, the text language has always run through it, and it has played an indelible role in understanding and understanding history. Oracle as the language of our country the ancestor of Chinese characters, but now the Chinese characters evolved from the oracle bone inscriptions, and today's Chinese characters can not only be understood as a kind of language, but also have the beauty of visual rhythm in people's minds. We often call Chinese characters square characters, in fact, it is also an evolution of geometric figures. As Chinese characters, it has been widely used in logo design. In ancient times, seals have existed as a logo, which shows that ancient people used Chinese characters as a design long ago. Elements. The Latin alphabet is a combination of geometric figures. It is an international language symbol. It has universality and can make the transmission of the logo

fast and international. These features are exactly what the designer has in the design of the logo. Design elements needed. We decompose and combine these Latin letters to make them a new geometric figure. It not only has the characteristics contained in the Latin alphabet itself, but also has more flexible and vivid appearance. These geometric figures that have been changed by the designer can be the characteristics of strong visibility and adaptability make it a design technique that is not uncommon in logo practice. The numbers we use are the well-known Arabic numerals, which are widely used and can break through the shackles of different languages in different countries. It is an international geometric element. The simplification, easy memory, and memory-enhancing characteristics of the number give the logo the depth of communication. The simplification of the number meets the conditions required in the logo design.

## 9.2 Representation of Abstract Reconstruction

When designers design some logos, the geometrical figures of the concrete form often fail to meet the designer's requirements. Currently, we must process the geometric forms abstractly, and then produce the geometric elements of abstract figures. The effect that the geometrical figure can't reach, abstract figure has room for imagination. It can give people different perceptions and reveries at different levels. It makes the essence of things more profound. In society in the event, when designers create logos for businesses and enterprises, they summarize all their expressed intentions with abstract graphics to express their meaning. These abstract graphic representations can not only bring good things to the business units The corporate image, and these abstract geometric figures are composed of many geometric figures. These rich geometric elements better meet people's visual needs. Abstract figures also have their shortcomings and express their meaning. On the above, it is easy to cause differences in opinions. It does not have the direct expression of concrete graphics, and sometimes it is inconvenient for people to translate. Organic graphics come from the growth trajectory of organic life in nature, and have curvilinear, vivid and lively visual psychological feelings. Due to the composition of organic graphics Flexibility makes smooth lines more and more accepted by people in the realm of life. Compared with organic graphics, inorganic shapes are all made up of some strong and powerful straight or diagonal lines, which are penetrating, serious, straight and straight, etc. This kind of rational graphics gives people a rigorous and formal visual experience. In figurative logo graphics, human body shape graphics refer to the overall shape or partial shape of a person as a design element used in the logo. Among them can be actions or expressions. Or original ecological natural objects. Consumers' acceptance of human shape graphics has more advantages than other graphics, especially food products. Designers use these original signs to convey a natural environmental protection message to people and stimulate consumers to the trust and purchase of products. It is not difficult to see from the ancient totem worship that the close relationship between animals and plants and people. In today's rapid development, animals and plants still appear as patterns in the logo. From the above, we can see that the reconstructed geometric logo has been used as a direct contact for the dissemination of information in all walks of life, even for individuals, the geometric logo is playing an increasingly important role. Under the influence of the market economy, the logo design has become more and more important. It has been recognized by merchants more and more. Merchants use different means to publicize and design their own corporate logos to achieve market recognition. Commercial logos promote companies and products and communicate with consumers. Logos in life indicate their own identity. It conveys the meaning of commodities and promotes the progress of society. With the promotion of economic exchanges at home and abroad, the image of the logo is not affected by language barriers, and geometric figures are consciously added to make it conducive to international exchanges and connections. In today's logo design, the world has become smaller and smaller, and the requirements for logos have also changed. Logos have no borders and are not generalized in one language. This requires better use of geometric figures. Design elements to enhance the communication and internationality of the logo.

## References

- [1] Li Aihong. Traditional graphics language [M]. Beijing: Beijing Institute of Technology Press, 2009.
- [2] Tian Feiyang. Interpretation of layout design boutique [J]. Publishing House of Electronics Industry. 2004.
- [3] Xiao Yi. Graphic design examples and printers [J]. Publishing House of Electronics Industry. 2001.
- [4] Xiao Yong. Visual design classics [J]. Huazhong University of Science and Technology Press. 2008.
- [5] Li Dongli. Analysis of the use of geometric figures in logo design [J]. China Science and Education Innovation Guide. 2013.
- [6] Wang Gang. The diversification of contemporary logo design [J]. Fine Arts Grand View. 2009.
- [7] Hu Xinyi. The new trend of logo design in the digital age [J]. Packaging Engineering. 2008.
- [8] Chen Zhan. The symbolism of logo design [J]. Packaging Engineering. 2009.
- [9] Zhao Juan. The use of geometrical figures in logo design[J]. Arts and Science Navigation. 2011.
- [10] Zhang Ziqi. The clinical application of PS in digital X-ray image post-processing[J]. Chinese Journal of Radiology. 2006.