

# Research on the Application of Color in the Design of Environmental Protection Posters

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## Abstract:

Color can better convey the information through that the author needs to express and achieve better results through various ways, which is not limited by language, text, and pictures. Combined with the basic theory of color and the design principles of environmental protection posters, this paper analyzes the characteristics of color and environmental protection posters and the relationship between them, the advantages of color in poster design and the application of its aesthetic paradigm in environmental protection poster design. Color can bring a stronger resonance to environmental protection posters, beautify the layout structure of public welfare posters, and enhance its expressiveness, communication and influence. By explaining the specific application of color in environmental protection public welfare posters, it guides readers to understand the great value of color in the warning, education and publicity of environmental protection poster design.

**Keywords:** Environmental protection; Poster design; Color; Aesthetic paradigm; Element; Empathy ability; Designer

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## I. INTRODUCTION

With the continuous change of information, people have more limited time to receive information, the biggest consideration in information transmission is how quickly readers can understand the content of the images. Poster is an important way of information transmission because it perfectly combines pictures, text, color, space and other elements to attract customers' attention and make information clear.

Recently, more and more people have begun to realize the importance of environmental protection for human survival and sustainable development. On the one hand, due to the popularization of environmental protection knowledge, and on the other hand, the publicity of excellent public welfare, the awareness of environmental protection has been deeply rooted in the hearts of the people. Using posters to quickly attract readers to convey information has become one of the important ways of publicity. Designers can deeply depict environmental pollution by designing the color of posters, and the impact of this color can stimulate people's desire to protect the environment.

Combined with the case of environmental protection public welfare posters, this paper takes the

application of color in the design of public welfare posters as the research object, and analyzes the characteristics of color. Balance the use of primary colors and essential colors, study their artistic expression in poster design, and integrate text, images and overall layout in environmental protection-themed posters. Therefore, the coordinated color matching will play a more significant value in the poster design.

## II. CHARACTERISTICS OF COLOR AND ENVIRONMENTAL PROTECTION POSTERS

### 2.1. The characteristics of color

Colour is one of the most sensitive and expressive elements that can evoke aesthetic resonance and emotion. A variety of colors can be divided into two categories: achromatic and chromatic. Colors with a saturation of 0 are achromatic. A chromatic color has three basic properties: hue, purity (also known as chroma, saturation), and lightness, which also called the three elements of color or the three attributes of color in the color science. Due to the difference in wavelength, hue, amplitude of light waves, etc. different color shades are generated.

The color of the object is affected by multiple influences such as ambient color, intrinsic color and light source color to produce color perception, which can have a huge impact on people's psychology. Designers can choose and use colors reasonably when the ambient light source changes, only when the designer has a clear understanding of the physical knowledge of color, Bright, vibrant colors, for example, make a person feel gorgeous, while the grey or stale colors make a person feel simple. By adjusting the hue of the colour it is possible to create a warm and cold effect (fig1) orange is the warmest colour so it is the warm pole in the colour dimension, blue is the cool pole. The cool and warm effects of other colors depend on their distance from blue and orange. Those close to the cold pole are called cool colors, those close to the warm poles are called warm colors, those in the middle are neutral colors, and one is achromatic. Blue makes people feel cool, red makes people feel warm.

You can create a sense of weight by adjusting the brightness. (fig2) The white cloud gives the feeling of floating, but the black metal gives a natural heaviness Generally speaking, high lightness makes people feel light, while low lightness makes people feel heavy. The apply of colour is double-edged and can be more visually impactful if used properly. Otherwise it can have the opposite effect and make the viewer feel uncomfortable. Therefore, designers can only be effective if they understand the structure overall design and by being cleverly creative with colour.



Figure1: Hues Classification Char



Figure2:Lightness Diagram

## 2.2. Characteristics of environmental protection posters

The environmental protection theme poster is one of the public welfare posters and an important way to promote environmental protection. Our poster design focuses on creativity and effects, and is matched with wonderful descriptions. Through warning text and graphics, we promote the awareness of environmental protection, and aim to vividly reflect the true value of environmental protection from our works (fig3, fig4).

Environmental protection posters spread the thought of environmental protection through visual effects, issue a call that we need to pay attention to environmental protection, and provides services for the development of social public welfare undertakings. It is a social public welfare behavior. There are various ways to design a poster, constructing it by designing graphics, fonts and colors. Perfect your poster design by coordinating colors, graphics, text. This enriches the artistic expression of the poster and strengthens the far-seeing effect, allowing the poster to better play the role of information dissemination.

As the level of human awareness increases, the aesthetic requirements for posters will become higher. If the designed works are not eye-catching enough it will not appeal to the audience and will not have a good communication effect. Environmentally themed posters are designed with a strong sense of purpose and can be very effective if they make full use of colour elements.



Figure3: Marine Environmental Protection Poster



Figure4:Climate Change Poster

## III. THE ROLE OF COLOR IN ENVIRONMENTAL PROTECTION POSTERS

Color elements are visual elements that cannot be ignored in the process of poster design and cultural information communication. It attracts attention quickly. The use of color in a successful poster design is often appropriate for content and form. Sometimes it contributes a product or some kinds of service-based design activity to success.

### 3.1. Analyze the role of environmental posters from the theme content

The content of the design theme in the environmental protection poster determines the overall color tone. Different environmental themes present different color tones. If the designer wants to accurately

express the content of the poster and strike chords with many audience, the designer are required to have a deep comprehending of the content of poster design. Not only it should fit the theme and arouse the emotional resonance of the viewer, but also highlight the unity of color and environment in the design of environmental posters.

In ancient times, borrowing scenery to express feelings is the same as expressing feelings towards objective things. The ultimate purpose of environmental protection poster design is "Colourful and Enchanting", which contains two aspects, one is visually striking and the other is spiritual resonance. Using colour should incorporate the viewer's personality preferences and mix other colors in order to fit the theme of environmental poster design.

The colors need to be more intensely expressed to capture the attention and high resonance of a wider audience. In environmental poster design there is a greater emphasis on colour matching, which creates a stronger collision of lightness, purity and complementary colors to create a more exciting visual attack.

### 3.2. Analyze the role of environmental posters from their social audience

The use of colour in the design of environmental protection posters is not only presenting a better message, but also becoming a popular concerns. Social research activities are required before designing posters, because there are different color preferences in different ages, educational backgrounds, and living surroundings. The only way to design environmental protection posters efficiently and easily is to design them with reference to research data and to change the colour tone for different communication objects. The fast progress of the ages, so when dealing with color, the color scheme that was once very popular with the public is no longer a trend of the moment.

The outdated color combination is difficult to make contemporary young people feel heated and freshness. It is a nature psychological trait for human beings to be curious and to seek the truth about mysteries, which called "the psychology of persistently hunting for novelty", it is the psychological state of being curious about unfamiliar things or phenomena. Using the original psychological characteristics of human beings, we are constantly exploring unusual visual colour combinations and application to appeal the audience who watching environmental protection posters.

[2]The biggest difference between the poster design of environmental protection and other poster designs is its "emotional connection", which express the emotion of nature through color. This emotion refers to the audience's instinctive emotions, such as shock, sadness, sympathy, etc., when they are shaken by the impulsive colors of the public service posters. Although the audience have their individual and particular aesthetics, they will be kept open their heart by designer when appreciating the poster works. The audience analyses and interprets the poster through their own aesthetic habit, it changes their aesthetic psychology, then they perceive and receive the emotional information contained in the design, which is a sign of 'empathy'.

Environmental protection poster is a tool of public service and an artistic way of publicity.

Environmental protection poster design requires a perfect combination of pictures, colors, space and other elements to express environmental protection. At the same time, using numerous materials to combine the form and content of poster which create a unified aesthetic. Promote the more meaningful and widely circulated awareness about environmental protection through the design.

3.3. Analyze the role of environmental protection posters from the color personality of environmental protection posters

Colour schemes can reflect the characteristics of an age, each age has a special colour trend, that is a popular colour scheme. It is the product of alternation social fashion trends, and was proposed by the authority of that age based on market research. This color matching is quite representative and front-edged. Trend colour has always been ahead of time, are used in poster design to keep them stylish. Designers must fully understand the relevant knowledge to be able to use them skillfully in poster design.

Color is the spirit of design, especially in the design of environmental protection posters. Using the characteristics of color and then properly applying it to the poster can make the poster design get more noticeable and empathy from the audience. Nevertheless, the use of popular colors in the design of environmental protection posters is not omnipotent after all. The source of the origin for the design inspiration depends on what the environmental protection poster wants to present. If a certain color is in fashion recently, everyone will use this color repeatedly when designing posters, which will easily lose the charm of designer's personal style.

With the intention of sustaining the vitality of the design, [2]designers can not blindly follow the trend. The personalization of color means that white cannot replace black, green cannot replace yellow, and even very close colors are irreplaceable. Each color has its own meaning, that is why it's so rich in variety. If the personalized language of color can be used more scientifically in the design of environmental public posters, it can give environmental public posters more vivid expressive ability and empathy ability.

#### **IV. APPLICATION ANALYSIS OF BASIC KNOWLEDGE OF COLOR IN ENVIRONMENTAL PROTECTION POSTERS**

4.1. The choice of color needs to fit the theme of the environmental protection poster

Colors is inspired from life and nature, but the intentions are higher than the two. They are artistically created through exaggerated or mimetic ways. Explore deeply this question from two sides, and start design with similar or contract colors of the poster's theme environment .In the process of poster design, how to use color is an accumulation of practice. The design of the poster should give consideration to the both beauty of the framework and the expression of the essential toward showing the profound implication of the work.

An extraordinary poster should use special colors in its design, which expresses the symbolic meaning. In the general production, the colour of nature observed by humans becomes a symbol or a proprietary substitute for it. Colors are given many derived meanings that rapidly image the substance being replaced

itself. The space of the poster is limited. Using a sign of color derivation to render the content of the poster artistically allows the viewing public understanding what is the culturally loaded of the poster and the creative intention of the designer. Because the content or themes of different posters are various, the colors that match the design are also different. Therefore, the color matching should conform to the theme and express a sense of hierarchy. The situation of the color used in the poster is more complicated, and the standards for their division are more diversified.

According to Munsell's theory of color harmony, color contains three dimensions: hue, purity, and lightness. These three dimensions have very substantial and detailed levels.[3]There are tens of millions of colors viewed, and the color mixing formed numerous colors are even more complex and diverse. Using color to distinguish advertisement will lead to the branch too intricate. All three color elements can be used as a division standard, but they cannot replace each other. The lack of any one will make the color system incomplete.

Therefore, this study does not completely follow the strict but too detailed to the color system of classification, but on the basis of the original color system, using more sensitive sorting criteria to approximate the degree of color and true color is divided into : ① real color; ② exaggerated color; ③ extreme color.

(1)True colour means that the colors of the objects in the picture are the same as natural true colors and have not been specially manipulated that deviate from its original colour gamut. Usually includes advertisements presented in photography which can reflect true color, unlike painting, which involves artistic processing of color.

(2) Exaggerated color means that the color of things in the picture has been processed and adjusted by the designer, make it inconsistent with the true color in a certain dimension, deviates from its original hue range, either becoming more vivid/dark, or brighter/dark.

(3) Extreme color means that the color of things in the picture is extremely different from its original color, Maximum/minimum in one of the three dimensions of color, presented as a single pure color, full color, or black and white tones.

#### 4.2. The use of colors needs to attract the attention of the audience of environmental protection posters

Color was widely used at ancient because it can express intuitively the content and theme of poster. when design a poster , designer will be disturbed by the commonality and individuality of color, in excellent poster how to using color design it base on the designers' professional knowledge. [4]As we all know, domestic and foreign history and culture are quite different, and their values are different. With the influence of cultural circle effect, poster design, as a special cultural product, naturally shows different styles. Throughout the history of poster design, from black and white posters, to color posters, to multimedia posters now. The design of posters has changed dramatically, especially the use of color.

From the natural and fundamental colors to the current rich colors, the colors of the posters not only reflect the primary ecological colors, but also have strong emotional . In the process of information

transmission and emotional communication between people, the symbols in the posters can be used to achieve that purpose. For example, different individuals with common hobbies, after seeing the same poster, they will have the common imagination because of a special symbol in the poster. In poster design, designers often reflect their individual emotions through the combination and application of different colors. In human vision system: black is mysterious, purple is a symbol of nobility, and green evokes vitality and energy.

Poster designers reconcile natural colors to find colors what direct expression of inner feelings. The paintings are rich in content as they totally emerge their elegant appearance and personality. People are subjective and colorful emotion. If the color applying to the poster ignores people's emotion, it will not be approved and praised by people. Color can help people relieve stress, boost motivation, and release emotions.

4.3. The color matching needs to highlight the personality and aesthetics of environmental protection posters

The evolution and development of color is a manifestation of the progress of social civilization, and it also promotes the evolution and development of poster design. Setting suspense is often used in the film or television to keep the audience's interest to continue reading and watching, mainly referring to setting some surprising and traceable sections. Suspense can also be widely used in poster design, such as exquisite structure and unexpected content for layout design, and the publicity effect is very significant.

By setting up suspense to leave space for the audience's imagination, then audience will be unconsciously influenced by the idea of poster when browsing repeatedly. It seems to be making up a mystery on purpose, in fact, this kind of suspenseful expression is used to achieve a special artistic effect. In this way, you can fully bring the subjective initiative of the audience into play, then achieve the role of promoting products and recommending services. There are many posters using this expression method, which can arouse the interest of the masses in the poster design work.

## **V. SPECIFIC IMPLEMENTATION CASES OF ENVIRONMENTAL PROTECTION POSTER DESIGN**

Environmental protection posters which subject environmental protection are the way of artistic publicity. Appealing to the public to participate actively in and practice environmental protection and promoting the idea of protecting nature in a new age. It has become the most spiritually penetrating media force in contemporary times by showing the harmonious coexistence between people, people and society, people and nature through artistic perspective and promotes social care, environmental protection and public ethics.

[6]In the multi - culture backgrounds, this paper combines the theoretical knowledge of color to analyze the breakthrough and innovation of color in the artistic expression of environmental protection poster design, as well as its advantages and irreplaceability in publicity and promotion.

### 5.1. People in different regions and countries have different preferences for colors.

For example, Figure 5 shows the colors that people in different regions prefer. Environmental protection posters designed according to audiences in different regions should have different pertinence. Different types of people and different countries, regions, and ethnic groups have different color preferences and taboos, and different color understandings. For example, blue is considered to be the color of heaven in the Middle East, while in Belgium, blue is a taboo color, and even some people in Egypt regard it as the color of the devil. Due to differences in cultural traditions and folk customs, people from different regions and countries have completely different perceptions and understandings of color.



Figure 5: Colors that people from different regions like

### 5.2. Environmental posters need empathy.

Appealing to the audience to take action through environmental protection posters and have fear and pity for the content of the poster. Being shaken by the poster to taking the initiative to practice it, try to protect the natural environment. For example the poster on the theme of air protection (Fig. 6), using a low lightness grey colour, which makes the audience feel depressed. Eventually they will repel the poster phenomenon from happening in reality, and be alert to behaviors that harm the environment in daily life.





Figure6: Poster on the theme of air protection

5.3. The design of environmental posters needs to be carried out according to different themes of environmental protection.

The construction of environmental posters should be carried out according to the corresponding environmental protection themes, such as preventing industrial pollution, and the target audience of the posters is industrial producers. According to the gender and where the location in different types of industrial and different areas to posted, different colors are used in a targeted manner. For instance, the publicity for urban noise reduction .An age census of the audience in the urban area firstly and then design environmental posters based on the survey results (Figure 7).

Age level	Age groups	Favorite color
child	0-12 years old	Bright and warm colors such as red, yellow, and green
juvenile	13-20 years old	High-purity, high-brightness colors such as red, orange, yellow, and cyan
youth	21-40 years old	Colors of moderate purity and brightness are also made of neutral colors
Elderly	41 years old and above	Low-purity, low-light colors, and sedate and serious colors

Figure7: Color preferences of different age groups

#### 5.4. Environmental protection posters also need to consider eye-catching features.

Environmental posters should also consider whether they stand out, to attract the attention of a wider audience in a limited space, which is the ultimate goal of an environmental poster. How to grab an audience is whether the important information in the layout can be displayed prominently through color contrast. Audience will quickly and accurately focus on the key points to effectively communicate the message. Color contrast mainly uses the hue, lightness, purity and tone difference between the two, which is a very common expression method in color design. As shown in Figure 8, the background of the layout is a black picture. Combined with the promotional information, the color blocks with strong contrast such as black, red and black and white highlight the content of the communication. Not only is it very noticeable, but it also feels stylish overall.



Figure8: Poster to protect pangolins and overuse of plastic

## VI. CONCLUSION

To sum up, the purpose of environmental protection poster creation is to publicize and establish environmental protection awareness for the society.

Color can bring creativity and impact to our poster design, highlight the theme of the poster and arouse the people's imagination, so as to better show the true meaning and value of environmental protection. The color of the environmental protection poster constitutes an important consideration for the designer's creation. It needs to be comprehensively designed according to the theme, audience and aesthetics. Through the comparison of sensibility and rationality, the use of innovative ways of thinking is used to determine the plan. In that way it has the ability to attract public attention and widespread concern of users.

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