



A Study of the Role of Color in Visual Communication in the Digital Perspective

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Citation: Lyu, H. (2025). A Study of the Role of Color in Visual Communication in the Digital Perspective. *Mediterranean Archaeology and Archaeometry*, 25(1), 352-357.

ARTICLE INFO

Received: 07 May 2024

Accepted: 23 May 2024

ABSTRACT

Color in digital visual communication not only has the function of visual attraction, but also can convey rich information and connotation through its unique emotional properties. Different colors can trigger different emotional responses from the audience, thus effectively guiding the audience's visual focus and emotional resonance. Therefore, we propose to study the role of color in visual communication under the digital perspective. First, we briefly describe the digital technology and visual communication technology, and conduct a basic research. Based on this, the emotional effects of different colors in visual communication are compared. We analyze the role of color in visual communication under digital vision from four aspects: emotional communication, visual guidance, associative function, culture, and branding, and combine them with the rules and characteristics of digital visual communication to present more possibilities and bring more immersive visual experience to the audience.

Keywords: Digital visual field; Color differentiation; Visual communication; Visual processing; Real-time data acquisition; Digitization technology.

INTRODUCTION

Visual communication is an important means of information dissemination, which has shown unprecedented vitality and potential in the digital field of vision ^[1]. Color, as one of the important elements of visual communication, has become more and more prominent in the digital field of vision, and is worth studying and exploring in depth ^[2]. In the digital field of vision, color is no longer just a visual embellishment, but has become an important carrier of information transmission and emotional expression ^[3]. Through the use of color, designers can more accurately convey information, guide the audience's emotions, and realize the effective dissemination of information ^[4]. Meanwhile, with the continuous progress of digital technology, the use of color has become more diversified and flexible, providing more possibilities for visual communication. Therefore, we propose to study the role of color in visual communication in the digital field. From the perspective of color psychology, color can trigger people's emotional resonance and stimulate their emotions and reactions ^[5]. In the digital field of vision, designers can create different atmospheres and situations through the selection and matching of colors, thus affecting the audience's psychological state and behavioral responses ^[6]. For example, warm colors can bring people a warm and comfortable feeling, while cool colors may trigger calm and rational thinking ^[7]. Therefore, in visual communication, the rational use of color can be more effective in conveying information and realize the precise positioning of information ^[8]. In addition, with the aid of digital technology, the use of color and multi-dimensional fusion effect has also been greatly improved, to a certain extent, simplifying the complexity of color management ^[9]. In addition, the popularity of digital technology also provides more possibilities for color innovation. Designers can create richer and more diverse color effects through digital means, injecting new vitality and creativity into visual communication ^[10]. It also helps learners understand the value and meaning of color in information communication, and provides designers with more scientific and effective color application methods and strategies ^[11]. Through continuous exploration and practice, the power of color can be brought into full play, injecting new impetus and vitality into the development of visual communication ^[12].

1 DIGITAL TECHNOLOGY AND VISUAL COMMUNICATION TECHNOLOGY

Digitization technology is a technology that converts various types of information into digital form for processing ^[13]. This technology breaks through the limitations of traditional information processing to a certain extent, enabling information to be transmitted, stored and processed with unprecedented speed and precision. Whether it is text, images, sound or video, they can all be converted into digital signals through digitization technology to achieve efficient transmission and sharing. The advantages of this technology are its efficiency, convenience and accuracy ^[14]. Digitization technology provides powerful support for the easy acquisition and transmission of information, whether it is remote communication across geographic space or large-scale data processing and analysis ^[15]. At the same time, digitization technology allows for accurate reproduction and preservation of information, avoiding the loss and distortion of information that may occur in traditional methods ^[16].

Visual communication technology, on the other hand, is a perfect combination of art and technology, which generally conveys information to the audience effectively through visual symbols, images, colors and other elements. With its unique charm, visual communication technology has become an important means of information dissemination in modern society ^[17]. By using visual elements such as graphics, text and colors, and through clever combination and layout, it creates attractive and infectious visual works, thus attracting the audience's attention and guiding them to understand and accept the information conveyed ^[18]. At the same time, visual communication technology is also the key to branding and promotion ^[19]. Through unique design styles and visual elements, visual communication technology can help brands establish a unique image and enhance brand awareness and reputation ^[20]. Whether it is logo design, product packaging, or advertising posters, brochures, etc., visual communication technology is indispensable ^[21].

2 THE EMOTIONAL EFFECTS OF DIFFERENT COLORS FOR VISUAL COMMUNICATION

As a kind of non-verbal expression, color has a direct and strong emotional effect. Different colors can trigger different emotional responses and convey different information and emotions. The following is a detailed analysis of the emotional effects of several common colors in visual communication ^[22].

(1) Red is a vibrant and passionate color with strong visual impact ^[23]. In visual communication, red is often used to express passion, love, courage, strength and other emotions. For example, in advertisements, the color red is often used to highlight the passion and vitality of a product or service to attract consumers' attention. At the same time, red can also inspire people's fighting spirit and determination, so in some sports or athletic occasions, red is also often used as the theme color ^[24]. However, it is worth noting that in some specific aspects, the color red can also form a certain negative impact, producing some negative emotional effects, such as tension, anger or a sense of danger. Therefore, the use of red color in visual communication should be carefully selected according to the specific context and characteristics of the target audience ^[25].

(2) Blue is a calm, rational and trusting color. In visual communication, blue is often used to express professional, reliable and stable emotions. For example, in finance, science and technology, blue is often used as the main color to convey a professional, rigorous brand image. Blue can also create a quiet, calm atmosphere, help relieve tension, enhance people's sense of trust. At the same time, different levels of blue may sometimes give people a different feeling, such as light blue bright, dark blue melancholy, ink indifferent. So in the use of blue, need to pay attention to grasp the brightness of the color and saturation, in order to avoid negative emotional effects.

(3) Yellow is a bright, warm and happy color. In visual communication, yellow is often used to express energy, sunshine, warmth and other emotions. In the advertisements of children's products or household products, yellow is often used as the main color to create a cheerful and relaxing atmosphere. At the same time, yellow also has a high degree of recognition, can quickly attract people's attention. But the transition of the yellow color can also form a harsh or too noisy effect. Therefore, when used, according to the design needs and the characteristics of the target audience to make moderate adjustments.

(4) Green represents the color of nature, health and peace. In visual communication, green is often used to express environmental protection, health, safety and other emotions. In the publicity of environmental protection products, green is often used as the main color to emphasize the environmental characteristics of the product. This color can also create a fresh, natural atmosphere, which helps to enhance people's sense of comfort and relaxation.

In visual communication, designers need to select the appropriate color according to the design needs and the characteristics of the target audience to match and use, in order to convey specific information and emotions, in-depth understanding of the characteristics of various colors and emotional effects, and combined with the specific design needs and the characteristics of the target audience for flexible use.

3 ANALYSIS OF THE ROLE OF COLOR IN VISUAL COMMUNICATION IN THE DIGITAL PERSPECTIVE,

3.1 Emotional communication

The multi-dimensional integration of color makes visual communication more rich and diversified. As one of the core elements of visual communication, in terms of emotional communication, color, with its unique charm and power, brings the audience a profound emotional experience. Firstly, digital technology makes the use of color in visual communication more accurate and flexible. See Figure 1 for details.

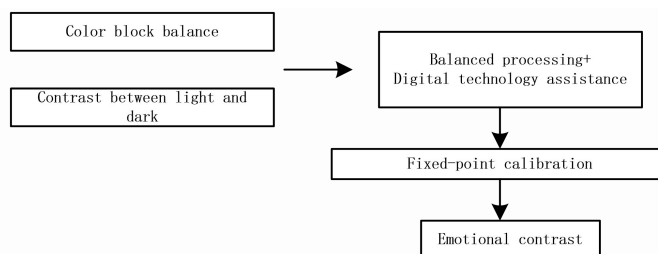


Fig. 1 Illustration of the content of color-emotion communication in visual communication

Figure 1 is mainly about the setting and analysis of the content of color emotion communication in visual communication. Based on this, through digital tools, designers can accurately adjust the brightness, saturation and hue of colors to create a rich variety of color effects. This precision makes the color can be better combined with the visual content to form a more harmonious visual experience, which further deepens the depth and breadth of emotional communication. Secondly, color has a direct emotional mapping effect in digital visual communication. Each color has unique emotional symbols and cultural connotations, which can trigger the audience's specific emotional response. For example, red often symbolizes passion, vitality and courage, which can stimulate the audience's enthusiasm and positive emotions; blue represents calmness, rationality and trust, which can create a stable and professional atmosphere. In digital visual communication, designers can choose the right color to convey a specific emotional message, triggering the audience's empathy and recognition.

In addition, the color and emotion communication in the digital field of vision also has a stronger interactivity and personalization. According to the audience's behavior and feedback, the use of color and collocation can be adjusted in real time, which makes the visual communication works more in line with the audience's preferences and needs. Stronger interactivity not only enhances the audience's sense of participation and immersion in the work, but also makes the emotional communication more accurate and effective. In addition, the personalized use of color can also better highlight the uniqueness and creativity of the work, which further enhances the effect of emotional communication. Under the digital perspective, the emotional communication of color is also reflected in cross-cultural and cross-disciplinary communication. By skillfully using colors in a diversified way, designers break through cultural and linguistic barriers in practice, and effectively convey emotions and messages to audiences of different backgrounds. However, in Gu cheng, due to the diversity and complexity of digital technology, it is necessary to constantly learn and master new techniques and tools for using color. Coupled with the changing and upgrading of the audience's aesthetic needs, it is necessary to constantly innovate and try new ways of color matching and combination to better meet the audience's emotional needs.

3.2 Visual guidance

Color in digital visual communication can build visual hierarchy through changes in brightness and saturation. In digital design, the difference in brightness and saturation of different colors can be used to create a sharp contrast effect. This contrast not only makes the boundaries between information blocks clear, but also guides the viewer's eyes to flow according to the designer's intention. Specific forms of guidance in the figure illustrates.

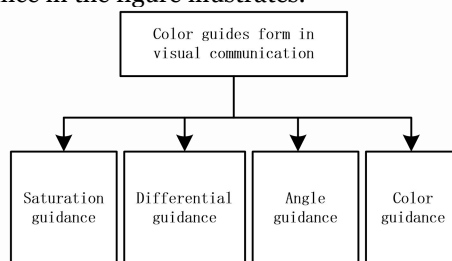


Fig. 2 Diagrammatic representation of color in guiding forms in visual communication

Figure 2 is mainly an analysis of the design and practice of color guidance in visual communication. For example, in web design, by adjusting the brightness and saturation of different information blocks, important information can be made more prominent and attract users' attention; colors can also guide the audience's sight through the contrast of warm and cold colors. In digital visual communication, the use of warm and cool colors is crucial for creating an atmosphere and guiding the visual flow. Cool colors usually give people a sense of peace and calm, while warm colors can stimulate people's enthusiasm and vitality. Through the clever combination of warm and cool colors, a visual flow is created to guide the audience to browse the information in a certain direction. This visual guidance not only makes the information conveyed more naturally and smoothly, but also enhances the audience's reading experience; the color visual guidance in the digital field of vision is also reflected in the sense of rhythm and rhyme of color. Designers create visual effects with rhythm and rhyme through gradation, repetition and contrast of colors. The visual effect can not only attract the audience's attention, but also guide them to receive information in a certain rhythm and order. For example, in animation design, through the gradation and transformation of colors, it can create a dynamic visual effect and guide the audience to follow the rhythm and change of the animation.

In fact, the integration and guidance of digital technology, to a certain extent, provides more possibilities for the visual guidance of color in visual communication. With the aid and support of digital tools and technologies, designers can precisely control the change and application of color to achieve more complex and detailed visual guidance effects. For example: the use of

digital software in the color adjustment tools, designers can make precise modifications and adjustments to the color in the image, so that the use of color is more in line with the needs and goals of the design. At that time, this also requires designers to have a solid foundation in color theory and rich practical experience, according to the design needs and the characteristics of the target audience for flexible use. At the same time, designers also need to constantly learn and explore new ways of using color and techniques to adapt to the ever-changing digital environment and audience needs.

3.3 Associative functions

Color in digital visual communication can trigger the audience's association with specific things. Each color has a unique symbolic meaning and cultural connotation, and can be associated with specific things or scenes. For example, when people see green, they tend to associate it with nature, vitality and peace; when they see blue, they tend to associate it with ocean, sky and calmness. In digital visual communication, the use of these colors symbolism, and specific things or scenes combined to trigger the audience's associations, thereby enhancing the communication effect of the information; color can also trigger the audience's emotions and emotional associations. Different colors can evoke different emotional responses, but also guide the audience to form different face thinking. For example, red is like fire, blue is like water, and green is like vitality. In digital visual communication, designers use the emotional characteristics of color to create a specific emotional atmosphere, triggering the audience's empathy and feelings. This emotional association not only enhances the communication effect of information, but also makes the visual communication works more infectious and attractive.

In addition, the association function of color in digital visual communication is also reflected in the association of culture and history. As a kind of cultural symbol, it carries rich historical and cultural connotations, and through the use of colors with specific cultural significance, it triggers the audience's association with culture and history, and conveys specific cultural information and values. The current setting corresponds to the content of the association guide, see table 1 to illustrate.

Table 1 Table of associative content settings of color in digital visual communication

Color associates content names in digital visual communication	Content standards
Color block splicing	Adjustment of different color blocks
Visual overlap	Color causes visual overlap
Digital adjustment	Combining digital technology for unbalanced adjustment
Dynamic presentation	Visualization+Dynamization

Figure 1 is mainly about the setting of the association content of color in digital visual communication. The current association standard and content are not fixed, but can be adjusted according to the actual needs. This kind of cultural association not only enriches the content of visual communication, but also enhances the cultural connotation and depth of the work. Coupled with digital tools and technologies, designers can control the use and presentation of color more precisely, making the color association effect more prominent and strong. In addition, digital technology can also realize dynamic changes and interactive effects of color, further enriching the associative level and connotation of color. In this context, designers also put forward higher requirements, need to be more familiar with the characteristics and symbolism of various colors, familiar with color and things, emotions, culture and other aspects of the connection. Flexible use of color, to create a unique association effect of visual communication works.

3.4 Culture, brand building

As an important carrier of culture, different colors often have specific symbolic meaning and cultural connotation in different cultural backgrounds. In visual communication, designers choose specific colors to convey specific cultural information and values. For example, in Chinese culture, red represents festivity, auspiciousness and prosperity, so in the visual communication of Chinese brands, red is often used as the main color to express the festive atmosphere and cultural heritage of the brand. In western culture, blue is often regarded as a symbol of stability, professionalism and trustworthiness, so in the visual communication of international brands, blue is often used to convey the professionalism and reliability of the brand; color plays a crucial role in branding. The shaping of brand image needs to rely on the power of visual communication, and color, as an important element of visual communication, can directly affect people's perception and feeling of the brand. By choosing the right color, we can create a unique brand image and make the brand stand out in the fierce market competition. For example, Coca-Cola's red and white combination has become its brand's signature color, which not only allows people to recognize Coca-Cola at a glance, but also conveys the brand's vitality and enthusiasm. Similarly, Apple's silver and white combination also represents the brand's simplicity, fashion and high-end; digital technology provides more possibilities for the cultural expression and branding of color in visual communication, realizing the dynamic changes and interactive effects of color, making the role of color in branding more prominent and vivid. For example, some brands will use digital means, in different scenes and activities, through color changes to convey different information and emotions of the brand, to enhance the interactivity and experience of the brand. In the whole process, the color, visual communication and brand will establish more links, the characteristics of its settings and the needs of the target audience, but also to create a brand culture in line with the visual image that can attract consumers, prompting the role of cultural expression and branding will be more in-depth excavation and application.

CONCLUSION

In conclusion, the above is an in-depth discussion and practical research on the role of color in visual communication under the digital perspective. Color plays a pivotal role in digital visual communication, not only as a visual element, but also as a carrier

of emotion and a medium of information, which can effectively convey the designer's intention and the audience's needs. Driven by digital technology, the use of color has become more flexible and diverse, bringing unprecedented possibilities for visual communication. But at the same time, facing the complex background of references, it is necessary to establish corresponding links for color management and color innovation, strengthen the speed and efficiency of color differentiation, and stimulate the enthusiasm of learners to explore and innovate continuously. Together, we will explore the new applications, trends and methods of color in digital visual communication, and contribute more wisdom and strength to the development of visual communication.

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