

# Application and Innovation of Computer Digital Technology in Visual Communication Design

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## Abstract

The application of computer digital technology in visual communication design and the technology in innovative research effectively solve innovative visual design through the application of amplified quantitative superset. Traditional visual design (such as microprogram firmware) cannot effectively solve existing problems. The successful development of computer digital technology application and innovative research in visual communication design makes visual art more creative, more practical, and interactive.

**Keywords:** Digital Technology, Visual Communication Design, Application, Innovation;

## 1. Introduction

Before the Internet entered the public's field of vision, traditional visual communication only relied on television, radio, newspapers, etc. to carry out the single-port information transmission, and the speed of transmission was slow and the audience was small<sup>[1-3]</sup>. With the rapid development of digital media, there are various forms of visual communication design. Visual conflict is incomparable to traditional design, and because its effect affects the public's visual aesthetic consumption, visual communication design in the information age is informational. Dissemination made a contribution<sup>[4-6]</sup>. By analyzing the development status of visual communication design, we try to summarize how to carry out artistic innovation and research in visual creative design based on computer digital technology.

## 2. Information dissemination characteristics of visual communication design in new media

New media and traditional media have very different development backgrounds. They emerged in the age of advanced technology. Thanks to technology, digital and network media intervene in people's lives, and the communication methods between people and

the mode of information dissemination have undergone tremendous changes. At the same time, the use of digital technology and network technology in visual communication design has changed the language form of visual communication and has a profound impact on the information dissemination method of visual communication design.

### 2.1. Two-way interactive communication promotes the formation of participatory design

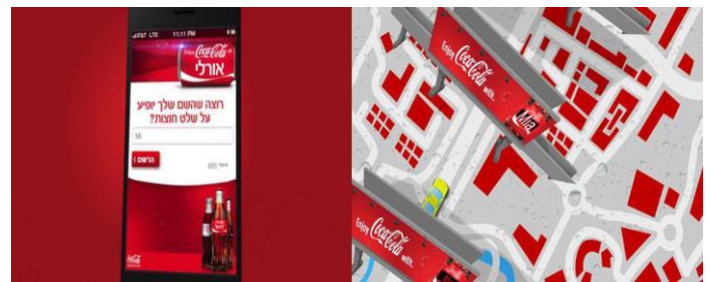
As the new media information transmission is compared with traditional media, the communication mode of traditional media is mass and one-way. The masses refer to a group of unspecified mass groups, which means that the audience cannot make choices. The audience can only passively accept but cannot respond, and cannot actively choose. The dissemination of new media is bidirectional and interactive. The audience is a collection of single and clear individuals. Therefore, the bidirectional nature of dissemination makes the new media more accurate and effective than traditional media to disseminate information.

In the era of new media, visual communication design has always taken the audience to receive visual information through their own aesthetic

judgments as the ultimate goal, and visual communication design has always pursued and yearned for psychological interaction with the audience, thereby turning the transmission of visual information into Effective communication and communication with people. According to the theory of reception aesthetics proposed by German aesthetician Hans Robert Jauss, the core of reception aesthetics is to start from the audience and start from the reception. It now seems that the concept of receiving aesthetics can be incorporated into the visual communication design in the new media era, and the audience has a high degree of participation in the interpretation of visual information. In traditional printing design, visual information transmission is passive communication, and readers cannot choose and participate, while new media visual communication design is an interactive design with people, emphasizing the audience's active cognition in the process of receiving information. My aesthetic appeal and willingness to selectively accept visual information. This provides space for innovation and breakthroughs in design thinking and concepts for visual communication design in the new media era. We can create visual creations based on this selective way of reading information, allowing the audience to fully participate in the entire design process To get a more humane visual experience.

The two-way interactive dissemination of visual information has made new media visual communication design pay more and more attention to the psychology of the audience and the "participation" in the design. On the contrary, more and more people are also looking forward to bringing their ideas and wishes into it. In the design, this promotes the formation of "participatory design". Everyone is familiar with the design of Coca-Cola's name bottle. It was first completed by an Australian Coca-Cola agent, and it is also common in China. People can bring their names into the packaging design to form personalized customization. As one of the activities of this activity on a global scale, Israel Coca-Cola played a custom billboard activity

outdoors, as shown in Figure 1. The first is an activity app that allows users to submit their names, and then when the mobile terminal is close to the billboard, it will detect the GPS signal of the mobile phone, and the billboard will display the user's name, making passers-by a unique interactive experience. It can be seen that the two-way interactive communication of new media has brought unlimited possibilities for visual design innovation. In the design of new media visual communication, the audience's participation is higher. People are not only receivers but also one of the creators of the design. This kind of interactive advertising design through audience participation not only realizes the high-quality dissemination of information, but also makes people have a pleasant experience.



**Figure 1.** Coca-Cola interactive advertising design in Israel.

## 2.2. Cross-media integrated communication breaks through the visual sense

In the era of traditional media, the carrier of visual information dissemination is mainly a single medium such as newspapers, magazines, posters, and television. Due to the constraints of space and time, the dissemination of information has limitations. In the current day when new media is becoming more and more prosperous, with the development of multimedia technology, a variety of media forms are integrated for integrated communication, so that information can be accurately and efficiently communicated. At the same time, the audience can get multi-sensory experiences such as sight, hearing, and touch.

The integrated communication of multiple media has brought a new creative field to visual design. Multimedia technology uses digital technology to comprehensively process various information such

as text, graphics, images, sound, animation, and video. This is important for visual design in the new media era. Speaking is both an opportunity and a challenge. Designers need to integrate multiple languages into their design works to enrich the form of expression. The rise of new media has transformed the traditional visual communication design from pure visual information transmission to multi-sensory experience such as hearing and touch. This kind of communication that transcends vision and multi-sensory blending brings a more humane and comprehensive experience to the audience. . This aspect is very obvious in the visual design of mobile media, such as its touch and gravity sensing technology, coupled with the performance of sound and visual effects in the media, so that users can feel and blend into the visual, tactile, and auditory senses. The dissemination process of visual design information, thereby forming an interesting and comprehensive experience.

Today's society is a multi-media society. With the support of digital technology and Internet technology, many new media forms have been derived. At the same time, traditional media has gradually moved closer to new media. For example, the current TV can no longer be divided into a single medium. It has become an intelligent terminal integrating audio-visual and entertainment. In addition to watching TV programs, we can also perform online videos and movies. Therefore, the continuation and integration of new and old media is an inevitable trend in the development of new media now and in the future. The design of new media visual communication needs to make full use of the characteristics of digital technology and multimedia communication, and continue to innovate design language to achieve high-quality visual information. . Efficient communication.

When using the DEA model to evaluate and analyze the industrial competitiveness, it is important to determine the classification of each variable, divide the variables into input and output variables scientifically, and introduce various variables into the corresponding DEA model for

measurement processing (such as As shown in Equation 1), in the end, the specific conditions of industrial technical efficiency, overall efficiency, and scale efficiency can be obtained, and the industrial competitiveness can be accurately and objectively analyzed and evaluated from the results of industrial production efficiency.

$$Y = TFP \times K\alpha \times L\beta + v - u \quad (1)$$

Where  $v$  is the random error term and  $u$  is the inefficiency term.

### 2.3. Personalized communication leads the modern visual trend

Personalized media has brought a new way of visual information transmission and a new visual experience. The personalized way of communication makes the visual effect gradually personalized, increasing the space for visual forms to choose from, and its visual language can express the distinctive audience The personality of the person can also influence the surrounding people through this personalized visual performance. Designers can make full use of the personalized advantages of social media to convey information, quickly capture new elements in line with the trend of the times, and apply them to visual innovation. In this kind of personalized information dissemination, people can establish various levels of communication and sharing, which also brings new creative space to visual communication design. For example, the emoji emoticons created by Kurita Kazutaka (Figure 3-3) are known as the first universal language and are widely used in today's social networks. Emoji is a variety of graphic symbols instead of language expression. People can use these graphic symbols to establish effective communication, and at the same time, through this design form, they can give full play to their imagination and re-creation. Nowadays, emoji symbols have once become a new type of visual marketing method in the new media era, using graphic symbols for personalized combination to form new semantics.



Figure 2. Emoji design.

### 3. Visual consumption and aesthetic psychological characteristics under new media technology

#### 3.1. Visual consumption under the influence of digital images

We are deeply in a consumer society, and the impact of visual culture on our lives has become increasingly profound. When "watching" has become a kind of consumption, emphasizing the pleasure of vision and focusing on the pleasure that vision brings to people, which makes visual consumption the mainstream of contemporary consumer society. With the development of society and the continuous innovation of new media technology, "digital survival" has gradually become a new kind of survival and lifestyle for people. Nowadays, "digital" products are rapidly updated with the development of science and technology, and technical digital images have an increasingly profound impact on paper graphics. As Hillis Miller said: "Printed books will continue to It maintains its cultural power, but the era of its rule is clearly ending, and new media is increasingly replacing it." In this age of new media prosperous, the visual shift brought by cultural products and digital images under new media technology is profound. Affects the public's visual consumption.

As new media technology intervenes in the lives of the masses, people's communication and lifestyle have undergone major changes, the media of visual information has undergone changes, and the way of information dissemination has gradually shifted from paper media to digital media. In the current "image reading era", people have forgotten the text

symbols in the paper, and gradually began to be willing to accept graphics and images. With the changes in media, digital images have profoundly affected people's lives, and they have become more abundant. The visual form, the dynamic, multi-dimensional, and multi-sensory information dissemination mode enables people to get a better experience. Digital technology integrates popular culture and words into new media, and digital images gradually replace words. With the advent of smart phones, people's lifestyles have been deeply affected, and digital image information has flooded every corner of people's lives. Visual images with many new media elements continue to influence and stimulate the consumer desire of the public, and the visual consumption under the digital technology also promotes the transformation of the public's aesthetics and visual culture.

The emergence of new media has made the consumption of visual culture gradually popularized, which in a real sense has brought a new opportunity for the development of "popular art". From then on, the art design in the new media era is no longer exclusive to the minority. The wide application of digital technology in visual works greatly simplifies the process of artistic creation and the dissemination and acceptance of visual information, and more importantly, narrows the distance between art and the public. People can have fun and interactive communication through new media, so that more people can participate in the process of art dissemination. At the same time, on the big stage of new media, the multi-tentacles, wide-ranging, and omni-directional communication of the Internet provide art creators with a vast space, while also reminding myself that all art creation cannot do without the participation of the public. Design is also for people.

In this era of "reading pictures", new media technologies are both an opportunity and a challenge for visual communication design. How to use new technologies and new expressions to attract the attention of the audience with a stronger visual impact and at the same time psychologically infect

Consumers, this is the biggest challenge in the new media era for visual design practitioners.

### *3.2. Aesthetic psychological characteristics of visual transmission of new media*

Aesthetics is a state of relationship formed between man, society, and nature, which has the characteristics of no utilitarian, image and emotion. On the basis of reason and emotion, subjectivity and objectiveness, seeking truth and development in aesthetics can be recognized and praised by society for a long time. The new media era has given birth to many forms of art design, and the unity of art and design lies in the construction and expression of its internal aesthetic system.

For the visual communication design under the new media technology, it breaks the time and space restrictions that were once encountered in traditional media, and constructs a new aesthetic paradigm in a new context. In the new media, people obtain a comprehensive experience through the dynamic visual performance of pictures and texts and the perceptual blending of multiple senses, thereby generating a rich sense of affection and pleasure. With the continuous innovation and maturity of new media technology, visual communication design needs to pay more attention to the aesthetics of the design form to meet the aesthetic needs of the public. Nowadays, the rise and popular use of the Internet make it easier for people to obtain graphic and image information through network platforms. With the rise of self-media platforms, people can communicate and share information in a timely manner and efficiently obtain the most fashionable information and images have undoubtedly broadened the public's horizons and thoughts, and the rapid spread of visual image information also constantly affects the changes in public aesthetics. In addition, with the intelligentization and simplification of software tools, the public can also give full play to their creativity in accordance with their personal aesthetic psychology to beautify images and text. For example, with the popularity of smart phones, various mobile phone applications for optimizing pictures emerge in an endless stream.

People can use them to beautify photos or simply arrange pictures and texts, which enables everyone to become a designer of visual images. It also shows that the aesthetic interaction effect in new media is taking place.

The development of new media technology continues to inject new vitality into visual communication design. The innovation and evolution of virtual technology has inspired designers to new design inspiration. Multi-dimensional and multi-sensory visual design creation has brought unlimited immersion to the public, such as Today's online games, three-dimensional animation, etc., all bring people a unique aesthetic enjoyment. While using the latest media technology to create visual creations, designers can also conduct cross-regional visual communication through network media. Designers use network platforms to share works and interact online to achieve aesthetic improvement. For the audience, the Internet is a big stage for visual detonation, and the presentation of every visual work affects the audience's aesthetic experience. Therefore, designers need to perceive the artistic connotation of new media visual communication, fully adapt to the audience's aesthetic psychology and experience psychology, in order to create visual works that can resonate with the audience and have a sense of aesthetics.

## **4. Innovation of digital technology in visual communication design**

### *4.1. Based on education and talent*

In the digital age, the innovative effects of traditional visual communication design are constantly turning into innovations in design concepts and thinking, and the basis for cultivating innovative thinking in education. The realization of innovation requires people to continuously use their own wisdom to give full play to their subjective initiative. Therefore, an important factor in innovation is talent. Moreover, visual communication design is an innovation-based curriculum, which is directly related to the designer's

educational design and their own abilities. Therefore, in order to cultivate more innovative talents, colleges and universities need to make full use of digital technology, effectively combine daily design with digital technology, improve their independent thinking and practice ability, and continuously learn the concept of visual communication design. , So as to enhance students' practical ability, and enhance their thinking mode and value judgment of visual communication design. In addition, in order to promote my country's traditional culture, colleges and universities should also establish a design education system that integrates nationality and modernization, and promotes the modernization and globalization of visual communication design, making it more feasible and practical.

#### 4.2. Should be based on technology

Science and technology affect the design of visual communication, and provide support for the design of visual communication with new ways of thinking, theoretical models, and technology. With the development of science and technology, visual communication technology has been continuously developed and updated from original printing and papermaking to modern digital technologies such as film and photography. However, visual communication designers must have a keen intuition to create modern popular elements when using digital technology, and they must also have the ability to transform digital technology into a production capacity that can create economic benefits for society, and achieve many improvements, such as Table 1 shows. In addition, we must work hard to absorb the relevant theoretical knowledge of Western visual communication design to make the innovation and application development of digital technology in visual communication more perfect.

**Table 1.** Improved content.

Serial number	Promote
1	Materiality Expands to Immateriality
2	Two-dimensional to multi-dimensional promotion

3	From static to dynamic
4	Single subjective improvement to human-computer interaction

#### 4.3. Organic combination of nationality and humanities

At present, the national characteristics in visual communication design are gradually becoming weaker with the development of globalization.

The development trend of uniformity and globalization of visual design has extremely adverse effects on its development and innovation. In particular, the times are constantly diversifying. According to the national culture of modern visual communication, it has more and more international and national characteristics. The characteristics of my country's national culture have brought unprecedented impact to people's vision and promoted the use of digital technology in visual communication design. China has a very good development trend.

#### 5. Visual communication innovation led by dynamic design

With the support of new media technology, visual information has shifted from traditional two-dimensional planes to multi-dimensional and dynamic transmission. This dynamic information transmission has become the most important means of communication in new media, which is compared with traditional static transmission. , Has a huge advantage. Dynamic design is a design form inspired by new media. It is a four-dimensional space design based on time, but it is different from animation design. The dynamic design of visual communication uses abstract graphics and images to make visual information dynamic through technical means. The focus is on the transmission of visual information rather than being as narrative as animation or film and television design. With the innovation and development of new media technology, the form of visual communication design is becoming more and more dynamic. Today, dynamic design is widely used in new media. Dynamic design is undoubtedly one of the main

characteristics of visual communication in the new era, and it is also the most representative form of expression in the visual design of new media.

### *5.1. Advantages of dynamic design in visual communication*

In new media, the "dynamics" of dynamic design refers to both the dynamic performance of visual elements and the dynamics of information dissemination media. This embodies the two aspects of dynamic design in new media: in a narrow sense, mainly It refers to the presentation of visual elements in the media with dynamic effects, such as dynamic graphics and text, animation, light and shadow, and influence. Broadly speaking, the process of new media dissemination of information is dynamic, which reflects the strong interaction of new media communication. Therefore, the dynamic dissemination of information in new media is a necessary condition for human-computer interaction. This also means that in new media, high-quality dynamic design can bring a stronger human-computer interaction experience to the audience.

For example, the "motion design" in interface design is getting more and more attention from visual design practitioners. Unique motion effects can express the distinctive personality of the APP, create fascinating effects, and at the same time can comfort users through user experience and make The audience gets a relaxed and pleasant feeling when reading the information, so as to truly achieve humanity. However, the dynamic design cannot be abused. The abuse of special effects will distract the audience. The dynamic effects are used to keep the user's attention and guide the user to operate. Excessive animation performance or excessive transition animation can only make users irritable , Produce disgust. The designer needs to grasp this delicate balance, achieve a degree of relaxation, and take function first as the highest design criterion.

### *5.2. Dynamic expression of text design in new media*

In the era of new media, visual communication design shows stronger communication between visual art and people. In addition to the

communication of image language, it is also inseparable from the communication of text language. The accurate and wonderful performance of font language can make visual design works. Add to the infectiousness of art. Font design is the use of styling rules and expression skills for the connotation of fonts, through in-depth creative thinking development, so that it has both innovative aesthetic vision and better semantic transmission. With the informatization and civilization of social life, the spiritual and cultural consciousness presented by people has become stronger, and people need more personal and tasteful visual forms. Nowadays, with the development of new media, technical means and the updating of design software technology, dynamic font design undoubtedly has unique personality and expressive power, and can meet the aesthetic needs of modern people's lives. Designers can use more Technical means and display platform to express, this kind of technical superiority gives designers more space to use their imagination. Using the advantages of media technology, we designed a dynamic font design that was "beautiful in shape and eye-catching" and at the same time "beautiful and heart-conscious".

## **6. Conclusion**

The dissemination of new media is bidirectional and interactive. The audience is a collection of single and clear individuals. Therefore, the bidirectional nature of dissemination makes the new media more accurate and effective than traditional media to disseminate information. In visual communication design, the innovation and application of digital technology has brought breakthrough progress to visual communication. It combines modern art design with science and technology. Therefore, it is an inevitable trend in the development of visual communication technology. As a result, communication technology has developed rapidly.

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