



# Exploration of Visual Communication Design Based on Green Design Principles

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**Abstract.** The field of art and design has accompanied the development of the country and the construction of a better society has begun to involve a larger scope, profoundly affecting our quality of life and economic construction. At the same time, however, the abundance of materials and commercial production and sales have to a certain extent caused great waste. In an era of high-tech abuse, the principles of green design should permeate the design concepts of every designer. In this paper, we look at the direction of visual communication design and explore the ways in which green design principles can be used as a guide to visual communication design practice and the implications for designers.

**Keywords:** green design principles · visual communication design · designer's responsibility

## 1 Introduction

In the era of the rapid development and spread of the Great Information Age, all bulk products have been successfully integrated into the life of society. Green design is beginning to be called upon more and more as the awakening of environmental awareness in the world of the future. Designers, as the original developers of products and as important decision leaders guiding the development of the design world and the use of the surrounding social life, have an important responsibility for the safety and security of the planet.

The importance of green design is pervasive in our social life. There are countless cases of accidental deaths and injuries caused by mistakes in the design of products; by the creation of new styles of permanent junk, whose materials and processes pollute the air we breathe and can leave irreversible environmental hazards. It seems that designers are no longer meant to be nice and kind, but have even become a group of “dangerous people” whose “ecological defects” are to blame for the increasing fragility of the planet.

Green design is a design movement that aims to protect natural resources and prevent industrial pollution from destroying the ecological balance, which is a key reason for the strong advocacy of green design.

## **2 Principles of Green Design**

The American design theorist Victor Babcock argued that design should have an ethical responsibility to users, society and the environment, and that design must balance the social and long-term significance of the present [1]. As a result, he wrote the book *Design for the Real World* and published more calls for designers to follow the “3Rs”: “Reduce”, “Reuse”, “Recycle”, meaning “reduce again”, “reuse” and “recycle”. He advocates that design should minimise the destruction and waste of resources and that design should consider the reuse and recycling of resources. A humanitarian vision of the world’s development wakes up designers who are over-indulged in the world of high technology. The development of design concepts with the main objective of building green lifestyles. Sustainable development as a goal and vision, green design as a pathway to build a green design system based on sustainable development.

## **3 The Practice of Visual Communication Under the Principle of Green Design**

As a member of the visual communication designers how should we apply green design principles to solve practical problems while reducing the burden on the earth? In exploring the practical ways of greening visual communication design, the author considers this question from four aspects: design philosophy, design language, applied materials and production processes.

### **3.1 Green Design Concept**

To raise the awareness of “greening” of the whole population, to cause reflection on ecological damage, to highlight the people-oriented, environmental protection, ecological, reduce material and energy consumption is our original design intention. In the design process, we follow the Laozi philosophy of ‘nature-based’ and consider how to increase the benefits and reduce the damage to nature, while meeting the basic needs of design. We aim for sustainable development and promote low-carbon design values.

### **3.2 Green Design Language**

Starting from Mies van der Rohe’s “less is more” concept, the design language of “less is more” and “simplification” is advocated. The design concept of natural simplicity is emphasised to improve the efficiency of visual communication and to promote the use and regeneration of visual resources. In visual communication design, consideration should be given to increasing the practical functions of the product, extending the life of the packaging design, increasing the possibility of secondary use of the packaging and adding more functions to it.

### 3.3 Green Application Materials

The use of natural, green, renewable and environmentally friendly materials, the design of the premise of not adding to the burden of the natural environment, reflecting the return of design to nature. Natural materials and green claims are a new era of people's need for quality of life [1], and can even be a "brand" effect, a positive design concept, so that it has the potential for rapid promotion. In the physical application of visual communication design, packaging design and book design are the main materials used, and the choice of materials can be more than just paper products, but more natural materials, recyclable materials and non-toxic materials.

- (1) Natural materials. Materials obtained from nature, only simple processing or even direct use in visual communication design, no pressure on the environment materials. For example, trees, plants, sand, stones, etc.
- (2) Recyclable materials. In the development of materials, the recyclability of materials is improved. In the selection of design materials, choose packaging materials that can be recycled and used multiple times.
- (3) Non-toxic materials. In the selection of materials to avoid the use of highly polluting, not easily degradable non-low carbon materials, to reduce environmental pressure, total carbon emissions.

### 3.4 Green Production Process

This can be considered from the three perspectives of improving printing methods, recycling packaging and increasing the practical functions of packaging, designing products that can be returned to nature and do not burden the earth one iota, or even designs that help the earth to reduce stress. The traditional printing process has exposed its serious environmental pollution hazards while promoting economic development.

- (1) Ink pollution. Ink as one of the basic elements of packaging, in the convenience of mass production at the same time also volatile organic compounds in excess of VOC (Volatile Organic Compounds) on the atmosphere and the human body to produce serious harm.
- (2) Industrial "three wastes" emissions pollution. Waste liquids, waste containers, if discharged into rivers, will cause great water pollution and soil pollution.
- (3) Printing using chemical materials. Excessive lead content exceeds the standard. Therefore, in the production process, the printing process should be changed as soon as possible, material supplies and the requirements of the factory environmental protection system, to do low pollution, high environmental protection products, as far as possible to reduce the pollution index of the printing process.

## 4 Green Design Practice in Visual Communication Design

### 4.1 Green Design of Packaging

Packaging design, as one of the more widely used ways of realising visual communication design, should be developed in the direction of greening from all aspects of it. Taking

express packaging as an example, Sinopec released the “2021–2030 China Express Industry Green Packaging Carbon Emission Reduction Potential Research Report”, which shows that the total carbon emissions of the whole process of China’s express packaging in the production and waste disposal stages will be 23,958,400 tons of carbon dioxide in 2020. This shows that, along with the continuous improvement of the economic level, the environmental burden brought by packaging is unforeseeable.

In the context of green design, low-carbon and environmental protection, enterprises should enhance the proportion of packaging use for environmentally friendly materials in their resource allocation, and develop the green low-carbon and economic benefits of the packaging industry in parallel. In the visual communication design process, change the material of packaging design to increase its recyclable times. Use paper products, glass, recyclable materials, composite materials, biodegradable materials, and avoid the use of disposable, polluting, non-environmentally friendly materials. For example, bamboo, wood and other natural materials to packaging design use, the use of low cost, high recycling rate. From the future development trend, the packaging design of paper products has been recognized by the world as green packaging design, which is the most promising green packaging design material compared with the three major packaging materials, such as biodegradable plastic, metal and glass, which have the characteristics of low cost, portability and easy recycling [2].

The design of the spatial structure of the packaging is also an issue that deserves attention, as is how to plan the internal space of the packaging in a rational way, while avoiding the waste of secondary resources due to the unreasonable size of the packaging. It is also important to think about the green design of the packaging structure.

Additional value and convenience can be added to the design of the packaging, for example by means of cords and hand-held designs. After the packaging has been dismantled, the secondary use of the packaging should be considered, e.g. dismantling into shoe boxes, storage boxes, toys, etc.

The root cause of resource waste in packaging design is reflected in the recycling of its packaging. In the process of packaging recycling, a special and complete recycling mechanism should be established to improve the secondary recycling of recyclable packaging materials and sorting devices. Non-recyclable plastic packaging should be destroyed and disposed of in a uniform manner to avoid any unpredictable impact on the environment.

## 4.2 Green Design for Books

In the age of information technology, the widespread popularity of electronic reading still cannot replace consumers’ dependence on paper books either. The Statistical Bulletin of National Economic and Social Development 2021 shows that in 2021, 27.6 billion newspapers of all kinds were published in books and periodicals. The huge number of paper books needs to be supported by green design, and the choice of paper, the application of inkjet and the secondary recycling of books after they have been discarded are all issues that designers need to consider. The choice of paper, the use of inkjet and the recycling of books after they have been discarded are all issues that designers need to consider. The recycling of paper is a way of reducing the pressure on the natural environment and enhancing the vitality of paper books.

The use of materials such as special papers, plastics, chemical fibres, leather, and non-renewable plant and animal materials in some book designs is detrimental to the sustainable development of green design in book design and publishing. This includes the use of synthetic chemical materials in book binding design, a significant proportion of which have not been proven to be harmless to readers, and even some printing inks can produce irritating smells during the flipping process, which not only pollute the air, but also affect human health [3].

Books are constantly being updated and published, and if the process of book design is overly focused on the use of binding materials and techniques, ignoring the foundations of green design principles, it will consume large amounts of natural resources, affect the environment and increase the cost of books and the burden of consumption on readers.

Taking young children's books as an example, the design of young children's books in cotton is very reasonable and in line with the laws of low carbon design, taking into account the reproductive development of young children, the requirements for the safety of paper materials and the requirements for younger use. The use of fabric is non-toxic and non-hazardous and prevents children from pulling and tearing during use. It has a long life span and high application value, in line with the concept of green design principles for book design.

## **5 The Green Design to the Visual Communication Designer's Inspiration**

Green design does not only represent a design style, it is a visual form study of environmental awareness, perfecting the harmonious development of design works and human social development, enriching the connotation expression of design works and following the development of human social journey. Greening is a design concept that needs to be considered and focused on in visual communication design, so that the right direction of human-centred design can be achieved.

### **5.1 Visual Designers Should Have Professional Standards**

The development of creative thinking in design, the integration of green design principles and the embodiment of environmentally friendly design concepts all require a high level of professionalism. As a professionally integrated discipline, design requires designers to consider various aspects such as artistic direction, conceptual expression, material application, design psychology, sociology, and ergonomics. This also requires the visual communication designer to strengthen his or her personal expertise and create designs with green design premises.

### **5.2 Visual Designers Should Have a Sense of Social Responsibility**

While designing the content of visual information, visual designers should grasp the impact of visual products on the human living environment and the consumption of natural resources. In the design thinking, reduce the pressure caused by visual pollution, extend the use cycle of visual information, improve the reuse of visual resources, and practice sustainable development and social responsibility in all aspects of design [4].

### 5.3 Designers Should Have a Sense of Heritage and Innovation

Visual resources are based on the dynamic development of society and the transmission of history and culture, a cultural, historical, and social context. In the context of the new era, the rapid development of electronic networks has brought about revolutionary technological upgrades such as paperless offices and online payments. Visual communication design, as a design discipline based on two-dimensional flat communication, should be attached to the new technological development of the new era to alleviate the environmental pressure brought by design, which is the responsibility and proposition of each of our visual designers.

## 6 Conclusion

### 6.1 The Future Development Direction of the Greening of Visual Communication Design

In conjunction with the greening of visual communication design, this has become the inevitable choice for the future. Designers have a considerable responsibility to work towards the goal of greening visual communication, but also without the participation of all consumers. After the government, enterprises and individuals have reached a consensus on green design, there will be more opportunities for positive interaction in green design in visual communication.

Green design methodology is integrated into the exploration and theoretical support of the research direction, combining the practicality of design with design concepts, not covering the design completely in the empty shell of concepts, but giving the design method to the design content enough green environmental protection theoretical support, making the whole design works rich and content. From the design of objects to the design of green lifestyles, from the reshaping of values to the formation of green lifestyles, green lifestyles bridge the gap between green design and sustainable development, and it is urgent to build a mainstream design consciousness that is people-oriented and environment-oriented.

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