

Research on the Inheritance and Development of the Paper as a Carrier of Information Transmission in the Context of the New Era

Qian Gao, Xiaoyun Fu

Department of Industrial Design, Zhejiang University of Technology, Zhejiang Province, China
fraugq@gmail.com, fuxiaoyun@163.com

Abstract - Paper is a great treasure which is result of the ancient science of our country, it enable the ancient culture flourish as a technological support. The invention of the paper put an end of the history of the heavy bamboo book playing the role as the information carrier. Along with the development of the economy and technology, the electronic industry's development had somehow set back paper's importance as the information carrier., but the habit that people prefer reading by book have formed for thousand years that would not let the paper substitute by other carriers. Through the research of paper's history and current situation in China, along with the design perspective we try to analyze the importance of the paper as an information carrier and its prospective future under this new era.

Index Terms - paper, information carrier, design, tendency

1. Introduction

The invention of paper is one of the important contributions that Chinese made for the progress of the human civilization. It has improved the progress of human society and social productivity, as well as the continuous development of the national economy. Before paper was created, people use stone, animal bones, bronze ware, textiles and other goods as information carrier.

As the carrier of information, paper is a media for people to read and get information. It has the advantages of low cost, long storage time, convenient transportation and use, spread wide and so on. However, with the rapid development of science and technology, people's life become more and more convenient, and flourished the way that people get reach to information. Hence, paper's roll as an information carrier has been lessened in a way. Whatsoever, paper has been invented for nearly 2000 years, and so does people's habit of get and spread information through paper media. This kind of psychological habit and preference is not easy to change in a short time. In addition, current technology is not capable of creating a substitute that is better than paper no matter in the aspect of economy, easy to use, or universality of consumer. So I really doubt of the recent saying of paper would be substitute by the electronic media.

According to the materialism, the process of things is a spiral movement by old things being replaced by new things, so does the paper. In the future paper's role of information carrier will disappear somehow, but the completion of this process would a slow and long procedure. People will gradually adapt to new things, at the same time they will slowly abandon old things. This adaption is both psychological and physical procedure. As a culture product,

paper is still a medium for people's nostalgia for old things. At that time, no matter how paper's nature changes, it will not disappear, it just lost the main function of information carrier and it's other function will carry on to serve people.

2. Feature of Paper Media

Information that record and spread through paper is called paper media, most commonly are newspapers and magazines etc. It is known for the credibility and authority of the information, which is resulted from their long-term accumulation. Such kind of credibility and authority is not even comparable for the network media in this era of information explosion. Authenticity of the information is the most important thing that people cares, people often consciously willing to believe message in the newspaper, which is a big advantage of the paper media.

2.1. The types and uses of paper

What is the paper? "The people's Republic of China National Standard (GB? 4687-1984) Regulations: the so-called paper, is deposited plant fiber, mineral fiber, animal fiber, chemical fiber or fiber mixture from suspension, then precipitates them to an appropriate forming machine and dry it into a uniform thin page."^[1] Briefly, paper is a thin fiber sheet used for writing, printing, painting, packing and other cultural life. Besides paper's roll as information carrier, it can also be used in sanitation, product packaging and protection etc.

According to different purpose of use, nature of the paper, the classification is also different. If only according to the method of manufacturing, it can be divided into two categories: handmade paper and machine-made paper. If classified according to purpose of use, it can be categorized as below: industrial paper, living and sanitary paper, packaging paper, printing paper, construction paper etc. There is various ways to categorize paper, such as paper quality or raw material.

In addition, special paper emerges in order to meet the various needs of people. Compared with the printing paper, it has special function and usually has only one function, therefore it has also been called functional paper. With the help of technology paper is not just a material to record and spread information or do art work on it, some paper now can be waterproof, fireproof, anti-rust, shape memory, and even can be combined with electronic and create interesting interactive products.

The diversified function of paper enables people to explore paper's value with a more open view. Maybe you can use the existing material to explore its new function and nature other than create a new material to replace it.

2.2. Analysis of the advantages and disadvantages of paper media

Mobile phone and network becoming more and more mature enables everyone became a reporter. Through these two things people can get a large amount of free information in a short time. During the information exchange process, a person who has a mobile phone or computer is both the information receiver and provider. Because of these information was come from unprofessional individuals, the reliability of the information cannot be guaranteed. As a result, all these large amount of unverified information have to be distinguished by the reader themselves. Although paper media cannot compare with digital media in the perspective of timeliness, the strong credibility and explanatory reporting is an important advantage of the paper media.

In addition, whether from the psychological or economic aspect, paper media spread more widely. Thousands of years of reading habit makes people psychologically prefer reading by holding a book or newspaper in their hand. What's more, paper can be preserved longer as a collection.

From the emotional aspect, reading through paper can bring more realistic feelings with five senses. When holding a book in your hand, you'll feel the texture of the book over; while turning the book the sound would slide into your ears. All these smell, visual and sound auditory experience and psychological feeling bring friendliness to the reader, which is incomparable for the digital simulation. With the flourishing paper types were invented, better aesthetic design of book made reading become a even more enjoyable experience.

However, some of the advantages mentioned above can also be disadvantages. For a instance, paper media is living for its credibility and the reality of information. It requires lots of human resource and equipment investment. Normally paper media has a certain publish cycle in order to spend more time to verify the authenticity of information. As a result, information spread speed is certainly incomparable with the explosive information communication through internet. What's more, newspaper and magazines' cost are very cheap and people can easily get a copy of them, lots of people abandon the papers once after they finish reading. Capered to digital books, it created waster in certain aspect and has the problem of low efficiency of usage.

3. The Inheritance and Development of Paper Media in the Context of the New Era

3.1. The inheritance of the paper media

Paper media's livelihood is depends on the long time built credibility and information authority, which requires a strong and experienced news planning team. As the main information form of paper media, words have to be strictly selected and edited before publish. High quality article is worthy of further reading compared to the digital media or the

internet. In addition, although there are plenty of literature classics and scientific E-books provided on the internet, people still prefer to buy actual book to read. It's not only because of the excellent reading experience, but also due to its collective value. Paper can be preserved much longer than digital storage device, Xuan paper (Chinese art paper) can be preserved for thousands of years. A large number of cultural legacy were recorded on paper and books. Paper has done a major contribution to culture inheritance and communication.

3.2. The development trend of paper media

Paper media now is suffering from the hit of internet, digital device and mobile phone, they are unable to meet the needs of people, who are aspiring for more vivid and interesting information communication. Traditional reading pattern has been gradually changed, and their aesthetic requirement for the book design is higher. Compared to digital books, beautifully designed actually books are more popular. This is a period of transition of the coexistence between the old and new media, everything is uncertain, everything is unknown. But there's one thing for sure: print media and the new media would eventually united.

Actually paper is not just for writing or painting; it also can be used in many other aspect of our daily life. For a instance, a Japanese architecture has successfully used paper reel to build house. In the 1980s, Shigeru Ban used paper reel built the world's first paper house. After that he built a lot of post disaster emergency shelter with his paper reel and has made lots of effort to help people who suffered from disasters. In such case, paper is no longer the vulnerable image that rooted in people's head. The diversified functions of paper enable people to treat it with a more open view.

3.2.1 Sustainable development of paper

Energy and environmental problem has been one of the whole world's most important issues. But the paper mill has been synonym for pollution for a long time. In fact, the papermaking process is mainly composed of two parts: the pulping and papermaking. Waste water from pulping and papermaking is one of the most important pollution sources. Therefore papermaking industry is worthy of attention and study. There are two directions to solve this problem: first is to use environmental friendly materials and improve waste recycling system; the second is to improve production technology and pulping efficiency.

An existing stone based material is very environmental: it is waterproofed, durable and uneasy to burn. Even if you put the written paper into the water, the words on the paper won't smudge. What's more, after you dry the wet paper you can still write on it as if it has never been into the water. If you put a stone paper and an ordinary paper on fire simultaneously, the ordinary one would burn into ashes quickly while the fire on the stone paper becoming smaller and gradually extinguished. It is both an environmental and safe material. Stone paper is a successful step on sustainable development exploration, which improves the raw material and producing procedure.

3.2.2. Paper combined with new technology

When paper is no longer only made from wood, new environmental materials came into the produce and design process. 3D printing as an important product developing technology is slowly getting into our daily life, during which paper plays a major role in it. With new materials and environment, paper is gradually getting rid of the image of pollution and not environmental (like the stone paper mentioned above). New materials also equipped paper with toughness, intensity, corrosion resistance and other physical and chemical characteristics. In the era of internet, paper is no longer a carrier of words and symbols, it can also be applied to industrial production, such as making low accurate model and raw model. It's like another version of sand table modelling, but paper modelling is more precise. Paper, a material with thousands of years' history, is undergoing an important transition during the new round of industrial revolution.

In the old days, information was exchanged through a two-dimensional media. With the development of technology, people are aspiring for more direct and interactive communication rather than a simple procedure of information record and receive. Designers now have successfully used a special ink to make the paper automatically become a 3D product from 2D graphic. Like the example in fig.1.

On the other hand, can we make a three dimensional product into a two dimensional one? The answer is yes. A designer named Kate Stone and her team use conductive ink to print circuit directly on paper and made a capacitive touchable operation system. It also uses other wireless connected device to make the paper more interactive. Compared to normal plastic substrate paper is cheaper and foldable, easier to carry and degrade, convenient to recycle and so on. It is an environmental friendly and cheap material for circuit. Information communications become more effective and direct, it is more vivid and the interaction with human is stronger.

The combination of new technology and paper made our life more colourful and interesting. Information exchange is no longer limited in two-dimension, it is freer to change from two-dimensional to three-dimensional. It is a more interactive process of information transmission and reception. Technology bettered our life.

4. Conclusions

Although paper has suffered a lot in this transition section of the new and old media, it is also an opportunity for paper. It is not the strongest of the species that survive, but the one most responsive to change. Paper need to change and enrich itself in order to meet the needs of people. It is not just the carrier of information; it is also the carrier of thousands of years' history of human. Intimacy is the biggest advantage of paper based book. While thoroughly using these advantages we also need to keep exploring new development under this new era. By using new technology and material, we can explore more paper's new characteristics. Besides the combination with digital media in the aspect of interactivity, timeliness of information and communication efficiency to make up paper's shortage, we have to pay more attention on environmental and sustainable development of paper. Only environmental development is ever lasting. In addition, paper can bring more real life experience than digital books in the emotional aspect. As the traditional Chinese calligraphy and painting media, paper plays an irreplaceable role in the cultural heritage. With the help of technology we can explore multi-dimensional characteristics of paper. But no matter how mature the technology is going to be in the future, how diversified ways of disseminate the information we could use, paper would still doing its very own job well, to contribute to the human cultural inheritance.

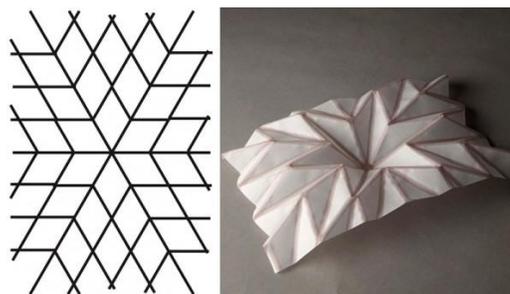


Fig. 1: paper printed with special ink.

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- [2] Fig.1 <http://jandan.net/2012/04/16/selffolding.html>