

# Traditional and Modern Technology Analysis of Paper Cultural Relics Protection and Restoration

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**Abstract:** Cultural relics are records of national history and civilization, inheriting historical culture and national spirit. Paper is one of the four great inventions of China. Paper products have appeared in the distant ancient times, and the text content recorded by paper cultural relics is of great value. However, since paper relics are prone to damage over time, historians have devoted themselves to restoring paper relics to obtain valuable historical records. The protection and restoration process should be continuously improved and innovated. Based on this purpose, this article discusses the traditional and modern methods of paper cultural relics protection and restoration, to provide help for relevant staff.

**Keywords:** Traditional and modern technology, paper cultural relics, protection, and restoration

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## 1. INTRODUCTION

With changes in atmospheric pollution in recent years, natural disasters such as smog, seasonal changes in temperature and humidity, rainy weather, high temperature and drought, and global warming have directly or indirectly affected the longevity of cultural relics. We know that the scientific management of collections is the key to prolonging the life of collections. In the face of practical problems and the safety of collections, collection administrators have a long way to go. How to make the cultural relics come alive and move while prolonging the life of the collection is a topic we often talk about, and it is also a mission we always keep in mind.

As collection custodians, we should take on this important task. Cultural relics are an important inheritance carrier of a country's history and culture, an important guarantee for the continuation of the national spirit, and even a historical and cultural resource that cannot be reproduced. The study of cultural relics is of irreplaceable significance to the study of our country's history, and it is an inevitable way and an important foundation for the development of modern socialism in our country. Cultural relics are prone to damage due to time and preservation reasons. After the cultural relics are mined, the protection and restoration of cultural relics must be carried out in time to ensure that the cultural relics can be perfectly preserved and passed on to future generations.

Through the protection and restoration of cultural relics, the complete inheritance of cultural relics can be realized to the greatest extent, and the damaged cultural relics can be repaired to a certain extent, and the charm of cultural relics can be re-bloomed. One of the reasons for the damage of paper cultural relics is that they are kept for too long. The main material of paper is cellulose, which is not conducive to long-term storage. After long-term storage, the cellulose is very likely to undergo oxidation reaction, resulting in yellowing of paper cultural relics, and it is easy to break when touched. Therefore, the paper cultural relics just unearthed should be treated with care to avoid secondary damage. Paper is mainly made of organic materials, and the production materials are closely related to the durability of paper. Due to the different papermaking processes, it has a greater impact on the life of the paper. Factors that cause paper cultural relics to

become diseased include temperature, humidity, light, insects, acidification, and human factors. Natural disasters will cause losses to varying degrees.

With the changes of the times and the baptism of the years, paper cultural relics are inevitably worn and aged, which aggravates the problem of paper cultural relics. It is very important to strengthen the protection and restoration of paper cultural relics. The application of microwave pest control technology is mainly to protect paper book resources, which is suitable for libraries and families. When paper is stored, the water content of paper books should be reasonably controlled not to exceed 8%. Books can be placed in a microwave oven for sufficient sterilization and drying before storage. This process only takes about 70 seconds to effectively sterilize and disinfect. When using this technology, ancient books contain a lot of pigments, and the binding is more sensitive to microwaves, which affects the protection and restoration of paper cultural relics. Microwaves are used to kill insects, and electromagnetic fields are used for heating. The pests are used as dielectrics to destroy the cholesterol in the pests and meet the needs of sterilization and disinfection.

## 2. THE PROPOSED METHODOLOGY

### 2.1 Traditional protection and restoration technology of paper cultural relics

Changes in temperature and humidity can easily cause damage to paper cultural relics. It is difficult to preserve paper cultural relics, and changes in temperature and humidity will have serious adverse effects on them, resulting in damage. The rise in temperature will cause the cultural relics to be damp and moldy, and the decrease in temperature will also destroy the fiber toughness of the paper, which will cause a serious decline in the fiber toughness of the paper cultural relics, resulting in a certain decline in the tensile strength of the paper, making the paper quality artifacts are damaged. Humidity changes will cause the text or paintings on the surface of paper cultural relics to fade, and excessive humidity will even cause serious damage to paper cultural relics such as mildew and rot. Moreover, excessive humidity will also cause many microorganisms to multiply in the paper, resulting in serious damage to cultural relics.

Excessive temperature and humidity will produce many microorganisms and insects. The damage of insects to paper cultural relics is huge. Since the raw material for making paper cultural relics is fibrous material, it is an environment suitable for the growth of insects. Paper cultural relics may also be corroded in ordinary storage environments. If the storage environment is poor, the damage of insects to paper cultural relics is almost devastating. Microorganisms have very low environmental requirements and can survive in any situation. Therefore, when the mold in the air reproduces on the paper cultural relics, it will corrode it, and it may also leave colored spots on it, making it difficult to recognize the characters. In practical application, microwave disinfection technology is mainly to protect paper book resources and is suitable for libraries and families.

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Multifunctional reinforcement glue is one of the most widely used protection methods at present. It can reinforce and protect cultural relics without affecting the color and texture of paper cultural relics. It has the advantages of simple configuration, convenient operation, and short cycle. Increased the life of paper cultural relics. Mechanical restoration technology refers to the use of paper and paste as the main restoration carrier when restoring paper cultural relics and books, and the use of pulp, screens, and paper-pressing grids for cultural relics restoration. This kind of restoration technology is also relatively complicated. During the restoration process, the restoration operation must be carried out in strict accordance with the restoration process to ensure that the paper cultural relics will not be damaged. Using modern technical means to protect and restore paper cultural relics includes two restoration methods: one is called original protection, which uses the paper itself as the main body for protection; the other is called regenerative protection, which uses the text content. The focus is on the retention of text messages.

## 2.2 Modern protection and restoration technology of paper cultural relics

As a cutting-edge technology, nanotechnology has broad prospects for practical application. Through the emergence of new nano-mold-proof paper, it is not volatile and can prolong the preservation life of paper files. Nano-calcium carbonate has corrosion resistance, aging resistance, and heat resistance. It is introduced into the protection of paper cultural relics and has heat resistance and anti-aging properties. In the practical application of regenerative protection technology, the information in the storage carrier is transferred to paper to realize the regenerative protection of paper cultural relics. The protection and restoration of paper cultural relics requires professionals to carry out digital processing. With the help of photocopying and publishing technology, the contents of paper cultural relics are copied and processed to achieve pre-protection, which helps to improve the effectiveness of the protection and restoration of paper cultural relics. In recent

years, with the continuous development of my country's science and technology system, nanotechnology has been greatly improved, and new nanomaterials have gradually appeared in the field of paper cultural relics restoration.

Nano-restoration technology is mainly through the application of nanomaterials, adding nano-materials to the paper of paper cultural relics, without affecting the color of the cultural relics themselves, to achieve anti-aging and heat-resistant treatment of paper cultural relics, thereby improving the strength of the paper carrier of paper cultural relics improves the quality of cultural relics and realizes the restoration of paper cultural relics. Nanotechnology is the main method of modern cultural relics restoration technology application, and it is also an important cultural relics restoration technology system in the new era, which plays an important role in promoting the development of cultural relics restoration and protection. Microwave insecticidal technology controls the humidity of paper cultural relics and protects and restores paper cultural relics by reducing the humidity. Before paper cultural relics are stored in the warehouse, they are sterilized in a microwave oven and fully dried, which can effectively improve the effect of cultural relics restoration. It takes a short time, usually about one minute to complete.

However, when performing microwave restoration of ancient books, we should pay attention to whether it affects the paper pigment and avoid microwaves from changing the color of the paper. The practical application of this technology is mainly to improve the reinforcement of fragile paper cultural relics in traditional mountings. It is mainly woven with the help of a single silk, sprayed with hot melt adhesive, and ironed with an electric iron to closely adhere to the paper. This kind of technology has outstanding advantages, simple operation, strong aging resistance of materials, and has considerable effect in the protection and restoration of paper cultural relics. At the same time, this method still has certain limitations. Although this method can realize the protection and restoration of paper cultural relics, the silk screen will cover it, which will affect the accurate recognition of characters, especially the characters with light ink. Recognition, the reflection of the silk screen will affect the accurate recognition of the text.

Comparing the traditional and modern protection and restoration techniques of paper cultural relics, it is found that the modern protection and restoration technology not only continues the advantages of traditional techniques, but also adds new technology components to achieve better protection and restoration effects. However, the use of modern technical means still needs to be further improved. For example, although the use of plasma deacidification can reduce the damage of acidic substances to paper, excessive accumulation of alkaline substances will also have a negative impact on the life of paper cultural relics. Therefore, the protection and restoration technology of paper cultural relics still needs further exploration.

## 3. CONCLUSION

To sum up, the protection and restoration of paper cultural relics can reveal the development of different historical periods, restore the essence of things, provide support for historical research, and at the same time realize the inheritance and development of excellent traditional culture, which is of great importance to the harmonious and stable development of society. enhancement. Cultural relics are the carrier of a nation's historical and cultural heritage, a cultural resource that cannot be reproduced, and is of great

significance to the transmission of national spirit. The protection and restoration of cultural relics is an inevitable way to realize historical and cultural research, and it is also a necessary measure to promote the development and inheritance of traditional culture in our country. It is of great significance to the development of national cultural undertakings.

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