

Returning Books to an Age of Innocence: How Conservation and Preservation Techniques Ensure the Stability and Accessibility of Archived Materials

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Abstract

One principal goal of the Manuscripts, Archives, and Special Collections (MASC) is to ensure that archived materials are readily available to researchers. Even fragile materials must be in a stable and functional condition for researchers to effectively utilize them without causing damage. This issue raises concerns about how best to preserve the integrity of rare books, manuscripts, prints, drawings, maps, and photographs while still ensuring adequate research access. This session describes the chief techniques necessary for proper preservation and conservation of paper documents.

The primary objective of conservation treatment is to stabilize an item, prevent further damage and deterioration, and improve the condition of the item for future use by researchers. Through the use of modern conservation techniques, it is possible to repair items to a stable restored condition. A sample of treatments performed include constructing new cases or bindings, reattaching loose or broken boards, sewing pamphlets and textblocks, mending tears, cleaning dirty documents, reattaching loose pages, repairing cracked bindings, removing old or damaging repairs, creating Mylar encapsulations, and constructing acid-free custom enclosures. Fundamentally, the goal of repairing items in MASC is to stabilize them as well as allow access for future researchers. Through the continuous application of preservation and conservation treatments to the MASC collections, the archives will continue to maintain the historical originality of items while ensuring their accessibility.

Stabilization



Maintaining a stable and protective environment is one of the most important aspects in the long-term preservation of library and archival materials.

Temperature and **Relative Humidity** play a crucial role in preserving items, as fluctuations in either greatly accelerate deterioration and can cause significant damage. The average rate of deterioration almost doubles with every increase in temperature of 18°F. Periods of

high humidity can cause severe chemical deterioration, mold growth, and insect activity. Therefore, the temperature in a climate controlled area should be around 60°F, ±2°F, and the relative humidity around 50%, ±2%.



inert materials and avoid harmful chemicals. The majority of paper collections are highly acidic and deteriorate over time. To prevent further deterioration, these items are housed in acid-free folders and boxes, which prevent the transfer of acidity between the enclosure and collection material. Prevention of chemical damage to collection materials upholds their integrity and value to researchers.

The deterioration of paper materials is of great concern to the archival community because environmental chemical reactions cause severe discoloration, deterioration, and embrittlement. **Archival Quality** and **Acid-Free Enclosures** have neutral or alkaline pH (7.0 – 8.5), use



Most of the paper items that suffer from **Acid Deterioration** were produced after the mid-19th century, when a revolution in paper production took place: manufacturers began using wood pulp, rather than cotton pulp, to make paper. While it is not possible to fully reverse the effects of acid deterioration, it is possible to isolate materials, neutralize acidity, and prevent further decay by adding an alkaline buffer to paper materials. This can be accomplished using an aqueous method—usually by immersing a paper object in a calcium carbonate solution—or by evenly spraying an item with a deacidification spray, such as Bookkeepers Deacidification Spray, which leaves an alkaline film of magnesium oxide.

Prevention

As objects age, they deteriorate and become brittle; **Protective Enclosures** provide books and documents structural support and protection during handling and transportation, in addition to preventing environmental damage caused by dust, dirt, and light. As you can tell, there are many reasons to construct custom acid-free enclosures. A rare and valuable volume may need a box to preserve its value, while a damaged low-value book may need a box because the cost of conservation treatment far exceeds the value of the book. Ultimately, protective enclosures



are a relatively inexpensive method of preventing damage to valuable or fragile materials. There are several different types of archival protective enclosures including the four-flap box, clamshell box, phase box, and Mylar sleeve, which is made of polyester sheeting.



Despite all our efforts to **Preserve Library and Archival Material**, they cannot last forever. Even with exceptional environmental standards and handling practices, items will gradually deteriorate over time and

become too fragile to handle. Fortunately, we can capture a digital image of these materials so that they will continue to be usable by researchers in an electronic form or as a printed copy. Here in the archives we employ a number of different scanners to build digital collections that provide access to some of our most delicate documents.



Documents that contain **Metal Fasteners**, such as paper clips and staples, have more potential for deterioration as the metal weakens the paper fibers. These fasteners often rust, causing the paper to become stained and brittle over time. Damage from rusty fasteners must sometimes be repaired. For paper pamphlets with rusty staples, it is ideal to remove the staples, repair damage, and sew the pages together.

Improvement



Reversibility is one of the most important best practices of conservation — it implies the ability to undo a previous treatment or repair, especially one causing deterioration or damage, while maintaining the integrity of the original object. In an effort to preserve as much of the original material, appearance, and character of an item as possible, conservators strive to alter the item as little as possible by using minimally invasive repair procedures in order to keep the item stable. By using reversible materials and techniques, we can keep books and paper artifacts available for use by our patrons, while also ensuring that future conservators will be able to undo the repairs performed, should better conservation techniques be developed at a later time.



Japanese Tissue is a thin, but very strong paper made from the long fibers of the kozo plant, mitsumata shrub, or gampi tree. The strength of Japanese paper is derived from the thousand-year old paper making process where the interlocking fibers are oriented in such a way as to result in a material which is quite strong. Japanese paper is the primary choice for mending tears on documents due to its exceptional strength, durability, reversibility, and variety of colors and thicknesses. Japanese tissue repair is a significant feature of conservation treatment because it strengthens the document, prevents tears from lengthening, improves the appearance, and allows users to safely handle the artifact without separating and misplacing fragments.



Document Cleaning is an important aspect of general care and maintenance of paper documents because it improves their appearance and removes harmful dirt and other contaminants from the surface. It is common for documents and books to have been stored in conditions other than ideal, causing dust and dirt to settle on these objects. Removing dust and dirt from books and documents discourages paper discoloration and prevents dirt from being embedded into the paper fibers. A dry method of cleaning involves a low abrasive cleaning powder, usually made of Magic Rub eraser shavings, that is gently massaged in a small, light, circular motion. The eraser particles will begin to change from light beige to a dull grey color which indicates the cleaning powder is effectively lifting dirt from the surface of the document. The document is considered clean when the powder no longer changes color.

