



Mississippi Lodge of Research No. 640

19/1 - Preservation through Photocopying

BACKGROUND

At the same time Lodges work to preserve original documents, the information these documents contain can often be readily preserved by producing stable copies. Standards have been developed for producing acceptable, long-lived copies by plain paper electrostatic (or xerographic) photocopying onto archival paper, or by silver-based microphotography (e.g., microfilm or microfiche). Neither the newer magnetic tape nor optical disk technology has, as yet, proven to be a safe means of storing information for very long periods of time. This whitepaper confines its discussion to the procedures and materials used in electrostatic photocopying onto plain paper as a means of preservation.

WHEN IS PHOTOCOPYING USEFUL?

There is a wide variety in the sizes, types, and ages of archival collections. Stable photocopies can capture the information on deteriorating original documents, or be used by researchers in place of fragile or valuable originals. The following are examples of situations in which photocopying can aid in document preservation and in the preservation of the information documents contain.

1. A few highly valuable documents are found in a series of files. These originals are removed from the files, and replaced with photocopies. The originals are placed in secure storage, and spared both handling and the risk of theft.
2. Mimeograph or ThermofaxTM copies of records are the only surviving documentation. Chemical reproduction processes such as these yield unstable copies that continue to develop over time. As result they often discolor and become illegible, grow increasingly more brittle and exude fumes that can degrade other documents stored nearby. Before this information is lost, these documents can be recopied electrostatically, sometimes with enhanced readability. If originals are retained (e.g., because they bear original signatures), they should be kept in a separate storage cabinet.
3. In a series of historic correspondence, letters are written in faded brown ink on a highly acidic wood pulp paper that is growing increasingly brown with age. No money is available for conservation treatment, and the information is in danger of being lost. A copy of each letter, while it does not slow the original's deterioration, at least preserves the content.
4. A series of early unbound journal entries by a well-known writer is used frequently by researchers. High quality copies can be produced for researcher use, saving the originals from repeated handling and wear.

5. Files contain a mixture of correspondence and attached newspaper clippings. The newsprint clippings are darkening rapidly, cracking off their clips, and transferring dark acid stains to the adjoining correspondence. Replacing the clippings with photocopies saves both their information and the original correspondence. The original clippings can be interleaved and/or segregated in a separate folder and their original location in the files noted. Many archives discard clippings after copying, provided they contain no handwritten notes.
6. A letter of a significant figure is slated for permanent exhibit at the site. A high quality photocopy of the original is placed on display; the word *facsimile* is included in the identifying label copy.
7. A Lodge has agreed to loan a number of historic documents for a temporary exhibit. In addition to the required loan forms, the staff produces a photocopy of each document for safekeeping.

Original documents should usually be retained after photocopying. In some cases, unannotated newspaper clippings or chemical copies, once photocopied, may be proposed for deaccessioning. One aspect of determining whether or not to propose a deaccession is to decide whether or not the document possesses *intrinsic* value (that is, does the original possess qualities that even the best copy does not). A document can have intrinsic value because of its close physical or intellectual association to an important figure, because the information it contains cannot be adequately copied, or because it is an example of historically interesting materials or processes itself and so provides physical evidence that its copies would not. The Mississippi Lodge of Research Board of Governors should be involved in all deaccessioning decisions. Consult the Board for deaccessioning procedures.

HOW ARE STABLE COPIES MADE?

For some of the photocopying projects listed above, the longevity of the copy is a major concern. The permanence of electrostatic photocopies is dependent on the use of a stable toner, the proper fusing of the toner onto the paper sheet, the use of a permanent and durable paper stock, and proper storage and handling of the copy.

The Government Printing Office (GPO) has published a study conducted for the National Archives and Records Administration on process and material considerations in producing permanent and durable photocopies, and procedures for evaluating their quality. Included in the report is a simple on-site test that Lodges can use to evaluate the adhesion of the image to the paper in copiers, or copiers being considered for purchase. The results of the study's own adhesion tests on copies made by several of the copiers tested are also provided.

1. The **Copier**. Xerox, Kodak, IBM, Canon, and Sharp are among the numerous manufacturers that produce the plain paper *indirect electrostatic* copy machines recommended for archival copying. In this process, a copy image is produced on a plain, uncoated paper by exposing an electrically-charged surface to light reflected off the original document. The light depletes the charge in the blank areas, so that a dry or liquid ink (toner) with the opposite charge will be attracted only to the areas that appeared dark

on the original. The charged toner is transferred to the copy paper in this pattern, and is then fused in place by heat and pressure. This process produces copies with superior permanence because it does not rely on impermanent dyes or on processing chemicals that can remain in coated papers and continue to develop over time. It is important that copy machines be tuned regularly to manufacturer's specifications in order to produce properly fused images capable of meeting archival standards.

2. The **Toner**. Toner is a dry or liquid ink that forms the copy image; most available copy machines use a dry toner. Only toners containing carbon black are recommended. Only toners meeting these specifications should be used:
 - Stable resin materials (e.g., polyesters, polystyrene, acrylics, epoxies, and copolymers of these)
 - Stable pigments (carbon black)
 - Balanced thermoplastic behavior in the fusing phase
 - Adequately fine particle size and distribution for desired resolution

3. The **Paper**. The American Society for Testing and Materials (ASTM) has published archival standards for both paper and image quality in "Standard Specifications for Copies from Office Copy Machines and Permanent Records" (ASTM D3458-75). Of the numerous archival quality papers available, two papers that meet ASTM maximum permanence standard (that is, expected to last several hundred years under acceptable storage conditions) are:
 - Xerox@ XXV Archival Bond, available from local Xerox distributors.
 - Permalife@ Bond (produced by the Howard Paper Mills Co.), available from local Howard distributors or from Conservation Resources International, Inc., 8000-H Forbes Place, Springfield, Virginia 22151, (800) 634-6932 and Hollinger Corporation, 3810 South Four Mile Run Drive, P.O. Box 6185, Arlington, Virginia 22206, (800) 634-0491.

In addition to a host of other requirements, a maximum permanence rating means that the paper contains no ground wood or unbleached wood pulp, that it has a pH range of 7.5 to 9.5 (that is, well within the alkaline range), and that it contains a calcium or magnesium carbonate reserve of at least 2%.

When testing a machine for copy quality, use the desired archival paper to evaluate clarity as well as proper fusing.

COPYING GUIDELINES

1. Mississippi Lodge of Research Publication 19/3 provides guidelines for handling original books and documents during copying to minimize damage.
2. In preservation photocopying, it is important to get the best possible image. Weak original images can often be enhanced in copying. In addition to contrast selections on the machine itself:
 - A yellow acetate sheet laid between the document and the platen can greatly improve contrast in blue inks, and sometimes in faint black inks or pencil.
 - A yellow acetate or plain white paper sheet laid behind thin tissue originals, or documents with faded or indistinct images, often enhances contrast.
 - A sheet of black paper laid behind thin paper sheets with writing on the reverse side may help eliminate the background image.
3. When producing a preservation photocopy, make sure that any notations appearing on the reverse sides of documents are also photocopied.
4. To notify researchers that they are working with a copy and not an original, the staff can type ***photocopy*** or ***photocopied for preservation*** along the edge of a piece of paper. Position this sheet behind the document during photocopying so that the label appears on the photocopy. This is an optional procedure.
5. There is an indication that, as electrostatic photocopies age, the image can continue to diffuse onto adjacent sheets. This is especially prevalent under pressure and at high temperatures. Also, contact with vinyl or plastic surfaces (e.g., notebook covers or non-archival storage materials) that contain plasticizers, can solubilize the toner and cause the image to be lifted from the page.
6. At the present time there are virtually no face-up copy machines available, and so it is very difficult to copy bound volumes, including bound ledgers, diaries, or letterpress volumes, without damaging their bindings. (See Mississippi Lodge of Research Whitepaper 19/7 for information on copiers suitable for photocopying books.) Rather than attempting to copy historically valuable books in-house, it is recommended that Lodges acquire additional copies of published volumes for use. For bound documents, contract with the closest regional conservation center to produce a microfilm edition. A hard copy can be made from this microfilm by the *copyflo* process in which microfilm images are enlarged, printed, and bound.

CONCLUSION

For the limited projects that frequently arise in Lodge collections, electrostatic photocopying can supplement conservation efforts in the preservation of both historic documents and the

information they contain. However, photocopying is not always the best reproduction method. Microphotography is preferred for bound volumes, for complete series of documents that can be arranged in final order, when readers or reader/printers can be made available to patrons, or when multiple copies or off-site use may be desirable.