

A Positive Approach to Negatives: Preserving Photographs via Microfilm Technology

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Special Collections and Archives at George Mason University (GMU) is one of many American archives responsible for a large collection of photographic negatives facing deterioration. At particular risk recently at GMU's Fenwick Library was the Library of Congress Federal Theatre Project (FTP) Collection. What follows is a discussion of GMU's experience in preserving the extensive volume of negatives in this collection and contracting with a firm that operates a LogEtronic camera, a photo-reduction mechanism capable of producing microfilm directly from photographic negatives.

The Library of Congress FTP Collection has been on permanent loan from the Library of Congress (LC) since 1974. The Federal Theatre Project, one of the four Works Progress Administration (WPA) emergency relief programs during the Great Depression, provided work for unemployed theatre people. The collection consists mainly of the records of 3,129 theatrical productions and includes playscripts, set and costume designs, photographs, posters, production bulletins, playbills, research material, technical drawings, music, and some administrative material. The photographs represent a visual record of the casts, sets, costumes, personnel, and theaters of the FTP productions.

The 9,000 negatives, predominantly on safety film and ranging in size from four by five inches to five by seven inches, with a handful of 35mm, were deteriorating alarmingly as they reached their fiftieth year in 1985. Neither GMU's library nor LC could undertake financially the task of duplicating the materials. Further, LC, as a federal agency, could not seek grant money

from another federal agency such as the National Endowment for the Humanities or the National Historical Publications and Records Commission (NHPRC), seemingly the most promising sources for assistance. Therefore, GMU's Special Collections and Archives, with the support of LC, began the search for grant funding for a microfilm project. During a telephone inquiry to NHPRC, a grants analyst suggested that the microfilming be accomplished using a LogEtronic camera. The National Archives and Records Administration (NARA) was already experiencing success in the use of a LogEtronic camera that conformed to its preservation standards. The camera, operational there since about 1978, was used for various purposes: to duplicate photographs that would be prohibitively expensive to reproduce through traditional means, to provide copies for researchers in order to avoid excessive handling of originals, to salvage images in deteriorating negatives, and to copy parts of large aerial imagery.

Next, a representative from a company in nearby Maryland made a site visit, with examples of deteriorating negatives (before) and microfiche copies (after), demonstrating visually what the LogEtronic camera was capable of doing—not only copying the negative, but indeed enhancing it in the duplicate microfiche. It was especially evident that the image of even the deteriorated negatives could be enhanced and preserved by this method. Unfortunately, during the time it took to write the grant proposal the company went out of business. We were told about another company, then called Eikon Radiographics, now

ADPACS, Inc. (Analog and Digital Picture Archive and Communications System), in New Hampshire. This company uses their LogEtronic camera mainly for microfilming X-rays.

A grant proposal to NHPRC to preserve the 9,000 negatives by duplicating them in microfilm was approved in 1984, supported by a matching grant from GMU. The total project budget was \$53,940, of which NHPRC contributed \$15,425; \$11,430 was earmarked for the actual microfilming of the negatives and production of a finding aid.

The microfilming was done by ADPACS, Inc. at its facilities. The company used the LogE 2600, the only model available at the time the company began using a LogE for microfilming X-rays. LogE cameras have an X-ray microfilm reducer with electronic contrast control and an overhead illumination device which reduces the image on negatives to 35mm film. This method ensures no loss of detail either for the negatives or any paper documentation included. The heart of the copying method is the electronically controlled cathode-ray tube that illuminates the original film at varying degrees of intensity to compensate for density changes in the original. The process, called contrast compensation, gives more exposure in darker zones and less in lighter zones. It can even reproduce images which cannot be seen by the naked eye. ADPACS's Quality Assurance Program meets American National Standards Institute (ANSI) archival standards, employing the "methylene blue" method for measuring thiosulphate content. Fuji film was used with the LogE 2600, and the per image exposure time ranged from a few seconds to as much as five minutes.

Three people worked on the project: a "project director," the librarian/archivist in Special Collections and Archives, whose time was supported by the university; a

"supervisor," also a librarian/archivist who has worked part-time with the collection for many years; and a "phototechnician" supported by grant funds. In addition, several employees at the LC Prints and Photographs Department served as consultants. The LC Photoduplication Service in the Technical Services Section approved the results of the test samples several times during the grant period by testing six inches of leader from several microfilm rolls for residual hypo (thiosulphate), film base, and definition (clarity, legibility, resolution, and sharpness of image). All the samples were judged acceptable.

Four copies of the FTP negatives were produced—two archival microfilm rolls for storage and two supplemental microfiche; the film and the fiche are in both positive and negative format. The fiche are now available to researchers and staff and are accessible through interlibrary loan. ADPACS encased the microfiche in protective mylar jackets and provided envelopes for them on which were entered, for retrieval purposes, the FTP series number of the negatives.

ADPACS performed a number of auxiliary services as part of the project. It agreed to use a "dedicated" truck to facilitate safe transport of the negatives to and from New Hampshire. It also provided maximum in-house security with full insurance and protection services for the original LC negatives. For rapid retrievability during the period when ADPACS was working with the negatives, the company filled requests by researchers for photographs by developing the negatives in New Hampshire as needed and mailing them to GMU or the requester. Only one time was there a slight glitch: someone at ADPACS sent a photograph developed from an FTP negative to the GMU radiology department. Judging by the postmark, it found its way to the biology department, which eventually forwarded it to the library through campus mail.

ADPACS also produced a finding aid for the collection. The information in the alphabetical master index of the finding aid was sorted into four other indexes: "personal name," "classification," "theater/location," and "photographer." After the master copy was prepared by ADPACS, additional copies were duplicated at GMU. This finding aid is now available upon request through interlibrary loan.

An unforeseen benefit of the duplicating project became apparent when an FTP photograph was requested for a local exhibit. A professional photographer produced a satisfactory photographic enlargement from the microfiche negative. Since the negative microfiche has a high degree of capability for reproduction, the microfiche can be substituted for the original negatives for this purpose as the negatives further deteriorate. GMU's Special Collections and Archives will continue developing the FTP negatives itself, when reprints are needed, until this becomes impossible. Some negatives already are unusable, but the microfilming project has successfully preserved the images as a visual record.

This microfilming technique, of course, is not the only option available for large-scale photo negative preservation projects. The GMU project was contemplated before optical disk and digital reproduction technology were viable for library and archives use. Even as recently as December 1986 at the Second Annual Conference on Preservation, however, NARA continued to recommend the conventional technique of microfilming to keep archival materials in acceptable condition for the coming generations. In the report *Preservation of Historical Records*, sponsored by the National Archives and prepared by the National Research Council, the Committee on Preser-

vation of Historical Records recommended the following for archival copying media:

The media that are appropriate for archival preservation are paper and photographic film, and the processes appropriate to copying using these media are archivally standard electrophotographic processes (for paper) and silver-based micrographic processes (for film).

The materials and technical problems inherent in the use of magnetic and optical storage media and the lack of suitable standards for archival quality make their use as preservation media for archival storage inappropriate at the present time.¹

Generally, videotape is considered another alternative for preservation and control of photographic images. But it does not have the capability to enhance as it duplicates, nor is the tape itself as stable a medium as microfilm for long-term preservation.

Since information on the grant project has begun to be disseminated, several inquiries and reactions have been received at GMU. A city historian in a midwestern public library recently received a grant for the preservation of a photographic collection using the same technology. His project will be done by another company using a LogEtronic camera; the company will pick up and deliver, even though it, too, is located in a different state from the project.

A LogE camera costs from \$4,000 to \$13,000, depending on accessories. While some institutions might be in a position to purchase the equipment, or might seek funding to buy one, some consortium or interinstitutional sharing of resources might constitute a more workable, cost-effective

¹National Research Council, *Preservation of Historical Records* (Washington, D.C.: National Academy Press, 1986), 86.

approach. If utilizing a vendor is not financially prohibitive, however, there is the advantage of having an outside company perform work which is highly labor intensive, usually involving experienced personnel—programmers, electronic engineers, and

photoscientists—and occasionally requiring multiple filming per image. Whichever alternative is preferred or most feasible, archivists should consider this modern technological alternative very seriously as they assess their preservation needs.



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