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A Context-Based Approach to Conserving Photographs On Textiles

**Anniack Parker, Shannon A. Brogdon-Grantham, Miriam Doutriaux, Gwénaëlle Kavich,
and Thomas Lam**

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Abstract

The use of textiles as a photographic support is relatively rare, and best practices for long-term care have yet to be established. Textile-based photographs incorporated into composite objects require a multi-pronged, contextually-informed conservation strategy. A recent Smithsonian Institution project brought together experts in photograph and textile conservation, as well as conservation scientists, to examine 11 quilts bearing photographic images in the Anacostia Community Museum's collection. The project combined curatorial and archival research with technical analysis of the photographs to enhance and fully document the artists' work and intent. Efforts focused on identifying and documenting the materials and techniques used to create textile-based photographs. The outcome is a set of conservation treatment recommendations that give full consideration to the artists' motivations and materials and techniques of production.

1. Introduction

In fall 2017, the Anacostia Community Museum (ACM) and the Smithsonian's Museum Conservation Institute (MCI) began a collaborative project to study and preserve 11 photographically illustrated quilts dating from the 1990s and early 2000s. The project began with historical research, based on previous curatorial and archival study, which provided important contextual information about the quilts and their makers, as well as personal interviews with the quilt artists and their close friends and colleagues. This information helped to frame the second part of the project, a series of technical analyses aimed at characterizing different types of photographic materials and techniques used to create photographs on textiles. The photographs on the quilts are all printed on a textile medium, and were selected to represent three printing techniques: (1) digital, e.g. electrostatic transfer or direct inkjet print, (2) silver gelatin on commercially prepared photographic textiles, and (3) transfer using a liquid emulsion. Overall, 144 photographs on textile were examined with Hirox microscopy in an attempt to catalog areas of damage and securely identify the printing process. Portable X-ray fluorescence spectroscopy (pXRF) and Fourier transform infrared spectroscopy (FTIR) were used to identify the presence of inorganic components and binder material and coatings, respectively. Results of these analyses will inform storage and conservation of the textiles. Specific conservation concerns include the need to stabilize the damaged photographic emulsion and relax the fabric supports.

2. Lori K. Gordon's Quilt Labat A Creole Legacy

Lori K. Gordon's (born 1958) quilt Labat: A Creole Legacy has images created by digital printing. The quilt (. 1) documents the life of Celestine Labat (1898-2004), a lifelong resident of the Mississippi Gulf Coast. Ms. Labat was born and raised in the early 1910s in Bay St. Louis, a town

with a large Creole community. Her family was Catholic, of African, white, and Choctaw descent, and Ms. Labat had to fight racial discrimination to get an education. At 236 x 289 cm, the quilt is a monumental wall-hanging that juxtaposes Ms. Labat's family photographs with blocks of text from an oral history project the artist developed with her. The photographs and text panels are printed on plain weave cotton fabric and stitched to a rough acrylic-painted linen drop-cloth.



Fig. 1. *Labat: A Creole Legacy* (2004.0001.0001) by Lori K. Gordon is based on the oral history Ms. Gordon gathered from Celestine Labat.

2.1 Technical Analysis of the Labat Quilt

The quilt is in stable condition overall except for a few loose stitches. The authors contacted the artist, Ms. Gordon, who was able to describe the technique she used to create the images on textile. She first scanned original photographs, creating digital images that she manipulated with an Adobe Photoshop filter to give them a cohesive monochromatic appearance. She then printed the images onto a commercially-produced Avery inkjet transfer paper using an Epson printer. Following the manufacturer's instructions, Ms. Gordon used heat to apply the inkjet transfers onto the textile. Once the image squares were created, she adhered them to the large drop cloth (secondary support) and stitched their edges down with brown cotton embroidery floss. Ms. Gordon did not recall the

adhesive. The stitches are a design choice, not a structural necessity. In the Hirox image the characteristic cyan, magenta, and yellow rosette pattern indicative of inkjet printing is visible (Jürgens 2009, Image Permanence Institute 2019) (fig. 2). In some areas, the surface has a melted appearance, evidence of the transfer process using a hot iron (fig.3).

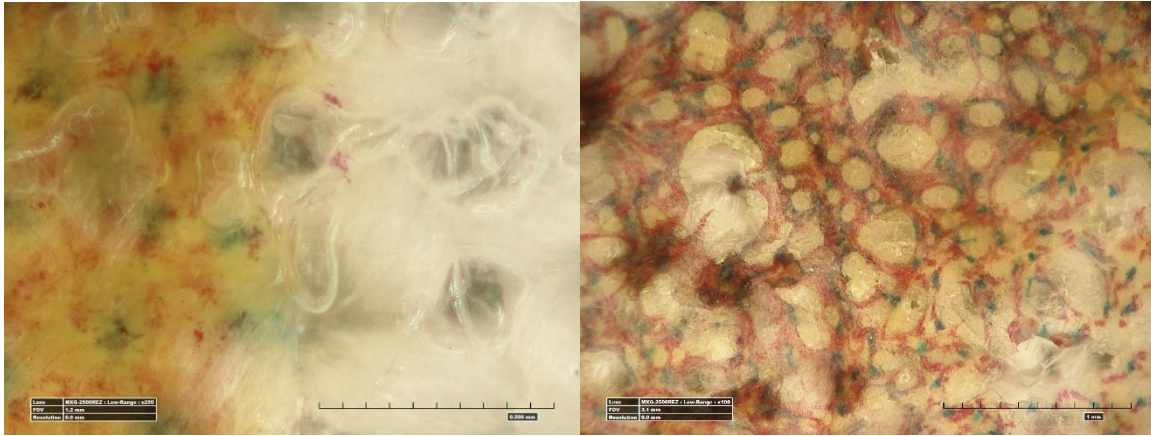


Fig. 2. This Hirox micrograph (250x) of the quilt by Lori K. Gordon (2004.0001.0001) shows the characteristic cyan, magenta, yellow, and black rosette pattern of inkjet printing.

Fig. 3. This Hirox micrograph (100x) of the quilt by Lori Gordon (2004.0001.0001) shows a melted surface, evidence of the transfer process using a hot iron.

Despite the detailed information on Ms. Gordon's transfer technique, the prints have a variety of surface sheens as a result of what appears to be the application of a coating media. Ms. Gordon did not remember what material she used to alter the surfaces, but the sheen and texture of the images point to the selective use of an acrylic medium. Since the surface of the photo transfers is in excellent condition, invasive sampling for analysis to confirm the composition of the surface coating was not performed. Studies into the aging of acrylic mediums have revealed that these materials crosslink, discolor, and develop acidity over time (Whitmore and Colaluca 1995). Due to the size of the object, flat storage is not possible, and the quilt will be rolled with the front facing out to avoid pressure on the photo transfers, paint, and coatings. An interleaving layer will be added to protect the sensitive photo transfers.

3. Ira Blount's Autobiographical Quilts

The digital printing method was also used by Ira Blount (born 1918). Born and raised in Memphis, Tennessee, he studied at the Tuskegee Institute and served in the Army before moving to Washington, D.C. in 1945. Mr. Blount always had a passion for creative endeavors, and he pursued not only quilting, but also embroidery, basketry, origami, and carving. Shortly before Mr. Blount's 100th birthday, he agreed to be interviewed by the authors at his retirement home in Washington, D.C. (fig. 4). Mr. Blount revealed that he



Fig. 4. Mr. Ira Blount identifies his family members on photographs during his interview at home in Washington, D.C.

developed his love of quilting late in life, possibly in memory of his mother, a seamstress who taught him to sew. Two of Mr. Blount's quilts include personal photographs printed on textile. The photograph on *Mem'ries of Camp Lee, VA 1942-1946* () is a sepia-toned portrait of Mr. Blount in his military uniform, signed in the right corner: "To the folks from Ira". The quilt measures ca.53 x 52 cm and includes his military insignia patches (from left to right: corporal, sergeant, first sergeant, and staff sergeant). The quilt's title and a caption reading Mr. Blount's full name, military number, and nickname, "Sgt. Shorty" are cross-stitched on Aida fabric, a plain weave cotton fabric commonly used for cross stitch embroidery, because of its even and open structure. The photograph on the second quilt, *Cannon Beckley, 1840-1903... and Family* (), is a black and white image of three generations of the maternal side of the artist's family. The quilt is made from a dark brown fabric framed with light brown mud cloth, and measures 35 x 62 cm. The title of the quilt is cross-stitched onto Aida fabric patches.



Fig. 5. Ira Blount's *Mem'ries of Camp Lee, VA 1942-1946* (2002.0004.0138) depicts Mr. Blount in his uniform during his time in the army.



Fig. 6. Ira Blount's *Cannon Beckley, 1840-1903 ...and Family* (2002.0004.0139) depicts Mr. Blount's maternal family.

3.1 Technical Analysis of Ira Blount's Quilts

Both quilts are in excellent condition; the seams and surface of the image material are stable and intact. Mr. Blount remembered consulting with members of a local quilting guild in Washington, D.C, the Daughters of Dorcas and Sons, who recommended a print shop in the area that could transfer photographs onto fabric. The surface of the sepia-toned photograph on the first quilt, *Mem'ries of Camp Lee*, has a slight gloss, but unlike Lori Gordon's *Labat* quilt, the surface does not appear to be melted. Under magnification, one can see cyan, magenta, and yellow image medium, characteristic of inkjet printing (fig. 7). In contrast, the black and white image on the second quilt, *Cannon Beckley, 1840-1903*, has a matte surface sheen and is monochromatic to the unaided eye. Under magnification, this printed image material appears to be a single black colorant suspended in a binding medium rather than embedded in the textile support (fig. 8). Despite capturing the morphology of the image material in high magnification, it has been impossible to identify whether it is a dye or pigment-based system. Confirming these specifics would help to inform preventive conservation measures, as pigment-based inks are lightfast and have lower sensitivity to environmental conditions, but are more sensitive to abrasion. Dye-based inks are less lightfast and have a higher sensitivity to humidity, air pollution, and water. Since both objects are relatively small, flat storage is appropriate.

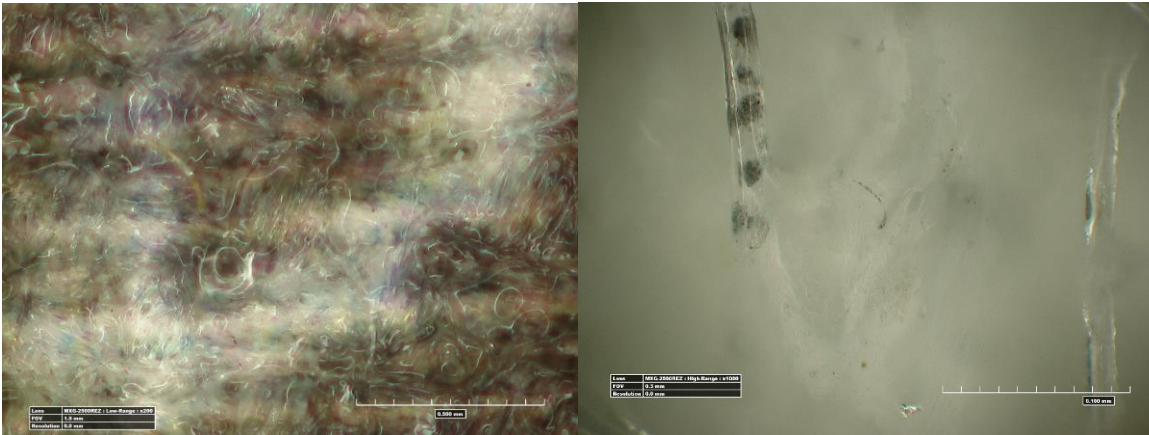


Fig. 7. This Hirox micrograph (200x) of Ira Blount's quilt 2011.0004.00138 shows the characteristics of inkjet printing with a glossy surface.

Fig. 8. This Hirox micrograph (1000x) of Ira Blount's quilt 2011.0004.00139 shows a matte surface sheen. A single black colorant is visible, and the image material appears suspended in a binding medium rather than embedded in the textile support.

4. Fay Fairbrother's Shroud Series

Fay Pullen Fairbrother's (1948-1997) artwork *The Shroud Series* includes a dollhouse and 10 quilts, 7 of them bearing photographic images (figure 9 shows one of the quilts 2002.0011.0006). The quilts vary in size from the smallest being 127 x 91 cm to the largest at 266 x 208 cm. Based on the artist's statement, the photographs were thought to be an example of silver gelatin on commercially prepared photographic textiles. However, results suggest they vary. The subject matter of the Series is harrowing, juxtaposing historic photographs of early twentieth century lynchings and gatherings of the Ku Klux Klan, with period portraits of African American and

white families (fig. 10). The dollhouse features some of the same images reproduced in miniature picture frames hanging on the walls. Fay Fairbrother died prematurely of cancer in 1997 and her work is not widely known. Archival research and interviews with her friends and colleagues revealed that she studied art history, earned her master's degree in photography, and sourced some of the images she used in *The Shroud Series* in the archives of the Western History Collection at the University of Oklahoma in Norman. Other source images are located at the Schomburg Center for Research in Black Culture in New York, New York, and the Allen/Littlefield Collection at the High Museum of Art in Atlanta, Georgia, though it is unclear whether Ms. Fairbrother used the originals or copies to create her own work. In all, *The Shroud Series* features 50 photographs on textiles, but around half are duplicates. There are 24 unique images, including 5 family portraits, 11 photos with the KKK, and 8 lynching photos. The identity of several of the lynching victims is known from prior research: Bennie Simmons, Thomas Shipp, Abram Smith, and Claude Neal (Allen 2000 and the New York Public Library digital collections). All five of the family photographs correspond to glass plate negatives at the Western History Collection at the University of Oklahoma, and although the identities of the African-American families are still unknown, knowledge of the original format of the images as glass plate negatives helps to contextualize the sitters and photographic practice in early twentieth century Oklahoma.



Fig. 9. This quilt from Fay Fairbrother's *The Shroud Series* (2002.0011.0006) features images of lynchings alongside family portraits and gatherings of the Ku Klux Klan.



Fig. 10. Portrait of unidentified African-American couple with child. Robert E. Cunningham 351 Western History Collections, University of Oklahoma Libraries 5x7" copy print off glass plate negative.

4.1 Technical Analysis of Fay Fairbrother's Shroud Series

Ms. Fairbrother indicated in her artist's statement that she used Luminos Photo Linen to create the images on her quilts. Luminos was a commercially available photo-textile made of cotton and designed to be used in the same fashion as traditional silver gelatin photographic paper [1]. As a commercial product, it is expected to produce a consistent result, yet Fairbrother's textile-based images show varying degrees of damage. Due to this, it became evident to the authors that the artist used at least two different image transfer techniques in creating this series. Specifically, images on the first quilt of The Shroud Series display severe flaking and loss of the emulsion, abrasion, and the presence of white fibers on the surface (fig. 11), while the images on the other six quilts in the series exhibit different types of deterioration, more consistent with that found on commercially prepared gelatin silver photographic paper. For this first quilt of the Shroud Series Hirox microscopy shows that the image layer has the continuous tone characteristic of a gelatin silver photograph, but, unlike commercially prepared gelatin silver papers and the six other quilts in the series, the image particles are readily visible under low magnification. Initially, the authors thought this could be a result of the artist hand-sensitizing the fabric using a liquid emulsion, such as Rockland Colloid's Liquid Light. However, pXRF on the object could not confirm the presence of an inorganic material, such as silver or another image-forming metal; FTIR analysis revealed the binder layer to be most characteristic of an acrylate polymer. After looking at the object carefully and examining photomicrographs of its image material, while using references such as *The Digital Print: Identification and Preservation* (Jürgens 2009, 106-120, 200) and the *Image Permanence Institute's Graphics Atlas* (2019), the conservators hypothesized that the images are most likely the result of an electrostatic printing process. Comparative photographs-on-textile were created in the lab using electrostatic printing on a plain weave mercerized cotton fabric. Examination of these simulacra finds clear similarities with the originals and supports the conclusion that Ms. Fairbrother most likely used this printing method with an acrylic medium to transfer the image onto the textile.



Fig. 11. Fay Fairbrother's quilt 2002.0011.0001 exhibits severe damage, including flaking, abrasion, emulsion loss, and the presence of white fibers on the surface. Photomicrograph (35x).

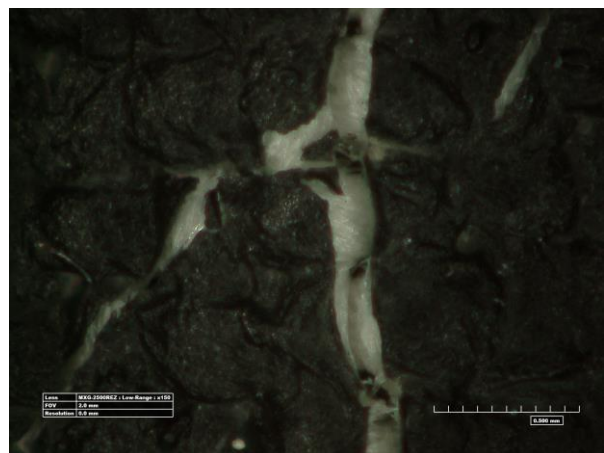


Fig. 12. Fay Fairbrother's quilt 2002.0011.0006 exhibits cracking of the image material. Photomicrograph (150x).

Images on the other six photographic quilts in the Shroud Series exhibit different types of deterioration including circular losses that reveal the surface of the primary support, cracking (fig. 12), and reddish staining characteristic of redox blemishes (fig.13). In addition, some edges of the Luminos Photo Linen are warped upwards. Since the photo linen is more rigid than the fabric of the adjacent quilt squares, the warping causes the wefts and warps of the adjacent fabric to stretch and buckle. Under magnification, the images appear to have a continuous tone and pXRF confirmed the presence of silver. This appears to confirm Fairbrother's statement that she used Luminos Photo Linen to create the images – although only on these six quilts.

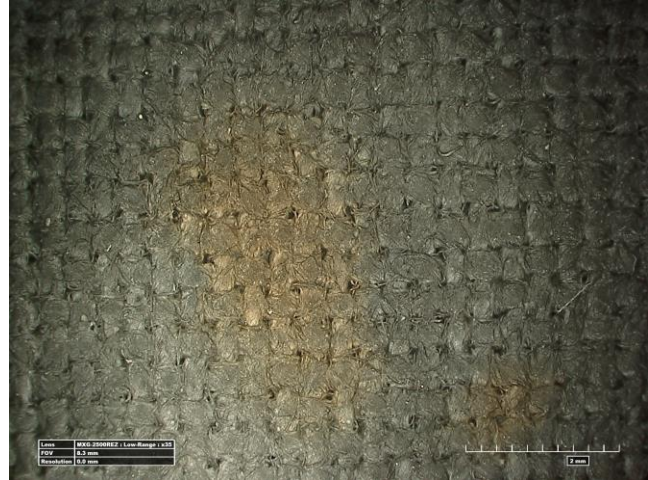


Fig. 13. The photomicrograph (35x) of quilt 2002.0011.0007 shows reddish staining characteristic of the photo gelatin process.

Two kinds of condition issues will need to be addressed: (1) the stabilization of flaking and loss of emulsion in the electrophotographic transfers and (2) humidification of the rigid edges of the Luminos Photo Linen. After treatment, all seven quilts will be rolled onto padded tubes with the front facing out. Tissue will serve as padding to even out warped areas and an interleaving layer will be added to protect the sensitive photo transfers.

5. The One Washington Quilt

The images that appear on the One Washington quilt (226 x 195 cm) are the only color photographs in the sample considered for this project. The transfer technique is unknown. It was assembled in 1998, during a workshop led by a local quilting guild, the Daughters of Dorcas and Sons. The quilt celebrates landmarks of Washington, D.C.'s eight wards, and is decorated with campaign buttons, pins, and banners, and quilted with the D.C. flag. In 2019, the authors conducted informal interviews with current guild members during a visit to the ACM. The conversation centered on their guild's history and friendships, as well as their long-time relationship with the museum (fig. 14). Members emphasized the joys of quilting together and learning from one another. None had participated in making the One Washington quilt, but several indicated they have created photographic quilts of their own using commercially available products.



Fig. 14. Members of the Daughters of Dorcas quilting group during a consultation at the Anacostia Community Museum.

5. 1 Technical Analysis of the one Washington Quilt

The quilt is in stable condition; the seams and surface of the image material are stable and intact, except for some abrasion evident on one of the image squares. ACM's former photographer, Harold Dorwin, captured the Washington, D.C. landmarks that are reproduced on this quilt. His original slides are in the ACM's archives, but it is unclear how the images were transferred to textile. The images have a matte surface sheen and display a distinct linear pattern when viewed under magnification (fig. 15). This is likely a characteristic of the printing process, but it is difficult to identify the morphology of the image material. The process used may be one of the following: a photo-emulsion silkscreen, an early color laser, or inkjet print (Gascione 2004, 79e). To facilitate

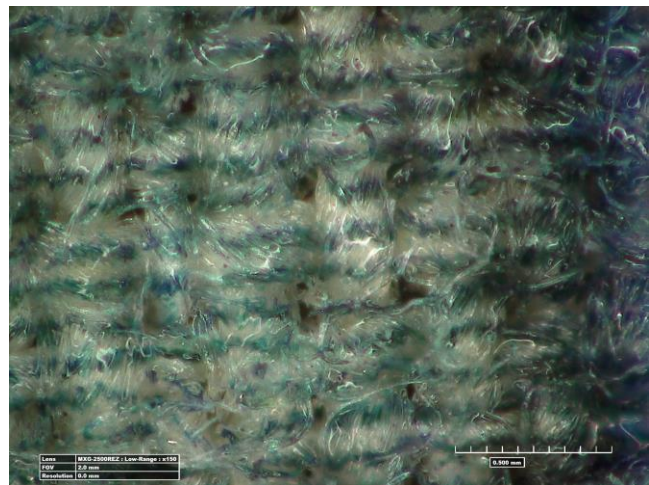


Fig. 15. The photomicrograph (150x) of the *One Washington* quilt shows a matte surface sheen overall and a distinct linear pattern, which is likely a characteristic of the printing process

identification, the authors are preparing simulacra of the different processes on plain weave, mercerized cotton cloth, to compare their characteristics to the images found on the quilt.

Additional Hirox imaging will be carried out to document an area damaged by abrasion and minimally invasive sampling for FTIR in this area will serve to characterize the binder material, which may help in identifying the printing process. Folded storage will be recommended with padding along the folds due to the various small objects pinned and sewn on the quilt, many of which are three-dimensional.

6. Conclusions

Identification of the photographic materials and techniques used to create photographs on textiles is challenging. Much can be gleaned from detailed visual examination under magnification, such as Hirox microscopy, which serves to characterize the morphology of the printed matter. This can be augmented with technical analyses including FTIR to identify transfers embedded in an acrylic medium, or pXRF to identify inorganic image-forming materials such as silver. Archival research and interviews have the potential to provide information about the artists' intent and working practices, although in the current sample, only one artist, Fay Fairbrother, appears to have given significant attention to the photo transfer process. Among the 11 quilts examined for this study, 6 by Fay Fairbrother appear to have images created with the silver gelatin process. These were identified based on the continuous tone of the printed matter and the presence of silver (pXRF). The remaining five quilts were created using digital printing methods, identified visually on the basis of the characteristic dot pattern. It is difficult to determine whether the images were printed directly onto the textile, or whether a copy of an inkjet print was transferred to the textile using heat, solvents, or an acrylic medium. Contrary to initial expectations, none of the quilts in our sample have images created using liquid emulsion.

All of these findings are useful in devising solid conservation strategies. The severe flaking observed on the surface of the first Fairbrother quilt was identified, based on FTIR, as curling due to the presence of an acrylic polymer, suggesting the need for particular care during conservation. The silver gelatin prints on photo-linen fabric have developed rigid edges that will be flattened through humidification. Most of the quilts bearing images created with inkjet printing techniques show little abrasion and no losses and will be rolled onto large-diameter tubes for storage.

Acknowledgements

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Notes

[1] Research in online photography forums indicated the Luminos Photo Corporation went out of business in 2005.

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