Lifting the Veil

Digitizing Black Archives at Tuskegee University

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ABSTRACT: Tuskegee University's rich archival collections have remained hidden to the public for many years. To alleviate the problem, the University Archives focused on a multilevel process of digitization and public outreach. This paper focuses on Tuskegee's endeavors to digitize its large collection of photographic images, negatives, and audio media. The process of learning about proper equipment and techniques has propelled the archives into one of the top digitizing archives among HBCUs, receiving over 850,000 hits (45 percent from abroad) in seven years.

KEY WORDS: digitization, archival, images, reel-to-reel, negatives

The history of Tuskegee University[1] is replete with stories of individuals rising above their circumstances to overcome adversity in an attempt to help their fellow man. These individuals had to face not only segregation during a time of overt racism but also financial pressures exacerbated by the economy of the time, as well as social pressures imposed by the prevailing agrarian society of the region. Overcoming such obstacles not only profoundly affected Tuskegee University and the surrounding area, but also shaped our nation. It is through the digitization of this rich legacy of historical materials that more people, academics and otherwise, have greater access than ever before to a variety of information from early farming techniques to the modern Civil Rights Movement.

Tuskegee (tuh-SKEE-gee) University is located in the rural east Alabama town of Tuskegee, the county seat of Macon County. Although some schools for African Americans opened up in Alabama immediately after the Civil War, opportunities for higher education remained difficult to obtain.[2] Recognizing this deficiency in

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1 For more information, see: Dana R. Chandler, "Tuskegee University," *The New Encyclopedia of Southern Culture, Volume 17, Education*, ed. Clarence L. Mohr (Chapel Hill, NC: The University of North Carolina Press, 2011).

2 Though African Americans did have access to some schools such as Alabama State University (1867), Talladega College (1869), Alabama A&M (1875) and Selma University (1878), they were not permitted to enter an all-white university and there was not a college or university for them in

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Tuskegee University ca. 1940. (Photo courtesy of Tuskegee University Archives)

rural Macon County, Lewis Adams, a former slave, and George W. Campbell, a former slaveholder sought to establish an institution of higher education accessible to African Americans. Through their efforts, the Alabama legislature established the Tuskegee Normal Institute on July 4, 1881. The following year, the Alabama legislature reconstituted and established the institute as a public body and corporation of the State of Alabama, with full power of action and authority vested in a board of trustees.[3]

From a modest beginning in a one-room shanty located near Butler Chapel AME Zion Church, Tuskegee University rose to national prominence under the leadership of its first president, Booker T. Washington (1856–1915). Washington was a highly skilled organizer and fundraiser who counseled US presidents and advocated for African American farmers and businesses. He worked tirelessly developing methods to help African Americans succeed by establishing a variety of on-campus vocational classes including carpentry, brickmaking, sewing, millinery, animal husbandry, and gardening. Students were also required to complete coursework toward general diplomas, which included classes in mathematics,

southeast Alabama. "Historically Black Colleges and Universities in Alabama," *Encyclopedia of Alabama*, accessed March 21, 2018, http://www.encyclopediaofalabama.org/article/h-1442.

3 "Linked Data Services," *Library of Congress*, accessed March 21, 2018, http://id.loc.gov/authorities/names/n80036583.html

English, and history. The institute attracted students not only from Macon County and the South but from around the world.

Washington's vision for Tuskegee University (originally called Tuskegee Normal and later changed to Tuskegee Normal and Industrial Institute in 1893) involved recruiting the best and brightest within the African American community as faculty. Notable Tuskegee luminaries include George Washington Carver (head of the agricultural department); architect Robert R. Taylor (director of mechanical industries); Monroe N. Work (founder of the Department of Records and Research); Clinton Calloway (director of the Extension Department, established "in order to systematize the school's numerous extension activities"); and Thomas Monroe (T. M.) Campbell, who became the nation's first agricultural extension agent.

Carver's experimentation with a variety of plants exemplified Tuskegee's focus on research and development. Taylor designed and oversaw the construction, using local resources and student labor, of many of the university's historic buildings, including the University Chapel (1896), which was renowned for its "singing windows" (1932). Work's publication of the *Negro Year Book* (1912–51) and the *Bibliography of the Negro in Africa and America* (1928) illustrated the university's mission to publish scholarly information that would be useful to Americans in all walks of life. Furthermore, Booker T. Washington developed a variety of techniques to teach, both on campus and off. One was through the implementation of the Jessup Agricultural Wagon (1906), an agricultural school on wheels. Another was through the publication of *The Southern Letter* (1884, renamed *The Rural Messenger* in 1922), which sought to educate farmers. Under Clinton Calloway, schools were built in rural areas for the benefit of the underprivileged, eventually leading to the building of "Rosenwald Schools" throughout the nation.[4] Finally, it was under Washington's advice that the US Department of Agriculture hired T. M. Campbell as an extension agent in Alabama. Campbell's position allowed him to educate rural farmers in advanced farming and land-management methods.

Although Tuskegee University rose to prominence under the leadership of Washington, other presidents such as Robert R. Moton (1867–1940) were equally as dynamic. Moton helped to found the Veteran's Administration Hospital on land donated by the university. His successor, Frederick D. Patterson (1901–88) oversaw the establishment of the School of Veterinary Medicine, where nearly seventy-five percent of all Black veterinarians received their degrees. Luther Foster (1913–94), the fourth president, led Tuskegee through the transformational years of the Civil Rights Movement. Tuskegee's fifth president, Benjamin F. Payton (1932–2016), was

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4 "Rosenwald School" was the name informally applied to over five thousand schools, shops, and teachers' homes in the United States which were built primarily for the education of African-Americans in rural areas in the early 20th century. Although the idea for these schools originated with Calloway, they were promoted by Booker T. Washington and financed partly through the efforts of the efforts of Julius Rosenwald and the Rosenwald Fund. For more information, see: Mary S. Hoffschwelle, *The Rosenwald Schools of the American South* (Gainesville: University of Florida Press, 2006).

the driving force behind the Tuskegee University National Center for Bioethics in Research and Health Care in response to the infamous US Public Health Service Syphilis Study conducted within Macon County, Alabama, from 1932 to 1972.[5] Gilbert Rochon, the sixth president, continued Tuskegee's prominence as an academic institution by leading the university to a number one ranking among baccalaureate colleges.[6] The current president, Brian Johnson, seeks to continue his predecessor's legacies by "transforming Tuskegee University into a twenty-first century, data-informed, outcomes-oriented and knowledge-based institution of the first choice."[7]

Tuskegee University is rooted in a history of successfully educating African American men and women to understand themselves against a background of rich academic heritage and the promise of their individual and collective future. Its mission has been to prepare them for effective professional and leadership roles in society and to become productive citizens in the national and world community. Although a majority of its three thousand students come from the Southeast, its enrollment currently represents forty-three states. Tuskegee University is a comprehensive institution with substantial outreach service programs and impressive research facilities. Over the past century, various social and historical changes have transformed this institution into a diverse place of learning whose fundamental purpose is to develop leadership, knowledge, and service for a global society.

The accomplishments of Tuskegee from its inception in 1881 to 1953 alone are impressive, but it is the university's employees and their devotion to the "Tuskegee cause" that led to its lasting influence throughout the nation and the world. It is under the first three administrations that Monroe Work, T. M. Campbell, and Clinton Calloway worked to alleviate the socio-political problems that African Americans faced. And, it is the collections of these and others that have contributed to the Tuskegee University Archives becoming one of the top archives in the nation.

The University Archives, A Brief Description

To augment its institutional collections, the University Archives has a particularly rich collection of materials related to civil rights activities.[8] Throughout the Civil

5 Frequently referred to as the Tuskegee Syphilis Study (originally called the Tuskegee Study of Untreated Syphilis in the Negro Male and now referred to as the US Public Health Service Syphilis Study at Tuskegee), this was an infamous clinical study directed by the US Public Health Service and conducted between 1932 and 1972. The study was actually started in order to observe the natural progression of untreated syphilis in 600 rural African-American men in rural Macon County Alabama, but who were told that they were receiving free health care from the United States government. See: *Jones, James H., Bad Blood: The Tuskegee Syphilis Experiment* (New York: The Free Press, 1981).

6 Erin Dillon, "America's Best Master's Universities and Baccalaureate Colleges," *Washington Monthly*, September/October 2011.

7 "Legacy of Leadership," Tuskegee University Website, accessed May 8, 2017, https://www.tuskegee.edu/discover-tu/tu-presidents.

8 For a listing of Tuskegee's numerous archival collections, see "001 Main Archives Holding List" at http://192.203.127.197/archive/handle/123456789/790.

Tuskegee University Archives, main hall. (Photo courtesy of Tuskegee University Archives)

Rights Movement, Tuskegee University played a prominent role in the unfolding of events in America's history. Furthermore, in the twentieth century the university served as a theater for historical events that had a major impact on America's development during the Great Depression, World War II, the Civil Rights Movement, and the modern era.

Not only were Tuskegee students actively involved in the Selma to Montgomery March, but also the faculty worked in several venues on behalf of civil rights. For example, Tuskegee University archivist Jessie Guzman, author of *Crusade for Civic Democracy: The Story of the Tuskegee Civic Association, 1941–1970*, was one of the first Black women to run for office in the state of Alabama. Charles Gomillion, Tuskegee University professor of sociology, was president of the Tuskegee Civic

Compact shelving. (Photo courtesy of Tuskegee University Archives)

Association during the important years of 1957–61. Gomillion was also chief protagonist in the Supreme Court case *Gomillion v. Lightfoot*. These are but a few of the six hundred historically significant collections awaiting researchers at the university archives. In fact, many of the collections housed within the archives have never been accessed or utilized.

Preservation and increased access to Tuskegee's historical collections is essential to the furtherance of the study of American history and civil rights history. Digitization is but one way to make these collections integral to understanding individuals and organizations that had a profound impact on America's past.

Even though some of the collections are unprocessed, approximately four hundred and fifty of Tuskegee's six hundred collections (75 percent) are used on a regular basis. During the last eight years, Tuskegee has had over two thousand visitors to the archives. Of those, several have been international, including twelve who have been directly helped with their dissertations and/or theses.

During the last five years, since our website was installed, we have had over 900,000 hits, with approximately 45 percent of those from abroad.[9] The

9 Most of the online inquiries to our website have been directed to the "Carver Bulletins" (Agricultural bulletins prepared by the Tuskegee University Extension office of which George

Tuskegee University Archives website. (Photo courtesy of Tuskegee University Archives)

website[10] has a variety of sections specific to the archives, particularly, finding aids, databases (for collections, media, etc.), digitized photos and documents, and audio and visual items. There are many items that can be used by teachers from elementary through college levels, including PowerPoint presentations, documents, and visual media. Although this is now the standard, it has been a journey filled with learning, detours, and success.

Planning and Implementation

As with any project, planning and implementation are extremely important.[11] However, planning was more problematic in this case because the archives did not know everything that they held. Most archives, especially those at Historically Black Colleges and Universities (HBCUs),[12] have materials scattered throughout their campuses that are either known but undocumented or completely unknown.

Washington Carver was the Director). These were scanned and uploaded by the Tuskegee University Archives.

10 See "Tuskegee University Archives Repository," Tuskegee University Website, accessed May 18, 2017, http://192.203.127.197/archive/.

11 For more information, see: *U.S. National Archives and Records Administration Fiscal Year 2014–2018 Strategic Plan*, U.S. National Archives and Records Administration, March 2014, https://www.archives.gov/files/about/plans-reports/strategic-plan/2014/nara-strategic-plan-2014-2018.pdf.

12 HBCUs are academic institutions that were established before 1964 with the intention of serving the Black community. There are now 101 HBCUs located within the United States, including public and private institutions. The number has decreased from a high of 121 institutions that existed during the 1930s.

Tuskegee University Archives images at the start of the digitization process. (Photo courtesy of Tuskegee University Archives)

Unfortunately, as over half of the one-hundred-plus HBCU institutions are private,[13] they often do not have the funding to devote to promoting their archives. To further exacerbate the situation, HBCU archives are understaffed or staffed with personnel that are unable to assess what they have, let alone know how to proceed with digitizing their materials.

Until recently, access to the Tuskegee University Archives has been limited or severely restricted. The archives, originally housed within the main library, but due to renovations, subsequently moved to an existing dormitory, languished for approximately three years. The time within the dormitory was destructive for the collections; the space was neither temperature nor humidity controlled for most of the time. Worst, birds and vermin had access to the same space. Although this was for only a few short years, it drastically affected the archive collections.

Environmentally Controlled Space

Finally, when the archives were moved to the current location, they remained in the original packing material for about two years. For approximately ten years, researchers did not have access to the materials due to their continued state of disarray. Access was finally permitted after the collections were unpacked, identified, and placed on shelves. The new archival space, renovated in 2006, is temperature and humidity controlled, with temperatures set at an average of 69–70

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13 "White House Initiative on Historically Black Colleges and Universities," US Department of Education, last modified April 23, 2008, https://web.archive.org/web/20080513215748/http://www.ed.gov/about/inits/list/whhbcu/edlite-index.html.

degrees Fahrenheit and 50 percent humidity.[14] Also, alarm and security cameras secure the space.

Rationale for Digitization

In 2008, a simple identification process was implemented, using three digits for each collection, followed by a decimal and three more digits to identify each of the boxes. As an example, each of the first five presidents of Tuskegee is identified with numbers 001–005. So, the first box of President Moton's collection is 002.001. A database is then compiled and labeled for each box with the collections placed on shelving based upon their respective numbers. Due to their particular conditions, many documents and photographs were in dire need of reproduction and digitization. This would alleviate further destruction of originals through excessive handling.[15]

Digitization of select materials from the collections required a multistep decision process to eliminate the numerous problems that existed, such as:

1. Which items are to be digitized?
2. Where to store the images once they were digitized?
3. What criteria were to be observed in digitizing our materials?
4. Who will do the digitizing?
5. And, above all else, how were we going to pay for this work?

Fortunately, Tuskegee's collections are rich and varied and include over 250,000 black and white and color photographs. Many of the images date from the earliest tintypes (1860s–80s) and glass plate negatives (1850s–1900s). The archive also contains over six hundred collections including documents and artifacts. These materials include items from as early as the mid-1700s through the entire terms of each of its presidents.

Funding

As noted, the biggest hurdle facing the archives in developing a digital program was cost. Fortunately, this obstacle was minimized when the archive received two Mellon/LYRASIS grants for digitizing a segment of the materials. The funding was preceded by intense internal scrutiny of the collections and needs of the archive. Initially, staff at the archives proposed external vendors for digitizing the material.

14 For an exhaustive explanation of environmental parameters for archives, see "A Guide to Environmental Management of Archival Material," U.S. National Archives and Records Administration, accessed May 18, 2018, http://www.nationalarchives.gov.uk/documents/information-management/environmental-management.pdf.

15 Proper handling of delicate originals, negatives and images is paramount to maintaining their original integrity. Irregularities in temperature and humidity control, as well as improper handling of photographs, documents and negatives can cause fading, deterioration, tearing, etc.

However, current archival staff soon realized that the process of digitization using vendors would drastically limit the quantity that could be digitized. The archivist submitted the proposals to the funding agency with the intent to digitize our materials internally. Equipment was purchased through these grants, but learning how to use the equipment and software became a new concern.[16]

Research and Approaches to Digitize Our Collections: Photographic Images

After processing, the physical images, which included identifying and sorting them, they were stored following recommendations regarding the storage environment and materials used for storage.[17] Photographs were grouped to form a single series. When photographic prints appeared scattered throughout a collection, such as clipped to correspondence, the original order of the collection was maintained through the use of a copy and the original was added to collections in the archive's media room based on consideration of safe storage and efficient description and access. We followed these basic guidelines for processing photographs:

- Photographs are extremely delicate, and any damage is irreversible. Caution should be used to protect the surface of the image from being scratched. *Always wear clean cotton or polyester gloves when arranging photographs.* Be careful not to pack upright files too tightly or too loosely, or flat files too heavily. It is generally safer to store photographs that are the same size together if possible.
- The emulsion is the most fragile part of any photographic medium. Never write on it.
- Avoid scratching the item. Fingernails rubber bands, paper clips, and even particulate matter such as dust or dirt can cause scratching; it can occur

16 Grants can be obtained for all manner of needs. The National Endowment for the Humanities (NEH) Preservation Assistance Grant is one of the best and most easily obtained grants for collection preservation. This grant helps small and mid-sized institutions—such as libraries, museums, historical societies, archival repositories, cultural organizations, town and county records offices, and colleges and universities—improve their ability to preserve and care for their significant humanities collections. These may include: special collections of books and journals; archives and manuscripts; prints and photographs; moving images; sound recordings; architectural and cartographic records; decorative and fine art objects; textiles; archaeological and ethnographic artifacts; furniture; historical objects; and digital materials. For more information, see "Preservation Assistance Grants for Smaller Institutions," National Endowment for the Humanities, accessed May 18, 2018, https://www.neh.gov/grants/preservation/preservation-assistance-grants-smaller-institutions.

The NEH has a proven track record in awarding grants of up to $6,000.00 to archives and libraries in need of help. The Northeast Document Conservation Center offers a listing of other important grant opportunities. See their website at: https://www.nedcc.org/free-resources/funding-opportunities/federal-grants.

17 For further information, see: National Archives suggestions for storage and handling at "Storage and Handling," National Archives and Records Administration, accessed May 18, 2018, https://www.archives.gov/preservation/storage.

during processing when photographic materials (prints, slides, or negatives) are removed or inserted into enclosures or when they are sorted and stacked. The emulsion side of a negative has a dull, matte finish as opposed to the base side of the negative, which is glossy or shiny.

- Avoid touching the emulsion with your bare fingers: the oils present on the skin damage emulsion and accelerate photographic deterioration. Hold the image by the edges, and use two hands to support prints that are 8"x10" or larger.

- When writing on the backs of photographs or on slide mounts, use only a #2 or softer pencil. Do not bear down. If the print is on resin coated (RC) paper, use a film-marking pen if necessary.

- Write only on the backs of prints and as close to the edge of the print as possible so that potential damage from bleed-through or future corrosion will be minimized. If necessary, a white plastic eraser can be used on the back of print. If the print is stored in an envelope and has important identifying marks or other information on it, remove the print first, then write the information on the top right edge of the envelope so that a researcher can easily find an item without opening the envelope.

- Never write on a negative. Record the information on the top of the clear sleeve, on the paper envelope, and on the file folder.

- Do not use "Post-it" type notes or pressure sensitive tape on prints, slides, or negatives. The adhesive leaves a damaging residue. Do not use paper clips or rubber bands on visual materials.[18]

Once processing and preservation of these materials were accomplished, finding aids were created which were then added to our existing archives repository website.[19] This helped to facilitate access by the public and researchers alike to many of Tuskegee's previously hidden collections.

Guidelines

The Tuskegee University Archives has had substantial experience creating Encoded Archival Description (EAD)[20] finding aids. This experience dates to 2007 when, under the guidelines of a previous grant with the University of Alabama Libraries

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18 The author is unsure of provenance of this list.

19 See: www.tuskegee.edu/ArchivesRepository; the Historically Black Colleges and Universities Library Alliance (HBCU Library Alliance) website: http://hbcudigitallibrary.auctr.edu/cdm/landingpage/collection/tuld; and the Alabama Mosaic website: http://www.alabamamosaic.org/collections.php.

20 Encoded Archival Description (EAD) is an XML standard for encoding archival finding aids, maintained by the Technical Subcommittee for Encoded Archival Description of the Society of American Archivists, in partnership with the Library of Congress.
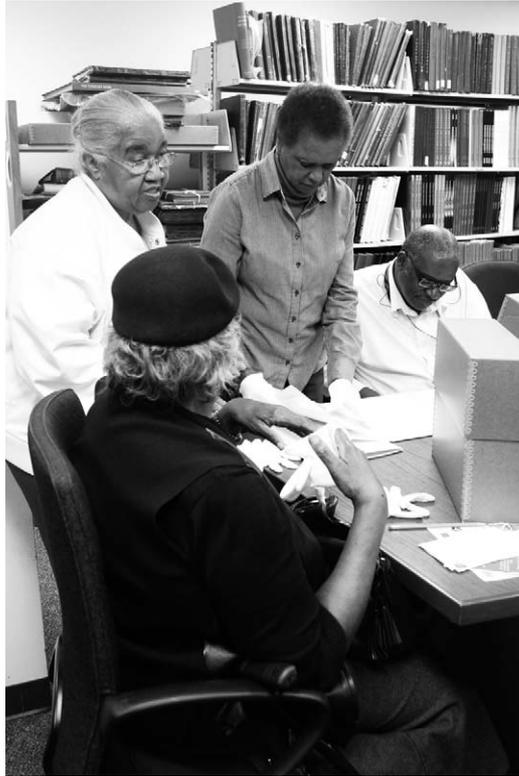
Tuskegee University Archives staff processing collections and photographs. (Photo courtesy of Tuskegee University Archives)

funded by NHPRC and entitled "Bringing Alabama's African American History to Light: A Model Partnership,"[21] the archive began delivering archival finding aids in EAD. In mid-2008, the archives began using a template based upon the 2007 pilot and the archivist hand-coded XML files for archival finding aids.[22] The finding aids from Tuskegee created under the original NHPRC grant were transferred to the Archives Repository website.

Once the collections had been processed and EAD finding aids for them had been created, archivists at Tuskegee selected items for digitization based on condition or importance. Due to continued deterioration of both documents and photos, Tuskegee University Archives has made a concerted effort to maintain these items through digitization and reproduction. The work was modeled in large part on the Association of Southeastern Research Libraries (ASERL) Civil War Project,[23]

21 A Facebook Page is all that remains regarding this important partnership. See: https://www
.facebook.com/note.php?note_id=382155747545. It is unknown why the original site was taken down,
although the work accomplished was later transferred to each university's main database.

22 These finding aids were available in versions encoded in Extensible Markup Language (XML)
using the Encoded Archival Description.

23 See: "Collaborative Digital Project – Civil War Era," Association of Southeastern Research
Libraries, accessed May 18, 2018, http://www.aserl.org/programs/civil-war/.

and we have followed the digitization guidelines published by the North Carolina Exploring Cultural Heritage Online (NC ECHO) initiative,[24] especially the strategies for dealing with digital production and metadata creation. Specifically, archivists created three classes of digital images for graphical materials: a digital master (preservation) TIFF[25] image scanned at 300 dpi and 24-bit color depth,[26] JPEG[27] display images at 96 dpi, and thumbnail images at 72 dpi. Images for textual materials were converted to PDF[28] files, taking advantage of Acrobat's built-in OCR[29] function. This procedure produced text files that were displayed alongside the page images—a technique Tuskegee had already used in several of its digital projects.

Initial Equipment for Digitization of Images

Equipment for digitization did not come with a series of easy-to-use instructions. Intense research and study led to the purchase of each piece of equipment. Initial equipment purchases included an Epson Expression 10000 XL Scanner, which proved to be very user-friendly. It is one of the few scanners that can digitize originals up to a size of 40 x 30 cm, which has been helpful due to the variety of print sizes within the collections. The scanner has an optical resolution of 2400 ppi,[30] with a maximum density of 3.8[31] at 48-bit color.[32] This unit can process reflective material, such as photos, and with the optionally available transparency

24 See: "Digitization Guidelines," Digital NC, accessed May 18, 2018, http://www.digitalnc.org/about/policies/digitization-guidelines/.

25 A TIFF, or Tagged Image File Format, is a computer file format for storing raster graphics images, and is used for basic image manipulation in a lossless format allowing image files to be edited and resaved without losing image quality. Lossless means that no part of the digital file is lost in compressed storage.

26 For an excellent discussion on digital master copies, see: "Managing Digital Projects for Preservation and Access," National Parks Service, September 2000, https://www.nps.gov/museum/publications/conserveogram/19-22.pdf.

27 JPEG is acronym for the Joint Photographic Experts Group which created the standard for a method used in digital photography for lossy compression for digital images.

28 PDF, or Portable Document Format, is a digital file format that captures all of a printed documents image allowing the end user to view, print, forward or navigate an exact copy of the original.

29 OCR, or Optical Character Reader, allows a computer to recognize written or printed text.

30 PPI means pixels per inch and describes the resolution (or clarity) of an image. This designation differs from DPI, which means dots per inch, and was originally descriptive of images printed on a dot matrix printer. PPI describes the number of square pixels that show up in an inch of digital screen, which is printed on a laser or similar printer. For more information, see: R. L. Wisnieff and J. J. Ritsko, "Electronic displays for information technology" *IBM Journal of Research and Development* 44, no. 3, (May 2000).

31 Maximum density, or dmax, is a measure of the deepest black tone a display or printer/ink/paper combination can reproduce. This means the higher the quality factor ($Dmax = -\log_{10}$(minimum print reflectivity)) the clearer and crisp the image. A maximum density of 3.8 is very high. For more information, see: Adrian Davies, *The Focal Digital Imaging A-Z* (Burlington, MA: Focal Press, 2005).

32 48 bit color means that the colors are sharp and seamless or smoother.

Image digitization equipment in the Tuskegee University Archives media room. (Photo courtesy of Tuskegee University Archives)

unit it easily scans negatives. This is sufficient for document scans and large negatives and prints. An Epson Stylus Pro 4900 Printer was also purchased to print copies of images for use by researchers and to print positive images from negatives. This printer accepts roll or cut sheet media up to 17" wide and uses "UltraChrome HDR Ink Technology" with eleven colored and black inks at a maximum resolution of 2880 x 1440 dpi.[33] This allowed archivists to print a variety of images in standard, poster or wide angled formats.

Most of the images scanned were in black and white, standard size, although there were many color photographs from the 1960s and 1970s. Negatives came in a variety of sizes and condition. Many have been subjected to intense changes in heat and humidity, making them highly unstable. Other images included slides and smaller photographs that were taken and developed overseas.

A server was purchased to store digitized materials, as well as to have a platform for the website. The Dell PowerEdge T300 with Quad Core Intel Xeon X3323 running at 2.5 GHz and having 2x3 M Cache provided the power and reliability the project needed. This unit contains three drives with one terabyte storage capacity for each, and has space to add one more drive. It has proven to have substantially met all of the archivists needs.

33 DPI has become the standard, even though PPI is correct.

The website utilizes Dspace as a platform for showcasing digitized materials. Dspace is an open-source[34] repository software specifically developed for published digital content. This software serves a specific need as a digital archives system, providing reliable long-term preservation and storage in an online format that is accessible without a lot of frills. It also provides the archives a method to store and retrieve materials with a rich metadata input system.

Costing over $21,000, this equipment required further software to ensure compatibility and usability with each other. The archives chose PhotoShop Pro by Adobe as the software for image manipulation and preservation. It has proven to be a wise choice due to its wide variety of applications.[35]

Training for each piece of equipment depended upon our supplier's support. Some suppliers provided hands-on training, while others used manuals and videos. Others required archivists to attend classes at a variety of sites with several other users. It was determined early on that at least two personnel should attend every session. This insured reliable backup and allowed for easier training of our other staff members.

Research and Approaches to Digitize Our Collections: Audio Materials

The digitization of sound media has proven more difficult. Audio materials consisted of reel-to-reels, cassettes, and albums. Specific work began with the reel-to-reel materials due to a generous grant from LYRASIS through the HBCU Library Alliance. This allowed the archives to purchase equipment to digitize the audio into a format suitable for use by today's devices.

Due to the initial decision to keep everything in house, Tuskegee archivists sought a new or refurbished reel-to-reel player to migrate the audiotapes over to a stable format utilizing an analog-to-digital converter. They chose an Otari two track MX5050 BIII 1/4" recorder because of availability and adjustments for a variety of tape reel sizes and material. Coupled with a Benchmark ADC1 USB Analog to Digital Converter, with a 2-channel 192-kHz 24-bit analog-to-digital audio converter, this combination has proven capable and easy to use. Archivists decided on Audacity, a free, open source, cross-platform audio software, for editing audio media. This software allowed archivists to convert to a variety of current formats seamlessly.[36] They then saved our uncompressed files to 24 bit/96 Khz WAV[37] files, and our compressed files to MP3[38] files for

34 Open-source software (OSS) is software with its source code that is publicly available for use for any purpose.

35 Thom Holmes, *Electronic and Experimental Music: Technology, Music, and Culture* (New York: Routledge, 2012).

36 Audacity is available for Windows®, Mac®, GNU/Linux® and other operating systems.

37 WAV or Waveform Audio File Format is a Microsoft and IBM file storing format that allows PCs to access raw or uncompressed audio bitstreams.

38 MP3 was developed by the Moving Picture Experts Group that uses lossy compression which reduces the accuracy of sounds that are considered beyond the ability of most humans to hear.
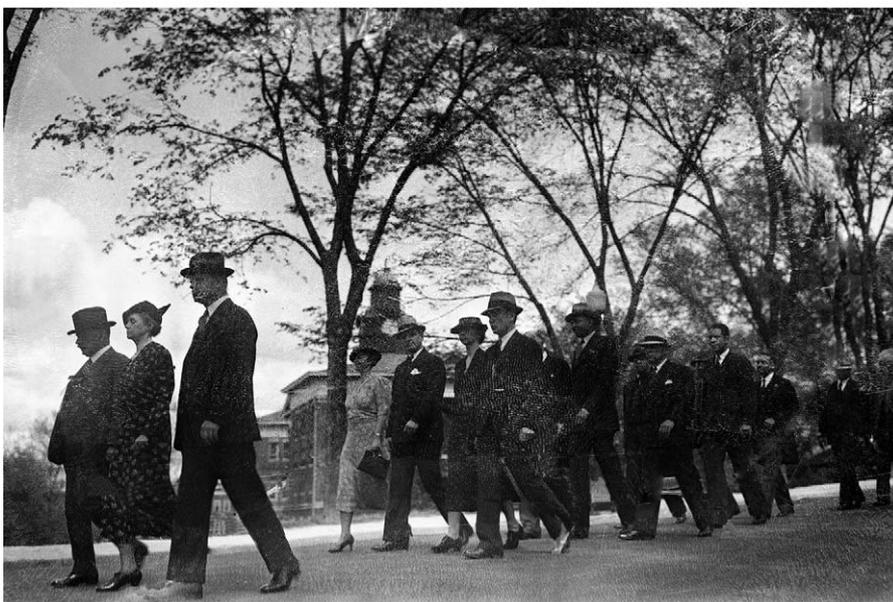
A digitally repaired negative, before and after. (Photo courtesy of Tuskegee University Archives)

easy online access.[39] Finally, if for any reason the tape fails, or was broken or damaged, the software allowed archivists to splice the audio without interruption seamlessly.

39 Ian Bogus et al., "Minimum Digitization Capture Recommendations," Association for Library Collections & Technical Services, June 2013, http://www.ala.org/alcts/resources/preserv/minimum-digitization-capture-recommendations#audio.

Reel-to-reel tapes to be digitized. (Photo courtesy of Tuskegee University Archives)

Audio digitization equipment in the Tuskegee University Archives media room. (Photo courtesy of Tuskegee University Archives)

The final part of the process included saving the digitized audio to the existing server; a LOCKSS[40] system (ADPNet[41] or equal) and to compact disc format. Original reels were then tightened and cleaned of dust and debris, and placed into new archival quality storage containers. This process was accomplished using student interns and students on work-study. These students also worked with digitizing the audiotapes, which were placed on the reel-to-reel player on a consistent basis (approximately two per day) with quality control maintained by the archivist, archival assistant, and media specialist.

After these materials were digitized, archivists included many of the files as part of a new initiative instigated by the Council of Independent Colleges (CIC) entitled the "Consortium on Digital Resources for Teaching and Research."[42] In partnership with Artstor,[43] the CIC sought to provide member college librarians, faculty, and staff members an opportunity to improve teaching and learning by enhancing faculty and student research throughout the world through a uniform system called Shared Shelf. This proved advantageous to the archives in that researchers who had been using the Artstor system now had access to materials in Tuskegee's archive as well.[44]

Outcomes of Digitizing Tuskegee's Collections

Providing long-term access to scholarly resources is now a core mission of the Tuskegee University Archives. For example, Tuskegee University recognizes educational extension and outreach as embracing a wide spectrum of liberal arts, scientific, and technical and professional programs. In accordance with that mission, the archive is now committed to providing long-term access to their

40 LOCKSS is an acronym for Lots Of Copies Keeps Stuff Safe and is especially important among digital archives for maintaining multiple copies of digital materials, primarily on off-site locations. Originally developed by researchers at Stanford University, the system allows for institutions with large server space to keep digital copies of materials from other institutions.

41 ADPNet is a "Private LOCKSS Network", or PLN, located on the "Dark" archive. It is for preservation ONLY, not for access or display. The process uses off-the-shelf equipment, with storage locations varying throughout the state of Alabama.

42 For more information, see: "Consortium on Digital Resources for Teaching and Research," The Council of Independent Colleges, accessed May 18, 2018, https://www.cic.edu/programs/digital-resources.

43 Artstor is a nonprofit organization committed to digital collection solutions for universities, museums, schools, and libraries worldwide. For more information, visit the Artstor Digital Library at http://library.artstor.org/library/.

44 Until 2008, access to the Tuskegee University Archives has been limited or severely restricted. The archives were originally held within the existing Main Library and due to renovations; it was subsequently moved to an existing dormitory where it languished for approximately three years. The time within the dormitory was dramatic for the collections; there was neither controlled temperature nor humidity for most of the time. Things were further exacerbated by various birds and vermin which had access to the same space. Finally, the archives were moved to its current location where it has remained, in its original packing for approximately 2 years. This space, recently renovated in 2006, is temperature and humidity controlled. All told, the archive was closed to most public research for approximately 10 years.

collections and website. This assertion reflects the institution's standard operating procedures and past practice.

Outreach to faculty and staff played another important role in why archivists decided to digitize many of the materials. Tuskegee faculty and students were encouraged to collaborate in an effort to analyze the audio and photographic materials in order to reinterpret and analyze them through modern scholarship and for curriculum and program enhancement. A variety of classes were developed to use the archives digital files including several within the department of history and political science and the department of English. For example, these departments together created a course examining the impact of audio media, such as speeches by prominent civil rights icons, and their effect on literature and mores of the time. Students, many of whom have family that were directly involved with or influenced by the modern Civil Rights Movement, but who themselves were unaware of the complexity of the movement, learned through the ironies and paradoxes embedded in the words and ideas heard in the audio-taped speeches. This experience generated research papers and presentations at Black History Month programs and at local conferences. These public discussions of the digitized material provided other scholars and members of the community new insights into the movement's multifaceted imprint on the South, the nation, and the world.

Overall, the digitization project helped improve teaching and learning in the humanities at Tuskegee University by providing opportunities for faculty and students in literature and history to collaborate on potentially groundbreaking research and contribute new knowledge to humanities scholarship. This was accomplished by allowing access to materials held within the archives that were not previously publicly available. The archive's new outreach paradigm also serves as a resource to stimulate and nourish creative teaching and learning.

The history of Tuskegee University rich and varied legacy is maintained within its archives. Digitizing these important materials, hidden and unavailable to the world for many years, has opened new avenues of research and discussion. Visibility for the university in this new form enables its continued success as one of the best institutions of higher learning in the South and beyond. The digitization of Tuskegee's collections and placement on multiple websites ensures that the university will remain viable for many years to come.

As previously noted, we have had over 900,000 hits to the website, with approximately 45 percent from outside of the United States. Utilizing website analyzing software, we have determined that approximately 77 percent of those from abroad are looking at only one section of our materials, specifically, the George Washington Carver Agricultural Bulletins. These materials have been completely digitized and are continually used to help families who are farming in the same manner that was used in the South during the early 1900s. In other words, people abroad are using materials created at the turn of the century to make their lives better. This is why digitation is so important.

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Dana R. Chandler has worked in a variety of capacities within both the private and public sectors. A trained surveyor, civil engineer and project manager, he has helped to design and build projects throughout the South and nation. In later years, Chandler had worked specifically with corporations seeking to start up recycling facilities in the United States and Latin America.

A trained archivist and historian, receiving his graduate degree from Auburn University, Chandler now works as the university archivist/assistant professor at Tuskegee University. Prior to his tenure, the archives had been closed to use by researchers for several years. Within two years of his hire, the archives reopened for use by researchers. This has permitted an influx of researchers from around the world to visit the archives in search of the interesting materials that are held within its collections. During the last eight years, the archives as had over a thousand visitors.