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# **The History and Evolution of Land Records Preservation (first draft, August 28, 2017)**

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*(Disclaimer: This is a proposed-for-adoption draft.  
There are still known deficiencies in format which PRIA's Style Committee will clean up following final  
approval.)*

**PROPERTY RECORDS INDUSTRY ASSOCIATION**

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## Paper

In the beginning, there was paper. Actually, in the beginning there were stone tablets, parchment<sup>1</sup> and vellum<sup>2</sup>, but, for the purposes of this paper, they won't be discussed as they weren't made from plant fiber. Papyrus is, also, not considered to be paper as it is made by laminating strips of sliced grass rather than creating a mulch. The roots of what we know as paper can be traced to China in AD 105.<sup>3</sup> From there, various paper-making techniques spread slowly westward.

The earliest mention of paper made from cotton or linen in Europe was in the 12<sup>th</sup> century but it wasn't until the advent of printing in the mid-15<sup>th</sup> century that the demand for paper began to rise.<sup>4</sup>

The paper used for recording real property transactions in the United States was originally manufactured in England, the source of many of our land records traditions. It was commonly called "rag paper" and was primarily made from recycled and cleaned linen or cotton rags. It took until 1690 for the first U.S. paper mill to be built near Philadelphia.<sup>5</sup>

By this time, the strength and durability of this paper was well known and state archivists recommended or required its use for permanent records. It wasn't until the mid-19<sup>th</sup> century that wood pulp was introduced into the paper-making process. This change was the result of a shortage of rags and the availability of wood from the vast forests that covered North America.

Processing wood pulp, however, required different manufacturing processes that affected the long-term stability of the paper. Two of the primary destabilizing components were lignin (a natural component of wood) and the acids that were used to breakdown wood fibers into pulp. The result was a product that became discolored and brittle over a relatively short period of time. It wasn't until the mid-1990s that production processes changed and paper from wood pulp became preservation quality.

## Photostats

In the early 1920s, typewriting gradually replaced the handwriting of property ownership details. Although a significant step forward in efficiency and legibility, it still required the recorder to transcribe the submitters' recording information. Also during the early 20<sup>th</sup> century, a photographic process emerged that could produce an image (copy) of a document. It was a projection photocopier developed by the Commercial Camera Company which later became the Photostat Corporation.<sup>6</sup>

It wasn't until the 1940s that this machine found its way into recorders' offices but, when it did, it changed many things both for better and worse.

Improved efficiency became the primary appeal for adopting this technology even though little was known about the longevity of Photostats. The days of tedious, hand-cramping transcription were replaced by the click of a shutter followed by a handful of chemical baths. Maintaining the knowledge base needed to reliably capture the diverse content of a recordable document proved to be challenging.

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<sup>1</sup> <https://en.wikipedia.org/wiki/Parchment>

<sup>2</sup> <https://en.wikipedia.org/wiki/Vellum>

<sup>3</sup> <http://users.stlcc.edu/nfuller/paper/>

<sup>4</sup> <http://users.stlcc.edu/nfuller/paper/>

<sup>5</sup> <http://www.conservatree.org/learn/Essential%20Issues/EIPaperContent.shtml>

<sup>6</sup> [https://en.wikipedia.org/wiki/Photostat\\_machine](https://en.wikipedia.org/wiki/Photostat_machine)

The euphoria of convenience ultimately became the image quality nightmare that makes these records a challenge to manage.

### **Microfilm**

Microfilm was patented by René Dagron in the 1859<sup>7</sup> and was used in the Franco-Prussian war to transport messages across German lines via carrier pigeon. It wasn't until the 1920s that George McCarthy was issued a patent for his Checkograph, a camera that was used to microfilm bank records. In 1928, Eastman Kodak purchased his invention and marketed it under its Recordak Division.<sup>8</sup>

Two significant events in 1938 hastened the use of microforms for archival preservation in American libraries and educational institutions. Due to the rapid deterioration of the newsprint original and the numerous difficulties in storage and use of newspapers, Harvard University Library began its "Foreign Newspaper Project". Today, this project continues and the microform masters are stored at the Center for Research Studies in Chicago. The same year also saw the founding of University Microfilms, Inc. (UMI) by Eugene Power. He had previously microfilmed foreign and rare books, but in 1938 his work became a commercial enterprise as he expanded into microfilming doctoral dissertations.<sup>9</sup>

The adoption of microfilm by recorders began in the mid-1900s. As with Photostats, convenience and efficiency were the primary drivers. Reduced storage space and rapidly improving retrieval technology were compelling reasons for using microfilm rather than creating paper-based books. Another important argument for microfilm that was known but not fully appreciated was the development of standards by the National Micrographics Association and the American National Standards Institute (ANSI).

Standards were seen as necessary and beneficial by the academic community whose interests reached beyond convenience to embracing long-term information preservation. By following well-researched and published standards, the possibility of achieving long-term information existence and court admissibility were greatly enhanced.

In the land recording community, despite the existence of these standards, adoption by recorders was limited. Much of the microfilm in the care and custody of recorders was created by untrained staff and/or indifferent vendors. This produced film with poor to average image quality, that contained undocumented splices (placing court admissibility in jeopardy) and that was often kept in poor storage conditions that threatened the film's longevity. Add to these negative factors the plethora of formats that were used over the years, and the results are the history of U.S. land recordings that are deteriorating, are difficult and expensive to migrate to modern formats, and, apparently, not worth saving by those who should fund their rescue.

### **Electronic Images**

In the early 1960s, the National Aeronautics and Space Administration (NASA) introduced electronic imaging to the world at large. The need to transmit pictures from spacecraft required the use of a digital camera, a direct precursor to the cameras and smart phones available today.

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<sup>7</sup> [https://en.wikipedia.org/wiki/Ren%C3%A9\\_Dagron](https://en.wikipedia.org/wiki/Ren%C3%A9_Dagron)

<sup>8</sup> <http://www.srlf.ucla.edu/exhibit/text/BriefHistory.htm>

<sup>9</sup> <http://www.srlf.ucla.edu/exhibit/text/BriefHistory.htm>

One of the first business applications to embrace electronic imaging technology was the facsimile machine. For fax machines to be widely accepted, a standard image format and data compression scheme was necessary. The Tagged Image File Format (TIFF) and the Consultative Committee for International Telephony (CCITT – now known as International Telecommunications Union [ITU]) were adopted as the image format and compression schemes that were to be compatible with every fax machine sold.<sup>10</sup>

By the early 1990s, network technology was evolving to meet the bandwidth needs of rapidly developing scanning and storage systems. In marketing parlance, electronic imaging was starting to sizzle and vendors were more than ready to “sell the sizzle.” A big obstacle to early sales success, however, was the proprietary data formats that manufacturers created to: 1) make the technology reliable; and 2) lock customers into their product.

Among the best candidates for this scanning and storage technology were heavy microfilm users – putting county recorders in the cross hairs of industry marketing efforts. Most recorders resisted the temptation to be early adopters based on concerns about embracing proprietary technology.

It was not until the late 1990s that sluggish sales and improving system reliability made the marketplace realize that a standard data exchange format would be the key to jumpstart sales. The timely success of the fax machine made the TIFF ITU Group 4 (TIFF Group 4) an obvious choice for a broader imaging standard. By the end of the 1990s, TIFF G4 had become the “de facto” image and compression standard and recorders across the country began to adopt this new format.

The cumulative impact that electronic imaging and internet access have had on the use of microfilm, both for viewing and preservation, is devastating. Traditional microfilm companies push back, but the promises of improved image quality, streamlined workflow, and instant access made microfilm seem primitive and undesirable.

In 1995, Eastman Kodak Company, recognizing the displacement of film for records retrieval, introduced the Kodak Archive Writer as a way to incorporate the preservation benefits of microfilm into the workflow of a scanning and storage system. Archive Writers attached to a Land Records Management System (LRMS) network and used light-emitting diodes (LEDs) to record images on microfilm. Archive writers have been successfully integrated into many LRMS products and, when their use complies with PRIA’s best practice Recording Electronic Images on Roll Microfilm<sup>11</sup>, the microfilm produced by these systems is customized for preservation and efficient document recovery.

During the last 20 years, electronic imaging technology has profoundly changed the land records management industry. PRIA has been a key player in this evolution by pioneering the policies and procedures to exchange real property records through the process known as “electronic recording”. But without the image and index data that the LRMS manages, all of the technology and workflow improvements are meaningless.

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<sup>10</sup> <http://netpbm.sourceforge.net/doc/faxformat.html>

<sup>11</sup> <https://www.pria.us/i4a/pages/index.cfm?pageID=3308>

The strategic value of electronic records has been under-appreciated and now is the time to turn our focus to assuring their authenticity and long-term existence. PRIA's microfilming best practice is just one layer of insurance in what needs to become a multilayered approach to preserve records. The time to develop a strategy to preserve electronic records in their native form has come.