

NOTES ON ARCHIVING PHOTOGRAPHS

Clement Bautista
eFIL Administrator

I. Color Photography

The colors in all color photographic media are not very stable: prints, negatives and slides should be considered as having limited life-spans. They should be stored in and displayed under conditions that slow down their inevitable deterioration.

Color Prints/Slides (Traditional)

Most traditional color prints (and their negatives) have been processed by photo labs. Even though many photographic processing procedures have been standardized (C-41, E-6, K-14, etc.) photo labs differ considerably in how they implement these standardized processes. For example, processing chemicals need to be replenished or replaced for maximum effectiveness, but labs vary in the frequency of replenishing chemicals. Negatives (especially from different manufacturers) need to be calibrated for printing on the lab's paper stock. So, an experienced printer – preferably a human with a good eye – is required to extract the best print from each individual negative.

The dyes in prints, negatives and slides fade over time; some dyes fading more quickly than others. The dyes in Kodachrome slides have often been considered to be the most stable dyes produced, yet, while the colors in many Kodachrome slides seem to last for decades, the medium which contains the dyes (gelatin on a polyester base) is still susceptible to environmental damage. Regrettably, while many photographers have felt Kodachromes were unique in their colors, resolution and longevity, its processing requirements have curtailed its commercial viability with digital photography's popularity.

Inkjet/Laser Prints (Digital Photography)

Prints produced by the more popular printers – inkjet printers – vary considerably in their stability. Some manufacturers claim their pigment-based inks are “archival” and can last for over 50 or even 75 years. Naturally, no one has actually seen 50 or 75 year-old inkjet prints and, perhaps, no one half a century from now will take these folks seriously anyway. Dye-based inks are generally less stable than pigment-based inks.

Prints produced by laser printers are generally considered more stable – depending, of course, on the paper on which they are printed. Prints produced by monochrome laser printers are thought to be more stable than those produced by color laser printers.

Inkjet and laser prints should be printed on paper that keeps its initial properties and will not harm the inks. Although the popular coated papers are attractive and easier to use, the coating may be acidic and, thus, not archival. Like all paper products used for archival purposes, the ideal paper stock for prints should be acid-free, lignin-free, and buffered. Not surprising, these papers generally cost more.

II. Black and White (Traditional)

Traditional black and white photographic processes using silver-halide film and paper continues to produce the most stable photographic products. In addition to its unique artistic advantages, silver-based photography's potential long-term stability is the reason why some archival institutions recommend using this medium as a backup for any digital photographic projects. Of course, like color negatives and prints, the film and paper used in black and white photographs must be properly processed and stored to reap its archival benefits. The film and paper should be washed completely of developing chemicals that can breakdown the metallic silver molecules making up the photographic image in negatives and positives. Like color materials, the gelatin which contains the silver-halide

molecules and its supporting base can deteriorate through handling and non-favorable environmental conditions.

III. Digital Photography

Scanning

Flatbed scanners are now both popular, relatively inexpensive and can be used for almost all scanning tasks. Unless scanning negatives or slides at very high resolutions – in which dedicated film scanners should be used – prints as well as slides and negatives can be scanned using many popular flatbed scanners with appropriate attachments and settings. Original scans of prints should be scanned with 1:1 aspect ratio at 600 dpi (dots per inch) and negatives/slides should be scanned at least 2400 dpi.

File Formats

Selecting the file format in which to save the digital images (scanned or camera-photographed) should be carefully considered. The first consideration in making a decision centers on what format will be readable years – more likely, decades – from now. The second consideration is deciding which format is best for archiving the digital information for the purposes at hand.

TIFF: The most standardized digital image file format is TIFF (originally, “tagged image file format”). TIFF format essentially describes and stores all image information from a scanner or camera. Its goal is to provide an environment in which applications can exchange image information. TIFF’s main drawback is its large file size.

JPEG: JPEG (“Joint Photographic Experts Group”) refers to an information compression technique as well as a file format. Because of its compression feature JPEG is not well suited to files that will undergo multiple edits, as some image quality will usually be lost each time the image is decompressed and recompressed (generation loss). It is preferable to use a “non-lossy” format such as TIFF or PNG while working on an image, with the final image saved as a compressed JPEG after all editing is completed.

PNG: PNG (“Portable network graphics,” pronounced, “ping”) is a bitmapped image format that employs lossless data compression. PNG was created to improve upon and replace the GIF format, which incorporated a proprietary data compression algorithm.

RAW: The best but *least standardized* file format in digital photography is a camera’s “RAW” format. RAW files contain information that is directly extracted from a sensor with minimal processing. In other words, it contains all the information a camera’s sensor is potentially able to record, limited only by the image-taking conditions, camera+lens properties and software programming. Although RAW files tend to be large, the main issue regarding RAW files – since each camera manufacturer determines how the sensors used in their cameras save digital information – is that RAW information is manufacturer-specific. Some filenames extensions are “.nef” (Nikon), “.crw” or “.cr2” (Canon), “.pef” (Pentax) and “.orf” (Olympus). Manufacturers and third-party software companies distribute computer software that can edit RAW files and convert them to more standardized formats. Adobe has released a specification for RAW files that is not manufacturer-specific: “.dng” or digital negative format. This attempt to standardize RAW files has not yet been fully accepted by the industry.

Refreshing/Migrating

As with all archival approaches for digital products, the preservation challenge for digital products is to keep image files refreshed (routinely backed up and saved on new storage forms) and migrated (converted to file formats that can be accessed by currently available software and hardware). While digitization promotes increased access to images, the procedures for archiving digital products add a whole new dimension (time and cost) to image preservation.