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# The Graphics Atlas

Ryan Boatright

*Presented at the 2011 PMG Winter Meeting in Ottawa, Canada.*

## Introduction

This paper will describe the development of the Image Permanence Institute's Graphics Atlas and will discuss its practical uses in both professional and mainstream environments. The website was designed for anyone needing to know more about the object-based nature of prints and photographs. With various web applications, Graphics Atlas guides users through the quintessential physical attributes of the most popular mainstream printing processes dating back to the 1400s with an emphasis on the medium of photography and its contemporary digital output. With special images, users may visually observe and compare characteristics such as image color, image structure (e.g., halftone patterns, photographic grain, etc.), paper texture, and sheen. Furthermore, it is possible to examine layer structures via highly magnified cross-sections.

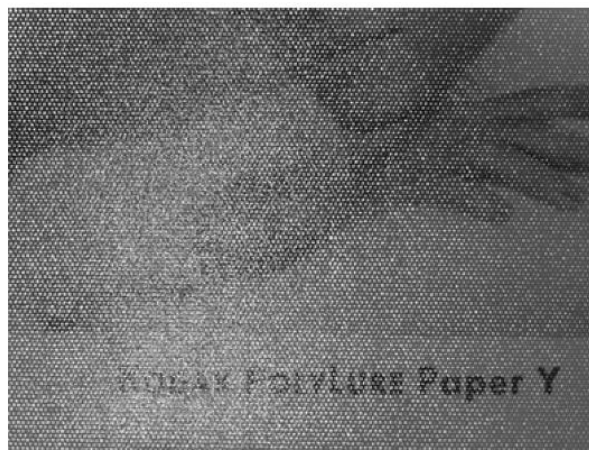
## Print Characterization at the Image Permanence Institute

The print identification flowchart tucked into the back of James Reilly's book *Care and Identification of 19<sup>th</sup> Century Photographic Prints* hangs in many photograph conservation labs and institutions charged with the care of photographs. It provides a constructive framework of the processes that existed during the time and intuitively guides you through the main characteristic traits of 19<sup>th</sup> Century photographic and photomechanical print processes. This chart embodies much of IPI's current mission with the Graphics Atlas- to provide reliable and concise information about the object-based nature of prints and photographs to those needing to properly identify and preserve them.

Beginning in 2000, print characterization projects trickled down the Mellon Foundation's Advanced Residency Program in Photograph Conservation (ARP). It was the object-oriented understanding of photography necessary in the conservation and preservation worlds that inspired much of the research by these fellows. For example, Tania Passafiume's capstone project provided an infrastructure for the understanding of Edward Weston's silver gelatin prints held in the George Eastman House collection. The project included a swatch book with paper samples that illustrate common silver gelatin print traits (e.g., tints, tones, textures, and sheens). The introduction of basic photo-documentation techniques to illustrate and characterize silver gelatin prints was seen later in 2005 via the ARP/IPI joint research project *The Characterization of Black and White Silver Gelatin Fiber Based Photographic Prints*. Another project by Gawain Weaver explored the various aesthetics of silver gelatin print deterioration. All of the ARP fellows' projects can be downloaded as PDFs on the George Eastman House's Notes on Photographs website ([notesonphotographs.org](http://notesonphotographs.org)).



*Fig. 11: Kodak Polycontrast Paper  
Smooth Glossy*



*Fig. 12: Kodak Polylure Paper  
Silk Lustre*

Fig. 1. Images made with axial illumination illustrating the different sheens of two once popular Kodak papers. From *The Characterization of Black and White Silver Gelatin Fiber Based Photographic Prints* by Corinne Dune, Lene Grinde and Ralph Wiegandt.

Because of such research the interrelationships between the appearance, structure, and manufacture of silver gelatin prints are better understood, and documented. Another side effect was the beginning of IPI's ongoing query into the world of inkjet prints and other digital print technologies. It's now clear that inkjet papers are just as diverse as photographic papers were 50 or 60 years ago, and have very different stability characteristics. IPI's Digital Print Preservation Portal ([dp3project.org](http://dp3project.org)) provides the information, skills, and tools to better identify and care for digital prints.

### **The Microscopy Lab**

During the last few years of the ARP, IPI made a push to further develop its imaging capacity, broaden its research scope, and invested heavily in the development of didactic print characterization web applications. The major advancements in IPI's photo-documentation techniques and the development of a comprehensive "visualization suite" to be used on the web began in 2006. Previously, the microscopy lab contained one copystand and a stereo-binocular microscope that was retrofitted with a low-resolution digital microscope camera. It was clear that a more standardized infrastructure and larger more informative set of images would play a vital role in the development of a print characterization website. A Canon 5D DSLR, compound microscope, fiber optic light line, and an additional copystand were purchased. Custom light holders and vacuum easels for the copystand were built. Ralph Wiegandt, a former ARP fellow, also made important modifications to IPI's microtome, which greatly sped up cutting cross-sections. Later, a third copystand was installed and dedicated to a HD video camera. A lot of time was spent calibrating lighting setups, standardizing imaging techniques, and researching the most appropriate levels of magnification. Photographing physical traits such as texture and sheen also required more complex thinking in regards to camera exposure and RAW image processing. IPI's large didactic prints and photographs collection came in quite handy for image tests. These imaging techniques are still methodically used when photographing each new object that makes

it on [graphicsatlas.org](http://graphicsatlas.org). Currently, the visualization suite contains 15 standardized images and 1 video.



Fig. 2. IPI's microscopy lab in 2006.

### **The Digital Sample Book**

Digital Sample Book was the predecessor of Graphics Atlas, and is still accessible on the web. At its debut, it served as an expansive catalog of various inkjet papers that could be browsed by contemporary photographers. But, once the potential of the newly invented web structure was understood, the scope of materials that would be added to the Digital Sample Book expanded to include pre-photographic, photographic, and photomechanical prints. For the first time, it was possible to objectively compare physical traits across many process types with a Google Earth like experience! You could zoom in and out, change the lighting to the side or top, or flip the prints on edge to examine their layer structures underneath very high magnification.

The Digital Sample Book's newly invented toolbar also marked an important shift away from using highly technical terms to describe lighting and magnification conditions used in the digitization process. For example, an image of a print that was photographed with a DSLR connected to a large compound microscope using bright-field illumination was not entered into the online database as "100X Cross-Polarized Bright Field View". Instead, a graphical toolbar was created that more intuitively describes this scenario. And, because of the toolbar, users become aware that the way we perceive photographs and prints is actually highly influenced by how they are lit, whether it be on a copystand, under a microscope, or in the gallery.

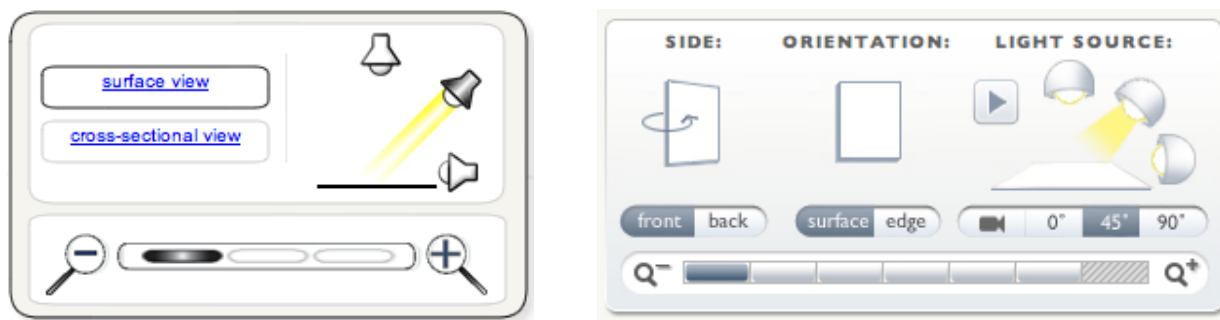


Fig. 3. The Digital Sample Book and Graphics Atlas toolbars.

In 2008 and 2009, under the guidance of James Reilly, a team comprised of myself, Zach Long, Gawain Weaver, Kate Palitsch, Ben Vanderburg, and the equip at the web design firm Jet A Studio in Louisville, KY set out to transform the website into a comprehensive didactic tool with new functions and content. Along with improvements to the comparison tool, step-by-step guided tours were added to teach users about the most important characteristics of each print in the database and provide important historical context. New identification pages would focus on telltale traits, and their common variations. These advancements marked the beginning of Graphics Atlas.

### The Graphics Atlas

Graphics Atlas has three modes that are accessible from the home page: Guided Tour, Compare Processes, and Identification. Within each of the three modes a print from the database may be selected by process type, visual browse, or a timeline depicting major use.

#### *The Guided Tour*

This mode consists of carefully curated sets of images tailored to each print. The first images provide broad perspective and historical context. Subsequent images hone into visual and physical nuances, and are often entirely specific to the particular object. Text on a panel next to each image details what to notice. At any time users can compare the currently chosen process with others or learn more about how to identify the process.

#### *Compare Processes*

The highly standardized visualization suite is available in Compare Processes. The side, orientation, light source, and magnification can be adjusted via the central toolbar. A video of the prints tilting back and forth in front of a diffuse light source is also accessible. Under each print is a “What to Notice” list with links to views that depict the most important aspects.

#### *Identification Pages*

These free-form pages (not bound to a strict web infrastructure) offer the most direct and specific details pertaining to key identification traits. The major variations amongst processes are also shown in one place. This is especially useful in better understanding deterioration, which often manifests itself in many ways and takes on various appearances.



**Graphics atlas** IMAGE PERMANENCE INSTITUTE  
Feedback | Tutorials & Support

Home | **Guided Tour** | Compare | Identification

Want to receive the Interesting Picture of the Week?  
Subscribe

**Graphics Atlas** is a new online resource that brings sophisticated print identification and characteristic exploration tools to archivists, curators, historians, collectors, conservators, educators, and the general public.

**IPI** IMAGE PERMANENCE INSTITUTE

BEGIN EXPLORING OUR STUDY COLLECTION BY SELECTING ONE OF THE FOLLOWING TOOLS:

**START NOW →**

**Guided Tour**  
Let IPI guide you through individual prints in a virtual study collection that contains processes ranging from the woodcut to the modern digital print.

**START NOW →**

**Compare Processes**  
Compare traits across processes using views made with various lighting techniques and magnifications.

**START NOW →**

**Identification**  
Learn about the distinguishing characteristics of each process. These pages contain step by step instructions on how to identify print processes.

Fig. 4. The Graphics Atlas homepage, 2013.

### The Graphics Atlas: Applied

The Graphics Atlas is certainly an invaluable tool when teaching courses on the care and identification of prints and photographs. But, beyond that it can be used in other public and professional domains. For example, a photograph conservator can use it to help identify prints in the field. Historians may use it as a reference while teaching on the evolution of printing or photography. A curator can use it to better understand the context in which a particular work of art was made. Contemporary photographers or printmakers can reference it to better understand how (and why) a traditional silver gelatin black and white print looks different than its inkjet counterpart.

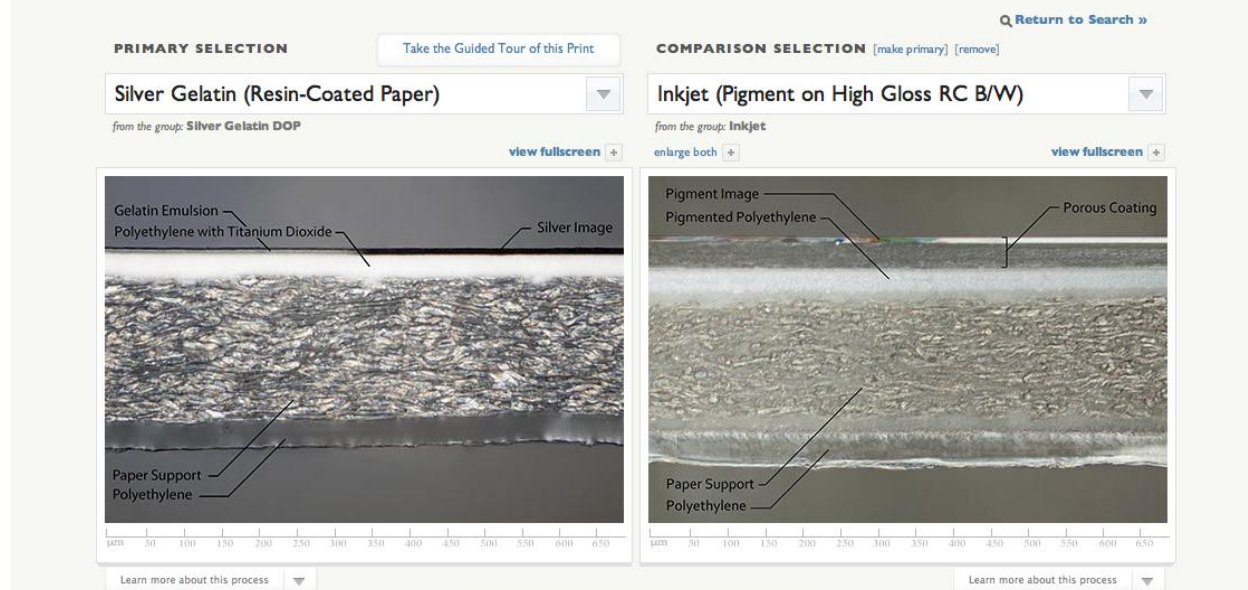


Fig. 5. Cross-sections depicting structural differences between resin-coated b&w silver gelatin prints and resin-coated b&w inkjet prints. These prints can look similar with the naked eye.

### Recent Developments

Although made public in 2009, Graphics Atlas was officially launched in February 2010. At the time Zach Long was responsible for managing the project and after his departure Kristin Smith became project manager. In 2012, IPI received a grant from the Andrew W. Mellon foundation, *Sustaining Knowledge of the Materials of Photography through Research and Education*, to support the continued expansion of Graphics Atlas. Alice Carver-Kubik was hired as a Photographic Research Scientist to lead the project and Alyssa Marzolf was hired as the Imaging and Microscopy Technician.

The database on Graphics Atlas has greatly expanded over the past few years. Recent additions include color slide films and additional silver gelatin black and white prints. An “Interesting Picture of the Week” email newsletter was also introduced. In just a short paragraph or two, each newsletter summarizes important historical information and characteristic traits of an interesting print in IPI’s study collection. Users can follow a link to learn more about these prints on [graphicsatlas.org](http://graphicsatlas.org).

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