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# Photograph Paper Sample Books : A Reference Collection and Web Presentation At George Eastman House

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PHOTOGRAPHIC PAPER SAMPLE BOOKS: A REFERENCE COLLECTION AND WEB PRESENTATION AT GEH

# PHOTOGRAPHIC PAPER SAMPLE BOOKS:



Kodak Azo photographic paper samples.  
"Some of our Photographic Papers"  
Rochester, Eastman Kodak Co., circa 1910  
14 x 20 cm.

## A REFERENCE COLLECTION AND WEB PRESENTATION AT GEORGE EASTMAN HOUSE

Emily Welch  
Fall 2008

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PHOTOGRAPH PAPER SAMPLE BOOKS:  
A REFERENCE COLLECTION AND WEB PRESENTATION AT  
GEORGE EASTMAN HOUSE

Emily Welch, BFA University of <sup>by</sup>Washington, Seattle, WA, 2002

A thesis project  
presented to Ryerson University and  
George Eastman House International Museum of Photography &  
Film

in partial fulfillment of the requirements for the degree of Master  
of Arts in the Program of Photographic Preservation and  
Collections Management

Rochester, NY, USA and  
Toronto, Ontario, Canada, 2008  
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## ABSTRACT

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This thesis proposes a model for the cataloging, evaluation, and description of photographic paper sample books in the George Eastman House collection. The model is implemented as a reference resource on *Notes – on Photographs*, a collaborative website in development at George Eastman House with the support of a National Leadership Grant from the Institute of Museum and Library Services. *Notes-on Photographs* is built on a wiki platform, which is characterized by capabilities for dynamic updating and collaborative editing by a group of users. The model implemented to describe the contents of the paper sample books utilizes these capabilities to further enrich the information resource.

Manufacturer paper sample books are invaluable resources in developing a better understanding of the materials of photography; they reveal the evolution of the dominant image-making support for over a century of silver halide photography. This project seeks to do a better job of explaining what they are, why they are valuable, and of promoting a standardized language to facilitate description and communication among professionals engaged in the care, display, and study of photographs. The ability to articulate the technological and material aspects of any medium contributes to better discernment and has implications for establishing authenticity, being conscious of an image maker's aesthetic decisions, dating works, and for understanding the condition and preservation of the object.

In most cases photographic paper sample books in the George Eastman House collection are undated, and catalogue records treat the books as single entries rather than complex bound material where each sample has unique characteristics. The work accomplished in this thesis will inform and enrich the object information in the current cataloging system, The Museum System (TMS) at George Eastman House.

## ACKNOWLEDGEMENTS

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“It takes time to look at anything if you really want to see it.”  
--David Hockney<sup>1</sup>

Much of what I know about the technological and material history of photography I have had the pleasure of learning from two authorities in the field: Grant Romer, Director of the Advanced Residency Program in Photograph Conservation at George Eastman House, and Jim Reilly, Director of the Image Permanence Institute. Many of the keypoints synthesized in this research with respect to the characterization of photographic materials originated with these two men in numerous publications, lectures, and meetings. As far as I'm concerned, they are changing the way that people think about photographs.

To my family whose support has been nothing less than extraordinary; to Ray, one of the best people I will ever know; and to my remarkable friends Tom, Rod, and Kiff, who consistently remind me of the phosphorescence of learning. I feel an immense debt of gratitude and aspire to return it many times over.

Finally, I wish to express my sincerest thanks to the Master of Arts in Photographic Preservation and Collections Management faculty for tackling a unique program and caring about its success. A special thank you to my thesis advisor, Blake Fitzpatrick, who was meticulous, patient, and thoughtful: vital components to the completion of this work. To Robert Burley for his careful attention and support through this process. And to Ralph Wiegandt, faculty of the Advanced Residency Program in Photograph Conservation, whose energy through much banter and practice on photograph surface imaging is greatly appreciated.

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<sup>1</sup> David Hockney, quoted in: Paul Richard, “David Hockney’s Drawing Power,” *Washington Post*, January 20, 1985, Show/Arts Recordings section.

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## INTRODUCTION

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Kodak's announcement in June 2005 that it would end black and white photographic paper production is widely noted in reference to the end of silver halide photography as the dominant image-making medium. Silver halide photographic papers have become specialty items produced by a handful of manufacturers, and are characteristically limited with respect to the wide variety of what was once available. Throughout its history, photography's materials have evolved in response to technological advances in the medium. Gelatin emulsion technology replaced a variety of photographic processes used in the mid to late nineteenth century and into the early twentieth century, and would be the dominant photographic technology from the period spanning between the 1880s to recent history.

As a result, gelatin emulsion papers became increasingly utilitarian finding application in journalism, the sciences, industrial use, advertising, illustration in books and other publications, the fine arts, and everyday amateur work. The material history of photography of the nineteenth and early twentieth century is richly documented in contemporary photographic journals, amateur publications, and in the often prolific writings of pictorialist practitioners and artists.<sup>2</sup> The literature about photography in the twentieth century, however, is largely concerned with the academic art history of photography and does not make the material characteristics central to its content. The material details of photography in the twentieth century can be found in paper manufacturer publications and sample books.<sup>3</sup>

The ability to articulate the technological and material details of any medium contributes to better discernment. As photography changes, and one form of image-making technology is surpassed by succeeding technologies, we need to establish an

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<sup>2</sup> Grant Romer makes the point that in 1860, 20 years after the invention of photography, Blanquart Evrard *The Origins, Progress, and Transformation of Photograph*  
Grant Romer, "History and Technology of Photographic Materials" (lecture presented at the Preservation Seminar, George Eastman House, Rochester, NY August 16-21, 2008).

<sup>3</sup> This information can sometimes be teased out from the writings of artist photographers of the mid and late twentieth century. A very notable exception is the writing and work of Ansel Adams and an excellent example of his work in this area is Ansel Adams, *The Print* (New York Graphic Society, June 1984).

understanding of what it was at its inception and what it is now before valuable reference material is lost.

Currently, photographic paper sample books in the George Eastman House collection are generally undated, and catalogue records treat the books as single entries rather than complex bound material where each sample has unique characteristics. The purpose of this thesis is to create a model to apply a materials-based approach to photographic paper samples in the George Eastman House collection: to do a better job of understanding what they are, and why they are valuable, and to do a better job of promoting a standardized language for description to enable communication among professionals engaged in the care, display, and study of photographs.

The photographic paper sample books have been surveyed in order to develop a model for the cataloging and description of their contents. The presentation format, the web-based collaborative resource, *Notes – on Photographs*, is a dynamic presentation tool that makes the collection viewable to anyone. The dynamic aspects of its architecture allows for the collaborative creation of chronologies associated with the manufacture of the paper samples and can be built, over time, into an encyclopedic resource. Additionally, it works as a didactic platform to promote a methodology for looking at paper samples. The reference material used to inform the chronologies for the prototype comes from original manufacturer publications and, in the case of Kodak papers, from internal documents held in the Rare Books department at the University of Rochester Rush Rhees Library, the George Eastman House Technology Collection, and the George Eastman House Conservation Library. A proposal has been made and a plan laid out for George Eastman House to amend The Museum System (TMS) catalog records to reflect the revised accession treatment for the sample books.

*Notes – on Photographs* explores the material aspect of photographs from myriad perspectives. This thesis project has found an application within a space of *Notes* and works as a series of catalog records for the photographic paper sample books in the collection of George Eastman House. A prototype is built to articulate what kind of information is necessary to make the description of the paper samples meaningful and promote this methodology in an online resource intended to be accessible by any user, but importantly, to other museum professionals. The catalog records are authoritative and not editable by other users. The chronologies for the manufacture and description of individual papers, however, are left open indefinitely, thereby taking advantage of the power of collaborative editing. In this way,

information related to the paper samples can be developed beyond the scope of any individual researcher.

## LITERATURE SURVEY

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In 1983, individuals in the Boston Museum of Fine Arts (MFA), Department of Prints, Drawings, and Photographs identified a need to articulate the material characteristics of prints made by Edgar Degas. This need exposed a deficiency in the ability to identify material characteristics—there were no standardized or evolved descriptors that might enable professionals across institutions to communicate with each other about the papers seen in Degas prints.

Connoisseurship in fine art aids in establishing the historical value of the object, which is inevitably linked to market value. The ability to articulate the technological and material details of any medium contributes to better discernment and has implications for establishing authenticity, understanding an image maker's aesthetic decisions, dating works, and for the condition and preservation of the object.

In response to the Degas experiment, Roy Perkinson, Head of the Paper Conservation Laboratory at the MFA and Paper Conservator Elizabeth Lunning developed *The Print Council of America's Paper Sample Book: A Practical Guide to the Description of Paper*. The *Paper Sample Book* contains 26 representative paper samples intended to visually illustrate the characteristics of new and vintage papers. In limiting the referent examples to 26, the guide promotes the application of a standardized vocabulary to better enable communication across the field.

In 1998, this system was applied by Judith Walsh to describe photographic images. Walsh used the *Paper Sample Book* to describe Alfred Stieglitz's photogravures in the National Gallery of Art collection. This approach treated Stieglitz's photogravures as material objects, print and mount, rather than as an image alone. Using the *Paper Sample Book*, characteristics such as color, thickness, and texture of the materials were observed and recorded, enabling the objects to be organized into like categories. With additional knowledge about the technical history and manufacture of papers, the data combined to make important conclusions about the age of the prints and their material structure.

Judith Walsh went on to create the Paper Sample Collection at the National Gallery of Art, comprised of 40,000 paper samples made from 1830 to the present.

The collection, both physical samples and resultant database, is the largest of its kind and continues to evolve.

Paul Messier, a conservator in private practice in Boston, Massachusetts, has assembled a collection of photographic papers similar in scope and design. As with the *Paper Sample Book*, the need for a reference database was catalyzed by a need to determine characteristic differences between photographs produced by a single maker over a working career. When the 1998 Man Ray and 1999 Lewis Hine forgery scandals exposed a lack of expertise in the photographic world in establishing authenticity, Messier became embedded in the pursuit of developing a methodology for the authentication of photographs using advanced analytical tools such as paper fiber sampling. He has also worked in collaboration with Dusan Stulick at the Getty Conservation Institute in applying X-ray Fluorescence (XRF) and Fourier Transform InfraRed (FTIR) technologies to the analysis of photographs.

Projects that explore the value in understanding the characteristics of photographic papers are relatively recent. In addition to Paul Messier's work, establishing a materials-based understanding of photography and photographs has been undertaken in the context of the Advanced Residency Program in Photograph Conservation at George Eastman House (ARP), funded by the Andrew W. Mellon Foundation. Jim Reilly and others at the Image Permanence Institute (IPI) have also worked in this area and are continuing to develop the Digital Sample Book, a tool intended to illustrate and educate about photographic processes and their materials. Dusan Stulik at the Getty Conservation Institute is currently building an Atlas of Analytical Signatures of Photographic Processes intended to be a massive database of the chemical characteristics of photographic materials. Most recently, this kind of work falls into the scope of the mission of the Center for the Legacy of Photography (CLP), a collaborative venture with members from both the George Eastman House and the Image permanence Institute, to articulate and define silver halide photography.

In 2005, Corinne Dune, Lene Grinde, and Ralph Wiegandt, then all third-cycle Fellows of the Advanced Residency Program in Photograph Conservation (ARP) published literature about characterizing photographic materials, the *Characterization of Black-and-White Silver Gelatin Fiber-Based Photographic Prints*. They took as their jumping-off point published work by a first-cycle ARP fellow, Tania Passiafume. Passiafume's *Silver Gelatin DOP Sample Book* developed a comparative reference tool for describing photographic prints. Dune, Grinde, and Wiegandt

attempted to advance methods of description and develop a system for imaging and documentation of print characteristics.

Katrin Pietsch, Photograph Conservator at The Nederlands Fotomuseum, created [www.photographicnegatives.net](http://www.photographicnegatives.net), a wiki resource for conservation information about photographic negatives. The resource, built through the cooperation of the FHTW Berlin (University of Applied Sciences, Course for Preservation and Conservation / Audiovisual and Photographic Heritage) and the Nederlands Fotomuseum, Rotterdam, is intended to present information about negative processes, deterioration, and conservation as well as provide image databases for identification and archival recommendations. Pietsch experienced an overwhelming amount of unwanted editing on the site and it has since been closed until resources can be made available to correct these issues.

Kerstin Bartels, a photograph conservator in Berlin, Germany, is currently developing a web-based identification resource for gelatin silver photographic papers. She is focusing primarily on German photographic papers; however, there will be an area of the site developed to incorporate other manufacturer papers comparison. The papers will be illustrated with micrographs taken under varying lighting conditions. They will be described and identified via interactive tools developed to make matches based on deductive reasoning; the software will pose questions for the user to answer, and the answers, via a process of elimination will generate a match. The project will be submitted in fulfillment of her PhD studies at the end of 2008 in both German and English.

In July 2008, the National Center for Preservation Technology and Training Grants Program announced a \$23,000 grant to fund the Foundation of the American Institute for Conservation (FAIC) "Conservation Wiki".<sup>4</sup> The resource will become a low-cost solution to publishing the compendium of AIC Conservation Catalogs, dating from 1985 to the present. These catalogs are comprised of publications that provide information regarding techniques for the treatment and preservation of historic artifacts. The initial grant covers the publication of existing content for the entire AIC membership, after which, individual AIC specialty groups will be responsible for publishing new content.

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<sup>4</sup>Anon., "\$165,415 Released for the National Center for Preservation Technology and Training Grants Program," National Center for Preservation Technology & Training (2008), <http://www.ncptt.nps.gov/News/2008/165,415-Released-for-the-National-Center-for-Preservation-Technology-and-Training-Grants-Program.aspx> (accessed October 31, 2008).

## THE SAMPLE BOOK CONTENTS

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The paper sample books in the George Eastman House archive primarily date from the first half of the twentieth century. This period was rich in the range and variety of available photographic papers. The contents of the books include examples of collodio-chloride and gelatin-chloride printing-out papers (POP), silver chloride and silver-bromide developed-out papers (DOP), cyanotype papers, platinum papers, carbon tissues and transfer papers; all offered in a multitude of surfaces. Silver-bromide developed-out papers were by far the dominant image support and as such, the bulk of the collection is comprised of these materials.

Richard Leach Maddox first published a method for using a gelatin emulsion for dry plate negatives in 1871.<sup>5</sup> In 1873 Peter Mawdsley invented gelatin bromide paper and by the 1880s photographic papers coated with a gelatin emulsion were in commercial production and displacing albumen paper as the dominant image making support, maintaining this dominance for over a century.<sup>6</sup>

The First World War brought a virtual end to the production of many of the papers in the early sample books. Collodion papers disappeared in the United States though they continued to be marketed in Germany until the late 1930s.<sup>7</sup> The expense of commercially manufactured platinum papers wasn't sustainable and at Eastman Kodak Company they disappear in 1916.<sup>8</sup> Cyanotype papers, or Eastman's Ferro-Prussiate paper also disappears from the Eastman Kodak Company price-lists by 1916.

As the dominant image-making support of the twentieth century, gelatin emulsion coated photographic papers were highly engineered to meet all needs for every kind of application and practitioner and were available in myriad surfaces with varying combinations of weight, sheen, texture, tints, and image tone. Photograph paper manufacturers compiled books with unique samples in the hundreds, named

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<sup>5</sup> Richard Leach Maddox, "An experiment with Gelatino Bromide" *The British Journal of Photography* vol. xviii (1871) : 422-423.

<sup>6</sup> Mark Osterman, "Introduction to Photographic Equipment, Processes, and Definitions of the 19<sup>th</sup> Century," in the *Focal Encyclopedia of Photography*, ed. Michael R. Peres (Boston: Focal Press, 2007), 62.

<sup>7</sup> *Ibid.*, 62.

<sup>8</sup> This information is corroborated by the manufacturer price lists as well as an Eastman Kodak Company internal document: Kodak Platinum Paper dates of manufacture: (Eastman Kodak Company) Drafting Department Data. From the Kodak Historical Collection #003, Rush Rhees Library, University of Rochester.

with a veritable melting pot of descriptors, and they are the key to revealing the history of black and white paper surfaces.<sup>910</sup>

The photographic paper sample book collection at George Eastman House contains sample books from Agfa, Gevaert, and The Autotype Company; however, the bulk of the collection is made up of books from the Eastman Kodak Company. Because of this, the model presented in this research for the cataloging and description of the paper samples, as well as discussion of how the model was developed will be in the context of one of the Kodak paper sample books. Though Kodak enjoyed an established dominance in the industry and it could be argued that the rich history of their paper surfaces would mirror the history of other manufacturers. The online resource, *Notes – on Photographs*, can be used to explore the other books. The construction of the books, like the materials they feature will vary in terminology, however, the model is designed with that flexibility in mind.

The aforementioned melting pot of terms used to describe paper and surface characteristics in Kodak manufacturing became refined as the materials evolved. In 1940 Kodak standardized surface descriptions to represent texture, sheen, and tint in combination. Prior to 1940, the letters, numbers, and descriptive terms applied to surfaces weren't necessarily consistent across product lines.<sup>11</sup> Later Kodak paper sample publications became *Dataguides*, produced in 1958, 1960s, 1970s and they are full of clues for how each paper was used.<sup>12</sup>

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<sup>9</sup> The work of looking at paper sample books to reveal this history originates with James Reilly, Director of the Image Permanence Institute, Rochester, NY and his staff as well as Grant Romer, Director of the Advanced Residency Program in Photograph Conservation (ARP) at George Eastman House, Rochester, NY. The fellows of the ARP who were and are engaged in evaluating photographic paper samples from a variety of perspectives include: Klaus Pollmeier, Ralph Wiegandt, Corinne Dunne, Lene Grinde, and Tania Passafiume. Paul Messier's work with respect to photographic paper samples is discussed in the Literature Survey section of this research.

<sup>10</sup> James Reilly has articulated this observation on multiple occasions, but most recently in an August 2008 lecture.

James Reilly, "Photograph Deterioration" (lecture presented at the Preservation Seminar, George Eastman House, Rochester, NY August 16-21, 2008).

<sup>11</sup> The history of description of Kodak fiber-based black and white paper surfaces can be found in the second edition of the following publication by Kit Funderburk, former Senior Technical Manager for Paper Science & Technology, Eastman Kodak Company.

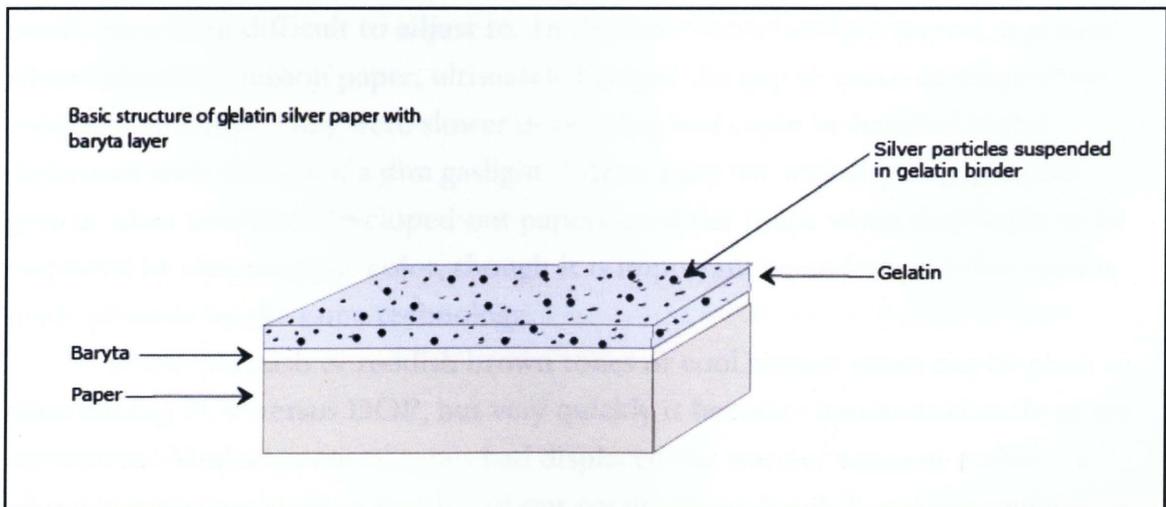
Kit Funderburk, *A Guide to Surface Characteristics: Kodak Fiber Based Black and White Papers (Second edition)*, Notes-on Photographs (2008), [http://wiki.eastmanhouse.org/index.php?title=Funderburk%2C\\_Kit.\\_A\\_Guide\\_to\\_Surface\\_Characteristics:\\_Kodak\\_Fiber\\_Based\\_Black\\_and\\_White\\_Papers.\\_%28Second\\_edition%29](http://wiki.eastmanhouse.org/index.php?title=Funderburk%2C_Kit._A_Guide_to_Surface_Characteristics:_Kodak_Fiber_Based_Black_and_White_Papers._%28Second_edition%29) (Accessed October 31, 2008).

<sup>12</sup> James Reilly, "Photograph Deterioration" (lecture presented at the Preservation Seminar, George Eastman House, Rochester, NY August 16-21, 2008).

## UNDERSTANDING THE CHARACTERISTICS OF THE SAMPLES

In evaluating photographic paper characteristics it is important to understand what the component parts of photographic papers are, what gives them texture, brilliance (sheen), and color; both the paper support and the image tone.

The generic components of gelatin emulsion coated paper are the support (the paper) the binder (gelatin colloid) and the imaging substance consisting of a halide (iodide, bromide, or chloride) and a silver (silver nitrate). In the case where the halide is bromide, these combine to form silver bromide crystals that are dispersed in the colloid. Gelatin emulsion coated papers quickly incorporated a pigmented layer of barium sulfate (baryta layer) underneath the light-sensitive binder layer, which has implications for base color and texture, since a baryta layer obscures the visibility of paper fibers. Other photographic papers can have a one-layer structure, as is the case with iron-based processes or silver-based salt prints, where the imaging substance is embedded in the interstices of paper fibers and not a binder layer. The presence of a baryta layer is sometimes detectable on basic visual examination and is generally determinable under ten times magnification.



The presence or absence of a baryta layer, as well as the thickness of the layer has implications for texture and surface in photographic paper.

Image tone is produced by the way that light interacts with the imaging substance. Printed-out papers (POP) and developing out papers (DOP) have distinct color differences. Development in papers that are printed-out happens not as a result of darkroom development but of printing out. The image is developed by exposure

to a very bright light source (typically sunlight) in a printing frame where the negative is in contact with the paper. The process is based on an excess of silver where silver chloride is reduced to photolytic metallic silver. Photolytic silver exists as an extremely finely divided metallic particle, and is round in shape. When light is scattered from smaller particles the result is the appearance of warm tones, which, in POP papers tends toward reddish brown. The development process is slow and, as a result, produces a self-masking effect protecting areas of maximum density from over exposing, which allows for a wide range of tones.

Development in a tray or tank greatly amplifies the output of image particles and requires a brief exposure in comparison to printing out—fractions of seconds as opposed to several minutes or hours. In the developed-out process the latent image is composed of just a few silver atoms (2 or 3). When developer is added the silver atoms multiply exponentially to produce large, filamentary silver particles, bulky in comparison to photolytic silver. Filamentary particles absorb light fairly evenly which results in the appearance of a very neutral tone.

The first developed-out papers (DOP) were introduced in 1885 but were unsuccessful because they were too sensitive to light. A photographer working in 1885 would have been used to working in some amount of light and the adjustment to the darkroom and the loss of control caused by a faster and less forgiving process would have been difficult to adjust to. In the late 1890s, Gaslight papers, a gelatin silver chloride emulsion paper, ultimately bridged the gap to make developed-out products practical. They were slower developing and could be handled in the darkroom with the aid of a dim gaslight.<sup>13</sup> After 1905 the majority of papers are gelatin silver emulsion developed-out papers until the 1960s when they begin to be displaced by chromogenic color, though it is important to understand that each is made possible by the same technology.

Warm purplish or reddish brown tones or cool neutral tones can be clues to determining POP versus DOP, but very quickly it becomes apparent that there are exceptions. Modern, neutral tones had displaced the warmer tones of earlier albumen prints and toning developed-out papers immediately became popular particularly in commercial portraiture where the warmer tones lent a suggestion of color to a sitter, having an overall more lifelike effect. Though experiments in toning of nearly every color were made, sulphur toning, producing brown tones, or selenium

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<sup>13</sup> Mark Osterman, "Introduction to Photographic Equipment, Processes, and Definitions of the 19<sup>th</sup> Century," in the *Focal Encyclopedia of Photography*, ed. Michael R. Peres (Boston: Focal Press, 2007), 81.

toning, producing greater maximum density and purplish blue tones were dominant in the twentieth century.

Surface can be considered a combination of texture, sheen, and base color. By about 1910 there were already a great variety of surfaces available in various papers. Consider the following description for a 1912 Kodak Velvet Green Paper:

“Effects heretofore to be had only by the laborious carbon process can now be secured by any amateur photographer with this new paper.

For landscapes, for marines, and in fact, for the majority of outdoor amateur negatives, the rich green of prints on Kodak Velvet Green produces most beautiful harmonious effects, with an indescribable “atmosphere” of nature itself.

And to use this paper the amateur has to learn no new processes nor possess extraordinary skill. Anyone who can print on Velox paper can print just as successfully on Kodak Velvet Green, as the two processes after exposure are identical, and the developing solution is only slightly changed.

The surface—a smooth semi-matte—brings out detail fully, and the paper is supplied in both single and double weights.”<sup>14</sup>

On baryta coated papers the effects of texture, base tint, and surface sheen could be manipulated on one or more layers of either pigmented barium sulfate or gelatin coating depending on the desired effect. The effects were produced either mechanically or by putting additives in the coating layers on the paper.

Calendering is a mechanical finishing of the paper either before or after baryta coating to increase smoothness and decrease thickness to varying degrees. Another degree of calendering, supercalendering, was an additional step intended to increase sheen, producing a high-gloss finish.<sup>15</sup>

Both texture and sheen are effects that can be machine produced before or after baryta coating, or by putting additives in the gelatin layer or supercoats. Additives, or matting agents (often silica) were used to control surface sheen<sup>16</sup>

<sup>14</sup> Anon., “Kodaks and Kodak Supplies,” Eastman Kodak Company, Rochester, NY (1912).

<sup>15</sup> Kit Funderburk, *A Guide to Surface Characteristics: Kodak Fiber Based Black and White Papers. (Second edition)* (Notes-on Photographs, October 2008), Chapter 3.

<sup>16</sup> Ibid, Chapter 4.

Wet felts, or marking rolls were used to impress texture prior to baryta coating, sometimes ending up with either no baryta or a very light coating in order to preserve the texture.<sup>17</sup> Some of the more unique surface textures, for example, Kodak's Silk surface were created by a roll embossed with a pattern in contact with the baryta-coated layer."<sup>18</sup>

Information about photographic paper surfaces is not only useful for their description but easily have application in dating material. For example, Kodak's Linen surface was only in production between 1921 and 1935. It should be acknowledged that papers could potentially be used past their expiration date but cross-referencing the materials with the manufacturing records is one indicator that used in combination with additional visual examination or analytical techniques could be a powerful tool for dating. It certainly gives you the knowledge that the sample doesn't date prior to 1921.

By 1980, available surfaces shown in the *Dataguides* have narrowed to nine. The examples and descriptions become less illustrative.<sup>19</sup> Kit Funderburk, author of *A Guide to Surface Characteristics: Kodak Fiber Based Black and White Papers*, and former Senior Technical Manager for Paper Science & Technology, Eastman Kodak Company, suggested recently that there are seven distinct surfaces of Kodak manufactured paper that professionals ought to know. The surfaces Smooth, Fine-grained, Tapestry, Silk, Suede, Medium Rough (though it was discontinued around 1967), and Tweed are all distinct and unmistakable from each other—able to be distinguished on visual examination alone—something that would be much more difficult to discern among the many subtly varied papers of the early twentieth century.

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<sup>17</sup> Glen G. Gray, "From Papyrus to RC Paper: History of Paper Supports," in *Pioneers of Photography: Their Achievements in Science and Technology*. SPSE The Society for Imaging Science and Technology, p. 43.

<sup>18</sup> *Ibid.*, 43.

<sup>19</sup> This point was made recently in a lecture given by James Reilly. James Reilly, "Photograph Deterioration" (lecture presented at the Preservation Seminar, George Eastman House, Rochester, NY August 16-21, 2008).

## WHY A WIKI?

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### WHAT IS A WIKI?

A wiki website is defined by the collaborative creation of its content and structure by a community of users. Its architecture designed with maximum flexibility in mind to enable use of additional applications.

The wiki model is in extensive use across many disciplines, however, the word wiki<sup>20</sup> inevitably conjures comparison to the tremendously successful Wikipedia, launched in 2001 by Jimmy Wales and Larry Sanger. Wikipedia is powered by MediaWiki software, one of many wiki software packages. MediaWiki was also selected for *Notes* on the basis of its proven performance, flexibility and ease of use.

Wikipedia is an open-content collaborative encyclopedia intended to be built and edited by an unrestricted community of users. Wikis have been used and modified in numberless forms, and while *Notes* was initially conceived to develop entirely within the wiki architecture it has since developed into a concept of a hybrid wiki/web image presentation.

*Notes* required many features already built in to wiki software. Site requirements included:

**Searchability:** Built on a free and open-source platform (Linux) and database (MySQL), and using PHP a free scripting language for creating dynamic websites.

**Simple navigation and use:** Pages are edited and formatted using wiki markup, or wikitext, an easily grasped alternative to XHTML or CSS.

**Powerful in grouping information:** Wikis grow dynamically with ever increasing numbers of users and contributors. Articles can be categorized by a system that can powerfully aggregate related material.

**Annotated:** Users need to be able to add or modify content without changing the framework of the resource.

**Trackable, authored entries:** Each contribution needs to be accounted for and time stamped to verify accuracy. Through this mechanism, every iteration of an article or

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<sup>20</sup> The Hawaiian word for 'quick' was pulled from obscurity in 1995 by Ward Cunningham the founder of WikiWikiWeb and developer of the first wiki software, which he described as "the simplest online database that could possibly work".  
Ward Cunningham, "What is a Wiki," WikiWikiWeb, (2002),  
<http://www.wiki.org/wiki.cgi?WhatIsWiki> (Accessed 10/29/08).

page becomes a permanently archived record and is viewable and able to be restored at any time.

**Triangulating understanding:** To simply and effectively be able to illustrate a topic via a multifaceted approach: photographic or video documentation, illustration, and written description.

**Universal accessibility:** Access to the resource must be open.

## EFFECTIVE USE OF OPEN SOURCE

### TECHNOLOGIES IN THE MUSEUM COMMUNITY

Museums are increasingly adapting to social computing solutions in order to attract contemporary audiences and in response to initiatives to allow wider access to collections online. They are leveraging open source applications to take advantage of social networking sites, blogs, and podcasts.

In 2008, the American Association of Museums (AAM) offered a four-part series of online “Webinars” under the group title, “The Digital Museum: Transforming the Future Now”. The seminars took as their jumping-off point, the 2007 AAM publication, *The Digital Museum: A Think Guide*. In a real-time survey during the fourth seminar, “Emerging Trends in Technology”, participants throughout the United States were asked to answer a question via instant message: which of the open source tools in use by museums were the attendees most curious about? The response was overwhelmingly “wikis”.

Entire exhibitions have been curated by user-generated content: the Brooklyn Museum’s exhibition *Click* (June 27–August 10, 2008) is one of several examples. Many initiatives employ folksonomic tagging allowing user generated content to be attached to collections records and make searching a more robust tool.<sup>21</sup>

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<sup>21</sup> The presenters at session 4, “Emerging Trends in Technology” were: Susan Chun, Cultural Heritage Consultant; Michael Jenkins, General Manager, Collections Information Planning, Metropolitan Museum of Art; and Robert Stein, Chief Information Officer, Director of MIS, IMA It's My Art, Indianapolis Museum of Art (Open Source, Open Access: New Models for Museums); Matthew MacArthur, Director, New Media Programs, National Museum of American History, Smithsonian Institution (Can Museums Allow Online Users to Become Participants?); and Larry Swiader, Chief Information Officer, United States Holocaust Memorial Museum (Promoting Social Change Through Technology). Some examples of open source software that museums are adopting were introduced by Robert Stein (Indianapolis Museum of Art):

- Pachyderm—a multimedia authoring system.
- Audacity—a cost-free tool for podcasting.

Material viewed by audiences inside and outside the museum is inevitably experienced differently.<sup>22</sup> Various studies have been undertaken to determine how visitor experience is affected by larger museum presence on the web for the purposes of studying how broad access to collections online affect on-site visits to institutions.

<sup>23</sup>

*Notes – on Photographs* is building on new opportunities for education and the dissemination of information being incorporated into museums. *Notes* becomes a good place to present data for the photographic paper sample book reference collection for a number of reasons. The collaborative, dynamic growth aspects of *Notes* offer opportunities for the creation of improved standards for collection description and access because it opens the project to a number of professionals that may not otherwise have access to it. It is an educational tool, easily disseminated and open to the public, to aid in teaching how to look at photographs and to promote a standardized language to facilitate communication about photographs. *Notes* is powerful in that it combines the dynamic collaborative aspects of wiki with advanced image presentation tools so that it can not only describe the contents, but triangulate understanding with images and illustration.

## HOW NOTES USES THE WIKI ARCHITECTURE TO ITS ADVANTAGE

*Notes* is modeled on the concept of a scholarly or research project wiki, which is distinct from the Wikipedia model in that it requires that contributors be of established expertise in the field. The project was designed to reach across the

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- Project Open Collection—an open source collections management system funded by the Mellon Foundation.
  - [www.steve.museum](http://www.steve.museum) --a collaborative social tagging project.
  - The Holocaust Museum—using Second Life (a 3-D virtual world) for Docent training.

<sup>22</sup>Paul Marty has published an article investigating the museum website experience before and after visiting the museum.

Paul F. Marty, "Museum Websites and Museum Visitors: Before and After the Museum Visit," Digital Library of Information Science and Technology, (2007), <http://dlist.sir.arizona.edu/2150/> (Accessed 10/29/08).

<sup>23</sup> An IMLS funded grant to the Colorado State University.

Ross J. Loomis, et al., "Website Availability and Visitor Motivation: An Evaluation Study for the Colorado Digitization Project: Final Report 01/06/03," BCR Library Network, (2003), [http://www.bcr.org/cdp/best/reports/loomis\\_report.pdf](http://www.bcr.org/cdp/best/reports/loomis_report.pdf) (Accessed 10/29/08).

discipline and aggregate the individual knowledge of curators, conservators, collectors, archivists, historians and students.

*Notes* uses the wiki architecture to its advantage by providing a forum for sharing of information and participation for researchers of photographs. Discussions can take place on the site and early drafts of research can be revised and edited fluidly. Research or publications can be edited to be up-to-date quickly and easily. The community that uses *Notes* will be cultivated to establish a density of expertise in the field.

It is critical that there are clear attributions of authorship in *Notes*. The technologies that *Notes* will be implementing to accomplish this have already been put in to use by many other collaboratively built resources.

One example includes Google's Knol: a unit of knowledge.<sup>24</sup> Experts on any number of topics author Knol articles. Only the author can edit or approve edits to their own Knol, however, they are viewable by anyone. Attention is drawn to authorship by a prominently displayed detailed author profile. Users are able to contribute to a Knol by leaving comments or reviews at the end of the article and engaging in a ratings peer-review system.

WikiGenes, an authoritative life sciences wiki also explicitly calls attention to authored entries through in-line tracking technology.<sup>25</sup>

Registered users can edit any article, but every single piece of text is traceable to its author without navigating away from the page. As the cursor rests over a section of text a rollover produces a dialog box containing author information. This information also links to an author page where there is additional information and an aggregated list of the author contributions. WikiGenes also offers a ratings peer-review system.<sup>26</sup>

*Notes* models its authoritative tracking system based on another resource—Scholarpedia.<sup>27</sup> Scholarpedia has established a class of user referred to as a curator; the curator is established at the top of every article. Users at the curator level have to be recognized experts in their respective fields and are either elected by the public or invited by Scholarpedia editors. Curators, and sometimes co-curators, are responsible for articles related to a particular topic and they are often the authors of those works. Each article is anonymously peer reviewed by editors to ensure accurate and

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<sup>24</sup> "Knol: a unit of knowledge" is Google's scholarly wiki. <http://knol.google.com/k> (Accessed 10/29/08).

<sup>25</sup> WikiGenes. <http://www.wikigenes.org/> (Accessed 10/29/08).

<sup>26</sup> Waldrop, Mitch. "Wikiomics" *Nature* Vol 455. 4 September 2008.

<sup>27</sup> Scholarpedia. <http://www.scholarpedia.org/> (Accessed 10/29/08).

reliable information. Modifications or suggestions to articles need to be approved by the curator before it can be incorporated into the final version.

*Notes* is developing a very similar approach by implementing a Curator level of control over a particular article or topic and cascading protection over sub-pages (or sub-articles). Curators assume responsibility for a particular topic or article and if any changes are made to these pages the curator is notified and must approve the changes. There are two parts to the structure: Curator Administrators are Sysops (a short term for 'system operator', it is an administrator level) who can curate pages and invite contributors to become curators. They can edit other curators and their associated pages. Regular Curators are a level above a Contributor and curate pages that cannot be edited by anyone except the sysops and themselves. By inviting curators who have the time and appropriate knowledge to take leadership over certain areas of the resource *Notes* will cultivate articles authored by contemporary experts in the field—the individuals who are generating advanced research in specified areas.

Contributors author material that goes through a review process. Pages that have been created or edited have to be anonymously approved by two other contributors prior to being included in the final version; this becomes the peer review process for the resource. If a user is both a contributor and an approved curator this review process is bypassed. Regular Users of the site have a username and password and can edit Discussion pages, which are an area for discussion attached to each article.

*Notes* distinguishes itself in another way—its advanced hybrid wiki/web image presentation tools are being developed in collaboration with computer science engineers at the University of Rochester. The collaboration applies open source technologies to image comparison and high-resolution image delivery over the web.

Using the image comparison tool in *Notes*, a user will be able to overlay images and determine possible matches based on corresponding keypoints of interest. This becomes useful in the comparison of photographer marks and inscriptions. For example, matching a photographer signature to another may aid in determining authenticity. Photographers frequently make a number of negatives to arrive at a particular image and the variants may be extremely subtle. In this case, an overlay would help to match a print positive to its film negative. The possibilities can be increasingly complex. High-resolution image delivery allows a *Notes* user to investigate an image of a photographic surface or its layer structure from a 1 to 10 perspective or by zooming in to 65 times or higher magnification in areas.

## HOW THE FINAL PRODUCT WORKS

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For the archive, there is real value in knowing the depth and extent of its holdings. A better understanding of materials, in the case of the paper sample books, will increase the value of the collection to potential researchers. The characteristic information included in *The Print Council of America's Paper Sample Book*, for example, became useful to an audience engaged in collaborative research and study. This survey of photographic paper sample books is approached utilizing a methodology for observation and description supported by Paul Messier and others mentioned in the Literature Survey section of this work.

Manufacturer-specific information is recorded in the following fields: brand, surface designation, date, date certain, texture, reflectance (sheen), base color, and additional notes on the sample. In addition to the catalogued fields, each brand name works as an internal wikilink (hyperlink) to an article where an annotated chronology for that brand can be developed. Aggregated below each chronology, on the same page, are links to every other instance in the collection where that paper brand appears.

The pathway for a current working example of this is as follows (the figures are placed at the end of this section). Navigation is accomplished via the back button in any web browser or hyperlinks located under the article title at the top of each page:

- (Fig. 1.1. Table for GEH\_1991:0279:01-15 in *Notes-on Photographs*.)  
To go directly to this example, paste the following URL in any web browser:  
[http://wiki.eastmanhouse.org/index.php?title=Photographic\\_Paper\\_Sample\\_Books\\_in\\_the\\_George\\_Eastman\\_House\\_Collection/SAMPLE\\_KODAK\\_BOOK\\_Velox\\_Prints\\_from\\_Kodak\\_Negatives\\_1991:0279:01-15](http://wiki.eastmanhouse.org/index.php?title=Photographic_Paper_Sample_Books_in_the_George_Eastman_House_Collection/SAMPLE_KODAK_BOOK_Velox_Prints_from_Kodak_Negatives_1991:0279:01-15)
- (Fig. 1.2. Category page for Kodak Velox Paper.)  
In the brand column, click on the word Velox. You will be directed to the following page:  
[http://wiki.eastmanhouse.org/index.php?title=Category:Kodak\\_Velox\\_Paper](http://wiki.eastmanhouse.org/index.php?title=Category:Kodak_Velox_Paper)

- A broader view of the 35 sample books being catalogued can be seen here:  
[http://wiki.eastmanhouse.org/index.php?title=Photographic\\_Paper\\_Sample\\_Books](http://wiki.eastmanhouse.org/index.php?title=Photographic_Paper_Sample_Books)

## DECISIONS

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### CHOOSING A TABLE FORMAT FOR CATALOGING

The wiki syntax that creates the table architecture is designed to be machine-readable for export to The Museum System (TMS) as well as other programs. This allows the information generated by this survey to inform the cataloging system in place at George Eastman House. Additionally, the table formatting helps to make the presentation simple, clear and readable which is useful for both understanding and editing information.<sup>28</sup>

### SELECTING DATA FIELDS FOR THE TABLE

Data fields were considered with several things in mind. They needed to refer to the George Eastman House Cataloging system. This is required in order to be able to reference the collection and get to the original object. As a result, the primary field is the George Eastman House accession number.<sup>29</sup>

In addition, the survey results in a collection of a large amount of descriptive data that will be available to inform the museum cataloging system, The Museum System (TMS). A standardized group of characteristic observations needed to be selected. Paul Messier's methodology and reference collection provided the basis for many of these selections for two reasons: he has one of largest such collections, and building on its breadth while sharing a common language would more effectively serve to promote the methodology as a standard.<sup>30</sup>

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<sup>28</sup> The decision to use a simple table format in Notes was made by the author and then confirmed after consultation with Ryan Donahue, Webmaster, George Eastman House, and Laurie Soures-Wooters, Manager of Web Development and Information Systems, George Eastman House.

<sup>29</sup> The author recommended changes to the George Eastman House accession numbering of the paper sample books in the collection. It was proposed that the sample books be treated as albums where individual pages have a unique accession number. These recommendations were approved in a meeting on July 14, 2008 with representatives from the Photography Department, Archives, and the Manager of Web Development and Information Systems at George Eastman House. The changes will be completed at a future date.

<sup>30</sup> Paul Messier (Photograph Conservator, Paul Messier LLC), e-mail message to the author, June 30, 2008.

Manufacturer-specific information is the preferred content for the fields. The application of a standardized set of subjective characteristic observations is intended to be promoted as a methodology useful for the description of papers across brands and age, however, manufacturer specific information is valuable for accuracy, and for making further observations about specific papers particularly where matching is concerned.

It is important to note that paper characteristics change over time for various reasons. This is addressed under the Characteristic Observation section below.

## CATALOG RECORD INFORMATION

The convention for accession numbers changed when the museum switched to The Museum System (TMS) as their cataloging system. Each sample book number will have to be padded with zeros to reflect the new convention of three sets of four numbers, e.g. 1976:1014:0052 rather than 76:1014:52. When all of the paper sample books have been cataloged there will be a request to Wataru Okada, Registrar, George Eastman House to change the object number (the group record) and then break it out so that each sample is treated as an individual item, e.g. 1976:1014:0052, 1976:1014:0053, etc. Some of the albums will have to be assigned an entirely new accession number. The George Eastman House Archivist will determine which information stays with the group record and which to the individual records.

## CHARACTERISTIC OBSERVATIONS

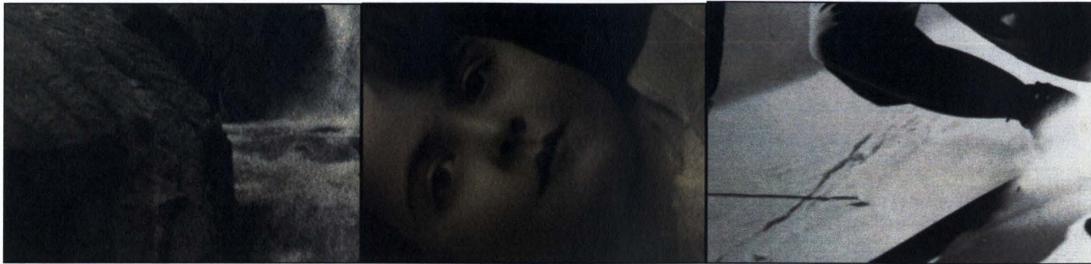
**Texture.** Texture is accomplished as either a machine process or by adding matting agents during the papermaking process as the substrate follows its path through sheet forming, wet pressing, drying, and calendering.<sup>31</sup>

**Smooth.** The calendering process achieves smoothness. The first run through the calendering stack is intended to flatten the substrate; the second is to reduce the smoothness. There are varying levels of 'smooth' or smoothness as there are with

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<sup>31</sup> Kit Funderburk, *A Guide to Surface Characteristics: Kodak Fiber Based Black and White Papers. (Second edition)* (Notes-on Photographs, October 2008), Chapter 4.

textured and rough papers. Off-machine supercalendering was employed to achieve extremely smooth surfaces.<sup>32</sup>



<p>GEH_1981:4565:0001 Eastman Bromide, Standard A "Some of Our Photographic Papers" Rochester, Eastman Kodak Co., ca. 1910. <i>This sample shows the roughest of the smooth surfaces. It is not baryta coated.</i></p>	<p>GEH_1981:4565:0001. Artura Iris E Smooth "Some of Our Photographic Papers" Rochester, Eastman Kodak Co., ca. 1910. <i>This sample shows the middle ground of smooth.</i></p>	<p>1981:4567:0001 Kodabromide F "Kodak Photographic Papers for Professional Use" Rochester, Eastman Kodak Co., 1949. <i>This smooth surface is characterized by a deliberate lack of texture.</i></p>
<p>To view the full version of the detail shots at 1:1, see Appendix III. The images are illuminated with a raking light source placed at a 90° angle to the picture plane. This technique more effectively highlights surface texture.</p>		

**Fine-grained.** Textures incorporated a variety of different appearances and result from a variety of different processes. Texture can be made on machine by less smoothing or impressing texture. Also matting agents could be added using a sieve with an incredibly small mesh size. Matting agents could be added in overcoats or directly blended in with the emulsion in cases where no overcoat was present. Fine grained (done by rolls), tweed and tapestry (made by felt-tapestry was a felt turned inside out—base material side out)—intentionally putting that pattern into the top side of the paper – top roll has the pattern texture in the press section BEFORE the on-machine *calendering*.<sup>33</sup> Fine-grained surfaces can range from pebbled in appearance to smoother surfaces.

<sup>32</sup> Kit Funderburk, meeting with the author, March, 20, 2008.

<sup>33</sup> Ibid., March 2008.



<p>GEH_1989:0967:1-131 Kodak Athena G "Photographic Papers Manufactured by Eastman Kodak Co." Rochester, Eastman Kodak Co., ca. 1929. <i>By 1932 Athena grades G, H, P, and Q were being called fine-grained in publications.</i></p>	<p>GEH_1981:4567:0001 Kodak Opal G "Kodak Photographic Papers for Professional Use" Rochester, Eastman Kodak Co., 1949. <i>The texture fine-grained is pebble-like in appearance or looks like it has cracks but is not straight.</i></p>	<p>Kodak Ektalure Paper E "Kodak Master Darkroom Dataguide R-20" Rochester, Eastman Kodak Co., 1965. <i>An example of the fine-grained surface texture in its last year of manufacture.</i></p>
<p>To view the full version of the detail shots at 1:1, see Appendix III. The images were captured with a Canon EOS 5D full-frame sensor digital SLR with a 100mm lens. The samples are illuminated with a raking light source placed at a 90° angle to the picture plane. This technique more effectively highlights surface texture.</p>		

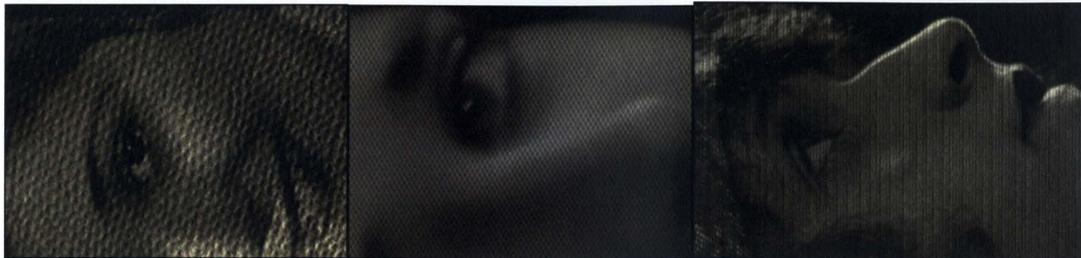
**Rough.** Rough texture was sometimes produced with welt felt marking but there is some suggestion that rough papers were also produced by less calendering. Kodak rough papers were produced from the 1880s until at Medium Rough was finally discontinued in 1967. These rough papers all become less rough over the years so that a Rough from the 1920s would look nothing like a 1960s Rough.<sup>34</sup>



<p>GEH_1981:4565:0001. Eastman Bromide, Royal Rough "Some of Our Photographic Papers" Rochester, Eastman Kodak Co., ca. 1910. <i>This sample shows the broadest roughness.</i></p>	<p>GEH_89:9701:0001-101. Eastman Bromide Standard C.C. "Photographic Papers Manufactured by Eastman Kodak Company" Rochester, Eastman Kodak Co., ca. 1925. <i>This sample is a step less broad in comparison to the 1910 sample. The overall pattern is more spread out.</i></p>	<p>Kodak Opal L "Kodak Master Darkroom Dataguide R-20" Rochester, Eastman Kodak Co., 1965. <i>This 'modern' rough texture has more regularity in it. It is more clear that there is a definite attempt being made at the manufacture of the texture.</i></p>
<p>To view the full version of the detail shots at 1:1, see Appendix III. The images were captured with a Canon EOS 5D full-frame sensor digital SLR with a 100mm lens. The samples are illuminated with a raking light source placed at a 90° angle to the picture plane. This technique more effectively highlights surface texture.</p>		

<sup>34</sup> Kit Funderburk, *A Guide to Surface Characteristics: Kodak Fiber Based Black and White Papers. (Second edition)* (Notes-on Photographs, October 2008), Chapter 4.

**Patterned.** For instance, Kodak’s Silk surface, in the roll section of papermaking the roll is engraved with a hexagonal pattern and embossed into the paper surface.



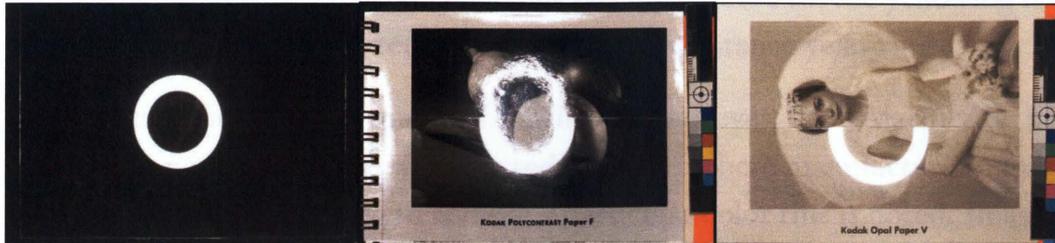
<p>GEH_1989:0967:1-131 Opal Grade Z Tapestry “Photographic Papers Manufactured by Eastman Kodak Co.” Rochester, Eastman Kodak Co., ca. 1929.</p>	<p>GEH_1989:0967:1-131 Kodak Athena Grade Y Silk “Photographic Papers Manufactured by Eastman Kodak Co.” Rochester, Eastman Kodak Co., ca. 1929.</p>	<p>GEH_1989:0967:1-131 Kodak Athena Linen Finish R “Photographic Papers Manufactured by Eastman Kodak Co.” Rochester, Eastman Kodak Co., ca. 1929.</p>
<p>To view the full version of the detail shots at 1:1, see Appendix III. The images were captured with a Canon EOS 5D full-frame sensor digital SLR with a 100mm lens. The samples are illuminated with a raking light source placed at a 90° angle to the picture plane. This technique more effectively highlights surface texture.</p>		

**Reflectance.** Much of the time there is an inseparable relationship between reflectance and texture. It can be useful to make the distinction between the two, but it is necessary to understand how they effect each other. For example, Eastman Kodak Company’s Opal sensitized on grain raw stock versus the same stock with 16g/m2 of baryta coating—it added luster and appearance of increased grain texture though there is no actual difference in texture. Grain in Opal was the same as grain in Azo—it was the same paper under the emulsion. <sup>35</sup>Uncoated fine grain sample with blue dyes.—wire side always opposite the felt side though they were used differently by different organizations<sup>36</sup>

The range of reflectance can be varied but it is useful for description to first make an evaluation based on three categories: Glossy, Semi-Matte, and Matte.

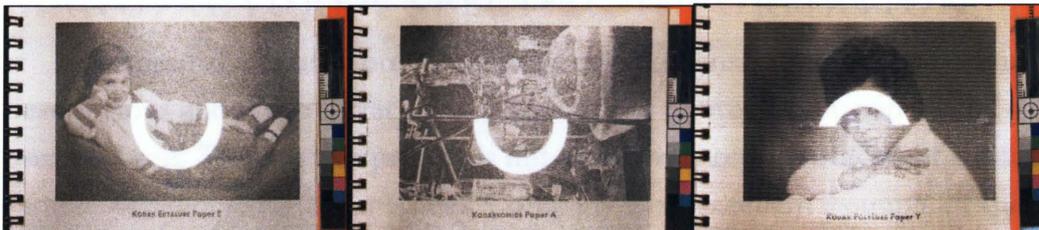
<sup>35</sup> Ibid., Chapter 4.

<sup>36</sup> Ibid., Chapter 4.



Documentation light source and glass reflective surface.	Kodak Polycontrast Paper F "Kodak Master Darkroom Dataguide R-20" Rochester, Eastman Kodak Co., 1967.	Kodak Opal Paper V "Kodak Master Darkroom Dataguide R-20" Rochester, Eastman Kodak Co., 1967.
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The samples were illuminating with a Fostec Ace with Stocker-Yale ring lamp perpendicular to the picture plane. The samples were half-covered with a reflective glass plate to show the nature of specularly at high reflectivity in comparison with the way reflectance is made more or less diffuse by the paper sample surface. The images were captured with a Canon EOS 5D full-frame sensor digital SLR with a 100mm lens.



Kodak Ektalure Paper E "Kodak Master Darkroom Dataguide R-20" Rochester, Eastman Kodak Co., 1967.	Kodabromide Paper A "Kodak Master Darkroom Dataguide R-20" Rochester, Eastman Kodak Co., 1967.	Kodak Polyure Paper Y (Silk) "Kodak Master Darkroom Dataguide R-20" Rochester, Eastman Kodak Co., 1967.
---	--	---

The samples were illuminating with a Fostec Ace with Stocker-Yale ring lamp perpendicular to the picture plane. The samples were half-covered with a reflective glass plate to show the nature of specularly at high reflectivity in comparison with the way reflectance is made more or less diffuse by the paper sample surface. The images were captured with a Canon EOS 5D full-frame sensor digital SLR with a 100mm lens.

**Paper weight.** Paper weight refers to the caliper thickness of the paper and it's coatings. This category is problematic because the possibilities are so varied. Manufacturer's tended to use the terms Single Weight, Medium Weight, Double Weight, Light Weight, or Heavy Weight. For this project it was necessary to distinguish papers as either Single Weight or Double Weight and leave further analysis (which require measurement tools) for specific applications.

**Surface base tint.** Base tint can be dyes added to the paper base where no baryta coating exists. Often baryta is tinted, and, according to this terminology, this becomes the surface base tint—it loses the relationship to the paper base tint, which can be better observed on the back of the print. Surface base tint is subject to change over time due to deterioration and likely, but not limited to, the yellowing of the gelatin binder, split toning techniques, or image substance yellowing.

Documenting image tone was considered, however, it was deemed to be too subjective an interpretation was rejected, however where manufacturer notes indication additional toning to achieve a particular color this is noted. Image tone in photographic papers can be a product of paper manufacture. In some cases, papers are developed in combination with particular developers to produce smaller image particles that yield a warmer tone. In other cases toners are used to achieve a particular effect. As with surface base tint, image tone can be an inconsistent identifier for reasons related to deterioration including a yellowing of the gelatin binder, split toning, or image yellowing.

## MANUFACTURER SPECIFIC INFORMATION

Numerous manufacturers produced comprehensive sample books with rich descriptions about the surface characteristics of photographic papers and suggested uses for each. Though this project is not exclusively representative of Kodak paper sample books, the Eastman Kodak Company is an excellent example of this practice. For a while, the publication of surface and contrast grades was inconsistent, skipping every year. Eventually letters designate texture, tint, and sheen in combination.<sup>37</sup> Later the dataguides begin and in 1948, a contrast chart first appeared with names for surface texture and gloss.<sup>38</sup>

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<sup>37</sup>Ibid., Chapter 1.

<sup>38</sup>Ibid., Chapter 1.

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## Photographic Paper Sample Books in the George Eastman House Collection/SAMPLE KODAK BOOK Velox Prints from Kodak Negatives 91:279:01-15

← Photographic Paper Sample Books in the George Eastman House Collection

### 91:279:01-15 Sample Book Contents

15 Total paper samples.

Accession #	Brand	Surface Designation	Year	Date Certain	Texture	Reflectance	Base Color	Notes on Sample
1991:0279:0001	Velox	Velvet	1918-1926	No	Smooth	Semi-Matte	White	photographed with Vest Pocket Autograp Kodak
1991:0279:0002	Velox	Carbon	1918-1926	No	Smooth	Matte	White	photographed with No. 1 Autographic Koc Junior
1991:0279:0003	Velox	Glossy	1918-1926	No	Smooth	Glossy	White	photographed with No. 1 Autographic Koc Junior/With Kodak Anastigmat Lens, f.7.
1991:0279:0004	Velox	Velvet	1918-1926	No	Smooth	Semi-Matte	White	photographed with Vest Pocket Autograp Kodak Special 1915
1991:0279:0005	Velox	Glossy	1918-1926	No	Smooth	Glossy	White	photographed with No. 1 Autographic Koc Special
1991:0279:0006	Velox	Velvet	1918-1926	No	Smooth	Semi-Matte	White	photographed with No. 1A Autographic K Special 1914-1916, 1917-1923, 1923-192
1991:0279:0007	Velox	Portrait	1918-1926	No	Smooth	Matte	White	photographed with No. 1A Autographic K
1991:0279:0008	Velox	Velvet	1918-1926	No	Smooth	Semi-Matte	White	photographed with No. 3 Autographic Koc
1991:0279:0009	Velox	Velvet	1918-1926	No	Smooth	Semi-Matte	White	photographed with No. 2C Autographic K Junior
1991:0279:0010	Velox	Velvet	1918-1926	No	Smooth	Semi-Matte	White	photographed with No. 1A Autographic K Junior
1991:0279:0011	Velox	Carbon	1918-1926	No	Smooth	Matte	White	photographed with No. 3A Autographic K Junior 1918-1927
1991:0279:0012	Velox	Royal Redeveloped	1918-1926	No	Smooth	Matte	White	photographed with No. 3A Autographic K
1991:0279:0013	Velox	Royal Untoned	1918-1926	No	Smooth	Matte	White	photographed with No. 3A Autographic K Special 1914-1934
1991:0279:0014	Velox	Velvet	1918-1926	No	Smooth	Semi-Matte	White	photographed with No. 3A Autographic Kodak/Without Kodak Portrait Attachment 1914-1934
1991:0279:0015	Velox	Velvet	1918-1926	No	Smooth	Semi-Matte	White	photographed with No. 3A Autographic Kodak/With Kodak Portrait Attachment

### Notes and Observations

- No date printed in book. Based on the years of manufacture of the various Autographic Cameras the samples may date between 1926.<sup>[1]</sup>
- Cover, black leather, embossed: Velox Prints/ from Kodak Negatives
- Prints are mounted; no backprinting is visible
- Album coming unbound

1. ↑ "KODAK: History of KODAK Cameras: Tech Pub AA-13," <http://www.kodak.com/global/en/consumer/products/techInfo/aa13/aa13.shtml> (accessed 2008-07-09 11:23:00). Coe, Brian. *Kodak Cameras: The First Hundred Years*. Hove, East Sussex: Hove Foto Books, 1988.

Categorías: Kodak Paper Sample Books | Kodak Velvet Velox Paper | Kodak Royal Velox Paper | Kodak Carbon Velox Paper | K

Fig. 1.1. Table for GEH\_1991:0279:01-15 in *Notes-on Photographs*.



GEORGE EASTMAN HOUSE

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## Category:Kodak Velox Paper

**Contents** [hide]

1 Chronology: Kodak Velox Paper

2 1918

3 1925

4 after 1950 to mid-1960s

### Chronology: Kodak Velox Paper [edit]

#### 1918 [edit]

Single Weight Velox papers are offered in surfaces **Glossy, Portrait, Carbon, Velvet, Royal**. Double Weight Velox papers are offered in **Glossy, Portrait, Velvet**.

Surface Designation	Surface Description
Glossy	Regular and Special
Portrait	Special
Carbon	Contrast, Regular and Special
Velvet	Contrast, Regular and Special
Royal	Regular and Special

Velox post card papers are offered in **Glossy, Portrait, Velvet, Royal** surfaces. Also offered in Brownie Post Card size (2 3/4 x 4 1/4) in two grades **Regular** and **Special Velvet** only.<sup>[1]</sup>

#### 1925 [edit]

Single Weight Velox papers are offered in surfaces **Glossy, Portrait, Carbon, Velvet**. Double Weight Velox papers are offered in **Glossy, Velvet**.

Numerical designations are used to denote the degree of contrast in Velox emulsions as follows: No. 1, New; No. 2, formerly labeled Special; No. 3, formerly labeled Regular; No. 4, formerly labeled Contrast.

Surface Designation	Surface Description	Notes
Glossy	Nos. 1, 2, 3, 4	DW only available in Nos. 2, 3
Portrait	No. 2	
Carbon	Nos. 1, 2, 3, 4	
Velvet	Nos. 1, 2, 3, 4	

• Also available as Post-Card paper in two surfaces:

**Velvet**—Nos. 1,2,3,4

**Glossy**—Nos. 2,3<sup>[2]</sup>

#### after 1950 to mid-1960s [edit]

• **Kodak Velox Paper** is a fast contact printing paper particularly suited to photofinishing because of its wide latitude and cold blue-black tone. This tone is universal throughout all six grades of contrast.<sup>[3]</sup>

1. ↑ CONDENSED/ PRICE LIST/ EASTMAN KODAK CO./ ROCHESTER, N.Y.
2. ↑ CONDENSED/ PRICE LIST/ EASTMAN KODAK CO./ ROCHESTER, N.Y./1925/Including Eastman Telegraphic Code / WHOLESALE/ PRICE EDITION
3. ↑ KODAK PHOTOGRAPHIC PAPERS FOR PROFESSIONAL USE 81-4567-1. George Eastman House Collection

### Pages in category "Kodak Velox Paper"

The following 12 pages are in this category, out of 12 total.

<p><b>P</b></p> <ul style="list-style-type: none"> <li>• Photographic Paper Sample Books in the George Eastman House Collection/KODAK PHOTOGRAPHIC PAPERS FOR PROFESSIONAL USE 81-4567-1</li> <li>• Photographic Paper Sample Books in the George Eastman House</li> </ul>	<p><b>P cont.</b></p> <ul style="list-style-type: none"> <li>• Photographic Paper Sample Books in the George Eastman House Collection/PHOTOGRAPHIC PAPERS SAMPLE BOOK, EASTMAN KODAK COMPANY 81-4562-1-33</li> <li>• Photographic Paper Sample Books in the George Eastman House</li> </ul>	<p><b>P cont.</b></p> <ul style="list-style-type: none"> <li>• Photographic Paper Sample Books in the George Eastman House Collection/PHOTOGRAPHIC PAPERS MANUFACTURED BY EASTMAN KODAK COMPANY 89-972-1-103</li> <li>• Photographic Paper Sample Books in the George Eastman House</li> </ul>
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Fig. 1.2. Brand chronology GEH\_1991:0279:01-15 in *Notes-on Photographs*.

## FUTURE DIRECTIONS

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In addition to the catalog of paper sample books, sections of this thesis will be open to comments and editing on the *Notes* so that the community of users can engage in the evolution of the model. User comments and edits will provide rich feedback to this preliminary work once *Notes* launches as an open resource in June of 2009.

The catalog entries are intended to be reference material and not meant to be edited. As such, these pages will be protected from editing in *Notes*. The brand chronologies, however, are meant to be dynamically updating material that, as it builds, can both inform the catalog and evolve into rich resources detailing the characteristic history of each.

Understanding what materials are in the reference collection provides an opportunity for further analytical evaluation. Visual examination can be used to make important evaluations about issues related to the materials, nevertheless, the physical makeup of these materials is complex and can require further, analytical investigation. This can include the use of XRF, and FTIR analysis, paper fiber analysis and UVA or UVC imaging to determine the presence of optical brightening agents (OBAs). Some of these technologies can be destructive to the print and as such, visual examination is regarded as the responsible first-step. The author has been a key participant in research on Lewis Hine's images, variously known as *Powerhouse Mechanic* in the George Eastman House Collection that illustrates this point.

There are challenges illustrating a three-dimensional material object via two-dimensional imaging. Recent application of advanced technologies to imaging photographic objects in a meaningful way is currently being explored in various applications in photograph conservation. *Notes* community built platform offers opportunities to refine these applications in real time without being hindered by the lengthy and costly realities of publication. It also enables the use of animated illustrations, which can be far more illustrative than a static image or drawing.

Finally, making this data publicly available can accomplish infinitely more than any single catalogue within an archive. The material becomes available for research and is more accessible than it is when confined within the walls of a single

institution. By harnessing the power of a collaboratively edited resource such as the wiki, the material can be dynamically updated: enriched by resources outside the reach of any individual researcher. In addition to enriching the George Eastman House records, data entries in the wiki are annotated, resulting in a historical record of the decision making process relative to cataloguing photograph paper samples.

## APPENDIX I: CATALOGING A PAPER SAMPLE BOOK IN *NOTES*

---

### SAMPLE TABLE FOR CATALOGING PHOTOGRAPHIC PAPER SAMPLE BOOKS

The code for the table used to catalog paper sample books is available on *Notes* at the following URL:

[http://wiki.eastmanhouse.org/index.php?title=Cataloging\\_photographic\\_paper\\_sample\\_books\\_in\\_the\\_George\\_Eastman\\_House\\_Collection](http://wiki.eastmanhouse.org/index.php?title=Cataloging_photographic_paper_sample_books_in_the_George_Eastman_House_Collection).

It is designed to be able to be edited simply using a find and replace tool in any text editor (fig. I.1).

```

{| class="papertable"
|+
| Accession #
| Brand
| Surface<br/>Designation
| Year
| Date Certain
| Texture
| Reflectance
| Base Color
| Paper Weight
| Notes on Sample
|
|-
| 1989:0969:0001 || [[:Category:brand|brand]] || surface || year || date certain ||
texture || reflectance || base color || paper weight || notes ||
|-
| 1989:0969:0002 || [[:Category:brand|brand]] || surface || year || date certain ||
texture || reflectance || base color || paper weight || notes ||
|-
| 1989:0969:0003 || [[:Category:brand|brand]] || surface || year || date certain ||
texture || reflectance || base color || paper weight || notes ||
|-
| 1989:0969:0004 || [[:Category:brand|brand]] || surface || year || date certain ||
texture || reflectance || base color || paper weight || notes ||
|-
| 1989:0969:0005 || [[:Category:brand|brand]] || surface || year || date certain ||
texture || reflectance || base color || paper weight || notes ||
|-
| 1989:0969:0006 || [[:Category:brand|brand]] || surface || year || date certain ||
texture || reflectance || base color || paper weight || notes ||
|-
| 1989:0969:0007 || [[:Category:brand|brand]] || surface || year || date certain ||
texture || reflectance || base color || paper weight || notes ||
|-
| 1989:0969:0008 || [[:Category:brand|brand]] || surface || year || date certain ||
texture || reflectance || base color || paper weight || notes ||
|-
| 1989:0969:0009 || [[:Category:brand|brand]] || surface || year || date certain ||

```

Figure 2.1. Fragment of code used for creating the table to catalog paper sample books in *Notes*.

## METHODOLOGY FOR POPULATING DATA FIELDS

The convention for filling in data fields always privileges manufacturer-specific descriptive language. This language, which can be found in sample books, price-lists, photographic journals, and manufacturer publications or documents reveals much about the original aesthetic and practical purpose for the different papers. Recommendations for any subjective interpretation in the fields are outlined in the individual categories below.

### **Accession Number:**

George Eastman House uses three series of four numbers separated by a colon. The first four numbers of the accession numbers represent the year of the accession date. The last four numbers represent the number of an individual sample in a lot (book). It also implies the order in which the sample appears in the book.

### **Paper Brand:**

Paper Brand is manufacturer specific information. The paper brand field is also used to wiki link to a category page for the given brand. The wiki link is generated by the following highlighted markup: `[[[:Category:brand|brand]]]` A vertical hash mark separates the article name from the displayed text. The convention used is to title the article name with the manufacturer name, followed by the brand name, followed by the word 'paper'. The displayed text is limited to the brand name. For example: `[[[:Category:Kodak Angelo Platinum Paper|Angelo Platinum]]]` or `[[[:Category:Gevaert Calcium Gevaert Paper|Calcium Gevaert]]]`.

### **Surface Designation:**

Surface Designation is manufacturer specific information. In some cases the manufacturer information is descriptive, e.g. "Velvet", in some cases it is a letter or number designation. It is not unusual to see a combination of these as well, e.g. "Standard A".

### **Year and Date Certain:**

Year can be catalogued as a specific year or period of years if the information is known. The use of "circa" is indicated by "ca." and indicates a period of five years prior to and after the noted date. A known date range can also be indicated, e.g. "1950 – mid 1960s".

The Date Certain field establishes whether the date is known "Yes", or not known "No".

Additional research will often help to date undated material. When this is accomplished the convention is to date the material in the "Year" field and indicate "Yes" or "No" in the Date Certain field dependent on the assurance of the date. A note should always be included at the end of the table where a date has been determined by additional research (fig. 1.2).

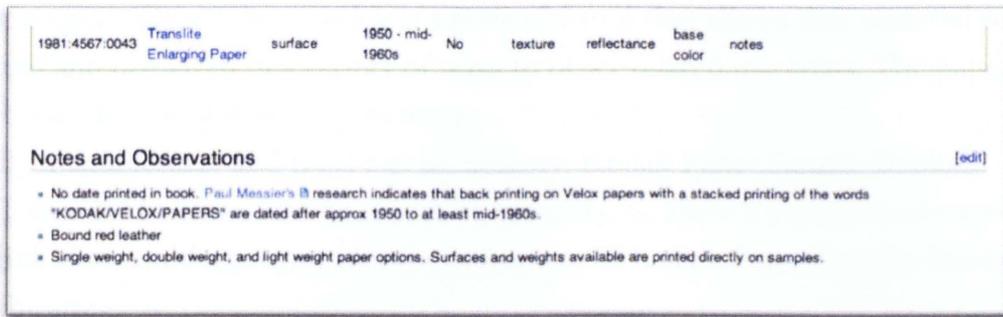


Figure 2.2. When additional research is used to date material the source should be listed and footnoted under the “Notes and Observations” section.

### **Texture, Reflectance, and Base Color:**

In instances where manufacturer information cannot be found, a subjective description should be made using the terminology established as part of the “Suggestions for the Description of 20<sup>th</sup> Century Gelatin Silver Print Surfaces”, also being developed in *Notes*, found at the following URL as well as an appendix to this work. Subjective descriptions in these fields should be indicated by square brackets, e.g. [Glossy].

[http://wiki.eastmanhouse.org/index.php?title=Suggestions\\_for\\_the\\_Description\\_of\\_20th\\_Century\\_Gelatin\\_Silver\\_Print\\_Surfaces](http://wiki.eastmanhouse.org/index.php?title=Suggestions_for_the_Description_of_20th_Century_Gelatin_Silver_Print_Surfaces).

### **Paper Weight:**

For reasons outlined in “Suggestions for the Description of 20<sup>th</sup> Century Gelatin Silver Print Surfaces” any subjective interpretation of Paper Weight should be indicated in square brackets and is limited to two options: SW (Single Weight) and (DW) Double Weight.

### **Notes:**

A field for any manufacturer information printed on the sample or additional inscriptions or significant marks. Notes should reflect the material exactly as it is seen, with a forward slash (/) to indicate a line break. Material noted as a result of subjective interpretation should be indicated in square brackets.

## CREATING CATEGORIES FOR THE SAMPLE BOOK CONTENTS

Categorizing articles in wikis is a powerful tool that allows that material to be aggregated and displayed in a variety of ways to other related materials. The paper sample books are categorized in two ways.

- 1) By manufacturer and type, e.g. [[Category: Kodak Paper Sample Books]]. This would allow a user to search by category, or allow a user to create a wiki link that could aggregate all other instances of Kodak Paper Sample Books on the site.
- 2) By paper sample brand name, e.g. [[Category: Kodak Vitava Rapid Black Paper]]. Through the creation of a category page for each manufacturer brand as outlined above in the instructions for the populating the Paper Brand field, each instance where that brand appears in another sample book is aggregated at the bottom of the category page. The category page also established a chronology for each individual paper brand.

## APPENDIX II: HISTORY OF NOTES

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The Photograph Connoisseurship Resource, built on a collaborative wiki platform, was developed by Luisa Casella, fourth cycle fellow (2005-2007) in the Andrew W. Mellon Advanced Residency Program in Photograph Conservation at George Eastman House as a Capstone Research Project. After successfully demonstrating the value of the resource in its pilot phase, George Eastman House received a National Leadership Grant from the Institute of Museum and Library Services (IMLS) to further develop and implement the resource as an open, collaborative tool on the web.

Now titled *Notes - on Photographs*, the resource is intended to function as a medium for collaborative communication between students, historians, collectors, curators, conservators, archivists, scholars, and others with expertise in the field of photography. Specifically, *Notes* refers to significant marks and inscriptions on the objects themselves, but also to scholarly notes about photographs, photography and its materials. *Notes*, which is at present in beta version, is scheduled to be open to the public in June of 2009.<sup>39</sup>

*Notes* had its genesis in 2005 at a meeting at Thea Westreich Art Advisory Services in New York City where the necessity for an authoritative reference resource created by and for professionals with expertise in the care, presentation, and connoisseurship of photographs was articulated. The group identified issues of evaluation, authentication, dating, and characterization among the pressing issues impacting art photography today.<sup>40</sup> This concern was evidenced by the Man Ray and Lewis Hine authentication scandals of the late 1990s.<sup>41</sup> Typically, specialized knowledge about this kind of information lies within the sphere of individuals or archives and dissemination is encumbered by the nature of the hard-copy publication system. The initial concept was structured around promoting a better understanding of the fine photographic print and sought to combine the individual knowledge of conservators, curators, collectors, archivists and scholars, each of whom work with photographs in daily practice but from specialized perspectives.

---

<sup>39</sup> The launch will be preceded by articles in the NYTimes, and Vanity Fair, a presentation at AIPAD, and colloquia and review sessions by the PMRG group according to the outline of the IMLS grant.

<sup>40</sup> Luisa Casella, "Design and Implementation of a Photograph Connoisseurship Resource Using The Wiki Model" (lecture presented at BioCommunications Association, Inc. 78<sup>th</sup> Annual Meeting, The Strathallen Hotel, Rochester, NY, July 22, 1008).

<sup>41</sup> Richard B. Woodward, "Too Much of a Good Thing," *The Atlantic Monthly* June 2003.

Grant Romer, Director of the Advanced Residency Program in Photograph Conservation, facilitated discussions about the most effective ways to share this kind of information. Peter MacGill, President of Pace/MacGill Gallery, suggested the wiki model: an online open-source collaborative tool. George Eastman House was elected an effective host for the project because of its status as the world's oldest exclusively photography museum, housing exceptional photography and technology collections, and a leader in the field of photograph conservation.<sup>42</sup> Additionally, the expertise and skill of George Eastman House staff was acknowledged as crucial to the success of the project. This expertise is supplemented by the human resources derived from three educational programs hosted at the museum: The Advanced Residency Program in Photograph Conservation, the Master of Arts in Photograph Preservation and Collections Management run co-operatively with Ryerson University, and the Selznick Graduate Program in Film and Media Preservation run co-operatively with the University of Rochester.

Key participants in the project outlined the project goals, and developed a schema for capturing and presenting information relevant to the characterization and connoisseurship of the works of master photographers.<sup>43</sup> Broad institutional collaboration and support was identified as key to the project's success from its inception and in 2006 the Photographic Materials Research Group (PMRG), comprised of experts in the field, was engaged to contribute, review, and evaluate the progress of the resource.<sup>44</sup>

The schema continues to evolve with the ambition of establishing a materials-based history of photography. It has become a hybrid wiki/web image presentation

---

<sup>42</sup> George Eastman House International Museum of Photography and Film, "History of George Eastman House," George Eastman House, [http://www.eastmanhouse.org/inc/the\\_museum/history.php](http://www.eastmanhouse.org/inc/the_museum/history.php)

<sup>43</sup> The schema can be found in instructional material at *Notes - on Photographs*, [http://wiki.eastmanhouse.org/index.php?title=Key\\_Attributes](http://wiki.eastmanhouse.org/index.php?title=Key_Attributes).

<sup>44</sup> George Eastman House. Narrative for IMLS National Leadership Grant 2007. The collector, publisher, and George Eastman House trustee Manfred Heiting established the PMRG group during a meeting at Paris Photo 2006. The members are all acknowledged experts in the field and are figureheads in charge of important collections of photographs. The members are as follows:

Anne Cartier-Bresson. Conservator, Atelier de Restauration et de Conservation des Photographies

Lee Ann Daffner. Conservator, Museum of Modern Art, New York

Malcolm Daniel. Curator, Metropolitan Museum of Art, New York

Keith Davis. Curator, Nelson-Atkins Museum, Kansas City

Manfred Heiting. Collector and publisher, Amsterdam

Nora Kennedy. Conservator, Metropolitan Museum of Art, New York

Paul Messier. Conservator, Boston

Grant Romer. Conservator, George Eastman House, Rochester

Dale Stulz. Appraiser, Los Angeles/Paris

employing multi-dimensional teaching tools to develop connoisseurship and to promote a standardized methodology for illustrating, describing, and understanding photographs (the objects) and photography (the technology): what it was at its inception and what it is now that silver halide photography ceases to be the dominant image making material.

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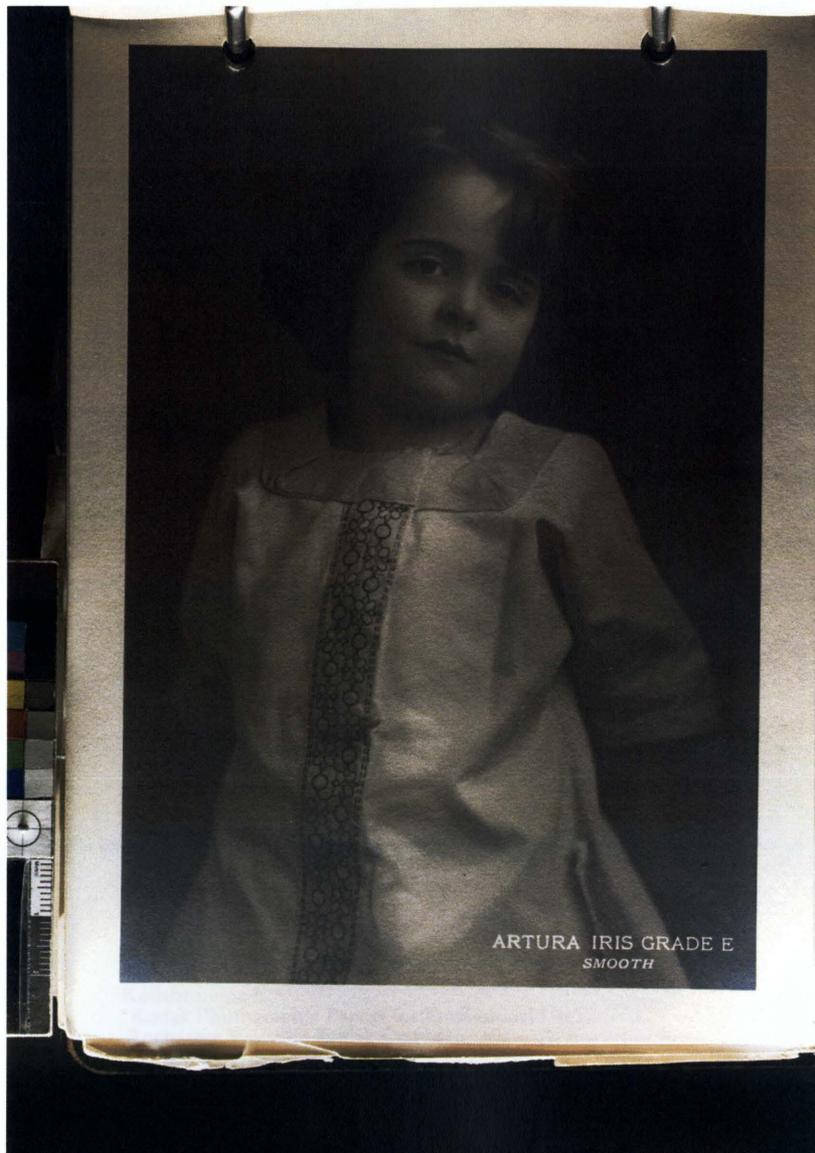
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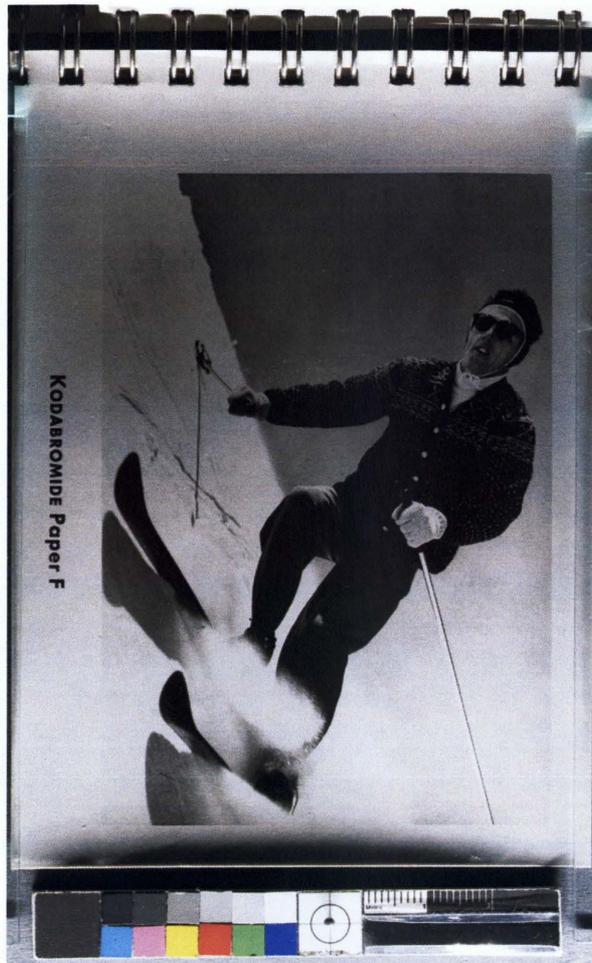
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GEH\_1981:4565:0001  
Eastman Bromide, Standard A  
"Some of Our Photographic Papers" Rochester, Eastman Kodak Co., ca. 1910.  
*This sample shows the roughest of the smooth surfaces. It is not baryta coated.*



GEH\_1981:4565:0001.  
Artura Iris E Smooth  
"Some of Our Photographic Papers"  
Rochester, Eastman Kodak Co., ca. 1910.  
*This sample shows the middle ground of smooth.*



1981:4567:0001  
Kodabromide F  
"Kodak Photographic Papers for Professional Use"  
Rochester, Eastman Kodak Co., 1949.  
*This smooth surface is characterized by a deliberate lack of texture.*



GEH\_1989:0967:1-131

Kodak Athena G

“Photographic Papers Manufactured by Eastman Kodak Co.”

Rochester, Eastman Kodak Co., ca. 1929.

*By 1932 Athena grades G, H, P, and Q were being called fine grain in publications.*



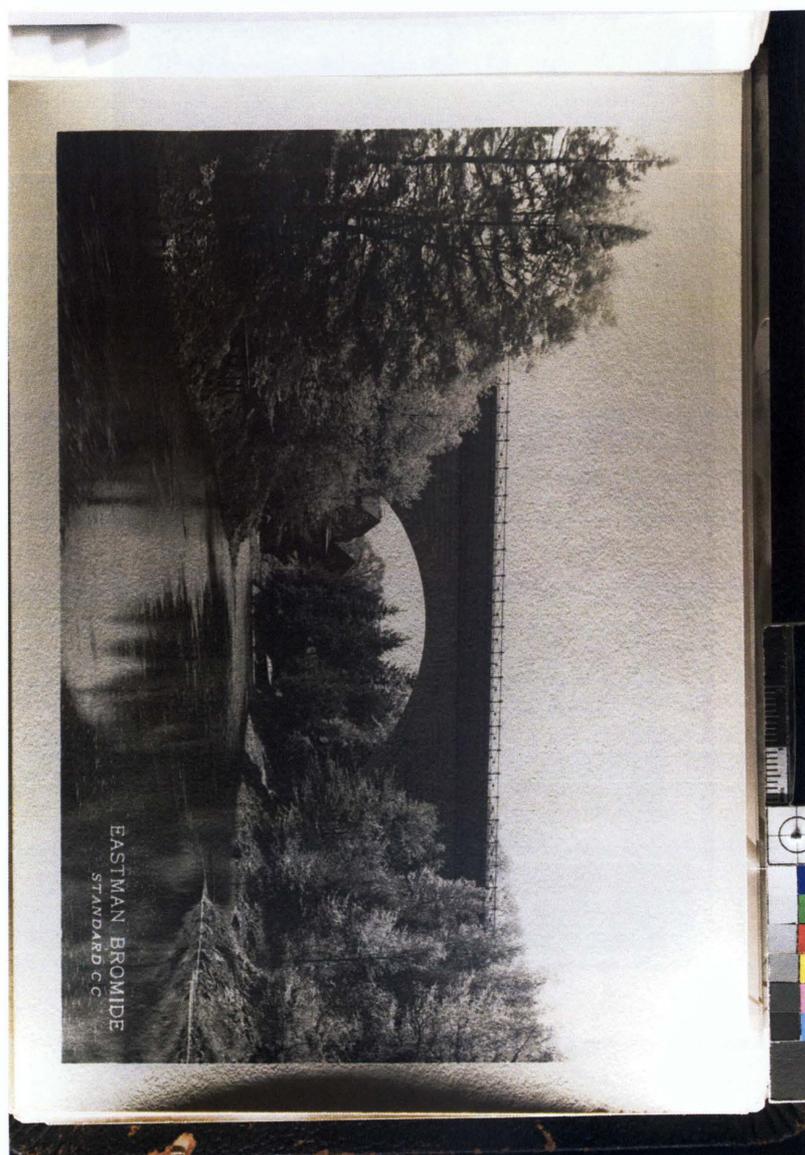
GEH\_1981:4567:0001  
Kodak Opal G  
"Kodak Photographic Papers for Professional Use"  
Rochester, Eastman Kodak Co., 1949.  
*The texture fine-grained is pebble-like in appearance or looks like it has cracks but is not straight.*



Kodak Ektalure Paper E  
"Kodak Master Darkroom Dataguide R-20"  
Rochester, Eastman Kodak Co., 1965.  
*An example of the fine grained surface texture in its last year of manufacture.*



GEH\_1981:4565:0001.  
Eastman Bromide, Royal Rough  
"Some of Our Photographic Papers"  
Rochester, Eastman Kodak Co., ca. 1910.  
*This sample shows the broadest roughness.*



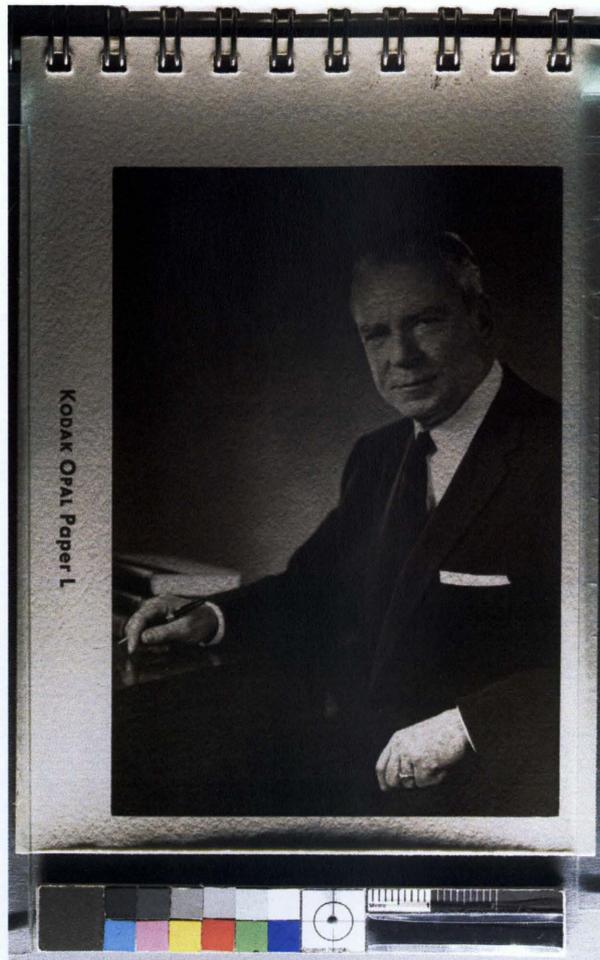
GEH\_89:9701:0001-101.

Eastman Bromide Standard C.C.

"Photographic Papers Manufactured by Eastman Kodak Company"

Rochester, Eastman Kodak Co., ca. 1925.

*This sample is a step less broad in comparison to the 1910 sample. The overall pattern is more spread out.*

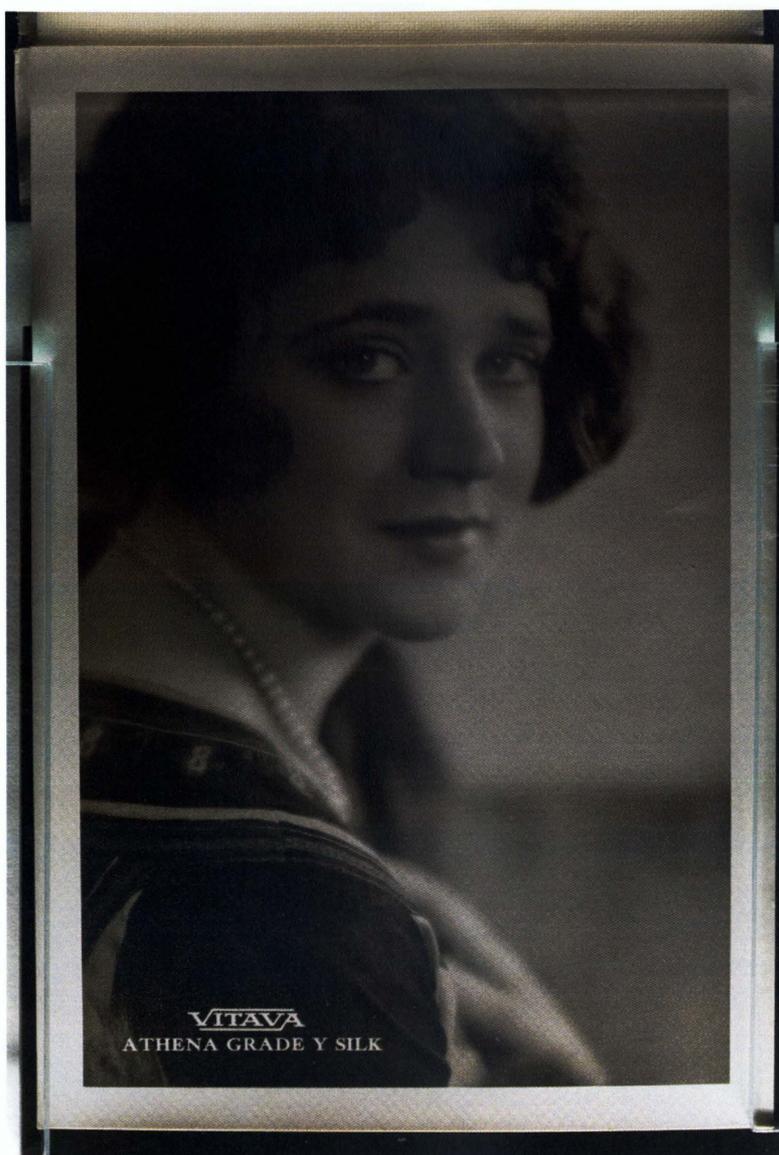


Kodak Opal L  
"Kodak Master Darkroom Dataguide R-20"  
Rochester, Eastman Kodak Co., 1965.

*This 'modern' rough texture has more regularity in it. It is more clear that there is a definite attempt being made at the manufacture of the texture.*



GEH\_1989:0967:1-131  
Opal Grade Z Tapestry  
"Photographic Papers Manufactured by Eastman Kodak Co."  
Rochester, Eastman Kodak Co., ca. 1929.



GEH\_1989:0967:1-131  
Kodak Athena Grade Y Silk  
"Photographic Papers Manufactured by Eastman Kodak Co."  
Rochester, Eastman Kodak Co., ca. 1929.



GEH\_1989:0967:1-131  
Kodak Athena Linen Finish R  
"Photographic Papers Manufactured by Eastman Kodak Co."  
Rochester, Eastman Kodak Co., ca. 1929.

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