# The Surface of Things–Part Two

## Harman Gloss and Traditional Gelatin Silver Papers

### *The Past, Present and Future*

*From the The Mists of Huangshan © Richard Lohmann*

I would like to begin with a story about a French wine glass called *Les Impitoyables.* In a recent conversation, a vintner named Michael Trupiano described a glass specifically designed for white wines, and this story makes a point that seems applicable to digital photography. He explained that some white wines are very subtle and that their complexity and richness can be difficult to discern. To solve this problem a wine glass called *Les Impitoyables* evolved in France. It has a large funnel-shaped bowl and a narrow mouth that allows for more circulation of the wine's aromas than other glasses and allows the wine to be vigorously swirled without spilling. The odd-shaped glass is held with a long stem that prevents the bowl from warming and allows the correct temperature of the wine to be maintained. The sole purpose of this glass is to feature the wine inside the glass.

Michael and a wine collector tasted a vintage white. They poured the wine into *Les Impitoyables*, and into a non-specific wine glass. Much to his surprise the wine in the funnel shaped glass was a revelation. Michael recalled … "In the ordinary glass it was flat. There were only slight aromas of fruit and nothing in the middle, with an insipid finish. The wine tasted old and tired. If I had not seen the wine poured in the two glasses I would have sworn they were two different wines!"

During a critique at an Ansel Adams Gallery workshop, I reviewed several digital prints made on plastic gloss and satin papers. A quick glance revealed the limitations of these papers. The subtlety of the photographs was lost. Instead, I noticed how stiff the prints looked. The gloss differential caught my eye and diverted my attention from the images. These photographs reminded me of the ordinary wine glass that masked the character of the wine. The tonality, smoothness and beauty of the photographs were upstaged by the unpleasant characteristics of the paper. While they were very interesting photographs, the prints did not serve the needs of the image. As in Michael's story in which a wine glass reveals the greatness of the wine, a good paper should do the same for a photographic image.

In that workshop four of the seven photographers used digital cameras to make black and white prints. They had never worked in a darkroom. These *digital natives* have no experience or "institutional" memory of what came before digital photography. They have only worked with plastic papers and ink.

Last year I wrote an article for the Luminous Landscape website that looked at three new inkjet papers. The manufacturers said that these papers were designed to replicate the look of black and white gelatin-silver papers. If you read my article you know that I was disappointed with two of the three papers.

http://luminous-landscape.com/essays/surface-reflections.shtml

One problem is that new papers are being judged in terms of their immediate predecessors. Ten years ago the glossy papers for the first inkjet printers were awful, while gelatin silver papers were evolved, mature and magnificent. Which paper do you use for evaluating improvement? Putting a digital print in perspective is possible only when you look at both digital and traditional photographs. To clearly evaluate present materials, I believe that you must consider papers that were perfected before digital photography emerged.

*From the The Mists of Huangshan © Richard Lohmann*

Recently Veronica Cotter, a marketing manager for Harman Technology which also makes Ilford photography products, sent me several boxes of Harman Gloss FB AL. (FB indicates fiber base and AL describes the Alumina coating that holds the inks on the surface of the paper). I had heard that they had been working on new inkjet paper and was interested to see what they had developed.

Upon opening the box I could see that Harman Gloss was very different from other inkjet papers. As I removed the first sheet I noticed something familiar. This paper carried the same delicate scent as traditional gelatin silver papers. In fact, it seemed like gelatin silver paper—the color of the paper and the slight curl of the coated side that came from the baryta coating, felt like an old friend. Between my fingers it was smooth and crisp. And for a brief moment, I panicked—thinking that the contents of the box were being exposed to light!

The reason this paper felt familiar is that Harman gloss is made with the same fiber base, baryta coating, and glossy surface as Ilford darkroom papers. In fact— it is produced in Ilford's coating facility. Baryta (barium sulfate) is a familiar term to traditional photographers. All fiber-based, gelatin-silver papers consist of natural fibers coated with baryta, silver and gelatin. Baryta's presence whitens the paper base and provides a smooth surface and has been in photographic papers for over one hundred years, with a proven record of archival permanence. When baryta is used in an inkjet paper, it dramatically improves the look of the paper. Prints made on this paper exhibit a classical elegance. They look like traditional photographs. The baryta layer offers an unexpected surprise. It improves the image structure. The baryta inhibits the ink droplets from spreading on the paper which creates sharper dots and sharper looking prints. When the same image was printed both on Harman Gloss and a plastic paper, viewed side by side, the Harman gloss print looked sharper.

Photographers, working in the darkroom, use baryta-based silver gelatin papers for high-quality exhibition prints. They are noted for their beauty and archival stability.

*From the The Mists of Huangshan © Richard Lohmann*

*Traditional Black and White*

Today there are fine-art photographers producing beautiful black and white prints in their darkrooms. They don't work in color, and haven't *gone digital* primarily for two reasons. The first is that black and white negatives were never designed to be scanned. It's difficult to achieve the same smooth tones from scanned negatives that one gets when printing in the darkroom. 35mm shooters are most affected. A Tri-X negative that makes a good enlargement, when scanned, can look excessively grainy as a digital print. Sharpening done without careful masking only accentuates the grain. Noise reduction filters can reduce sharpness and acutance. In some cases they create artificial-looking *smeary* results. Without effective sharpening, black and white digital prints can appear can to be less sharp and smooth than prints made in the darkroom. With digital cameras getting better, there are more photographers making black and white prints from their RAW files. An image from a Canon 5D, (up to a certain print size) can produce cleaner digital black and white images than most 35mm or 6x4.5cm black and white negatives. There is a second reason that some fine-art

black and white photographers haven't switched to digital photography. Simply put, many inkjet papers don't compare favorably to traditional materials. Some black and white photographers who come from platinum printing, like myself, have been using cotton fine-art papers like Hahnemuhle Photo Rag and monochromatic inks. Until recently the only gloss papers available were plastic gloss, luster papers, or newer papers like Crane Silver Rag and FibaPrint Smooth Gloss, which, I believe, have light scattering, distracting surfaces.

These materials, with some exceptions, are not acceptable for exhibition in fine-art galleries, particularly those selling vintage and contemporary photographs. When traditional prints are exhibited side-by-side with digital prints made on plastic papers, the digital prints suffer by comparison. Not surprisingly curators and collectors are reluctant to purchase black and white prints made on plastic papers. In the world of black and white fine-art photography, platinum prints, and more recently ink prints made on rag papers, have come to define quality. For those working with a gloss surface — the gelatin silver print still sets the standard for quality, permanence and beauty. While many black and white photographers are still shooting film, recently they have been getting good digital cameras and want to make elegant prints. Papers like Harman Gloss may attract those photographers making traditional prints who want to maintain that look with their digital prints.

*From the The Mists of Huangshan © Richard Lohmann*

*Glossy Prints*

For the last forty years black and white photographers have been able to choose gloss or matt papers. This fundamental choice determines the look of their prints. Today there is no overriding aesthetic that favors one approach over another. From the 1890's to the early 1920's, Pictorialism was the prevalent style of the day. During that period, photographers were making images on rough surface papers using soft focus lenses. Pictorialists manipulated their images using Gum Bichromate, Platinum, and combinations of processes. They were trying to parallel European art and hoped that their images would gain acceptance by the art world, based on similar materials and intentions. At that time glossy prints were used by commercial photographers and were considered less expressive, less artistic.

However, In 1922 Edward Weston wrote extensively in his Daybooks about his transition from matte surface to glossy prints. From then on he made photographs that represent his move from the softness of Pictorialism to the clarity of Modernism. He wanted to make precise images that were free from decoration and sentimentality and felt that glossy prints helped him achieve that goal.

The look that was begun by Weston and was continued by Paul Strand and Ansel Adams, has continued uninterrupted. Today we see artists, from Michael Kenna to Sebastiao Salgado, making powerful, expressive prints using glossy papers. Gelatin silver prints, created in darkrooms, are exhibited in galleries and

museums throughout the world. The gelatin silver print represents the look that has come to define black and white photography—and still sets the standards for quality, permanence and beauty.

We also see gorgeous prints that are made on matte papers. Today many digital black and white photographers print on rag papers because they love the look of matte surfaced fine art papers. Photographers like Tom Mallonee and Jenny Ellerbe are making stunning digital prints using six monochromatic inks on cotton papers. I make prints for my Atmosphere and landscape portfolios using the same method.

Ten years ago with less sophisticated printers, some photographers felt forced to use matte papers because there was no gloss paper that was the aesthetic equivalent to gelatin silver papers. As a practical matter, fine-art papers with textured surfaces tend to mask the deficiencies of digital printing, hiding dots and gloss differential.

*From the The Mists of Huangshan © Richard Lohmann*

*Harman Gloss*

In early July I had the opportunity to show Steven Brierley, one of the owners of Harman Technology, my stack of prints on Harman Gloss. He told me that his company, named for Alfred Harman, who started the

original Ilford company in 1879, makes Ilford papers, films and chemicals and also has a new line of professional inkjet papers that include Harman Gloss, Harman Matte, and warm tone versions of both papers.

After two months of printing on Harman Gloss FB AI, I believe that Harman has produced a wonderful new paper. It gives photographers who appreciate gelatin silver prints something they have requesting for more than a decade—a smooth, traditional surface made from stable organic materials.

I have made black and white prints on Harman Gloss with an Epson 3800 printer using the Harrington Quadtone RIP. This flexible software lets black and white photographers linearize their printers, adjust ink limiting, and add warmth and coolness to the highlights, midtones and shadows of their prints. Using the Quadtone RIP and the Epson K3 inks, I have made prints that are classically neutral, and others that exhibit warm shadows and cool highlights, which is my personal preference. I have spent two months evaluating the strengths and weakness of this new paper.

## *Results*

Prints made on Harman Gloss, when viewed in most types of light, display the best characteristics of gelatin silver prints. At a workshop, students and instructors inspected dozens of gelatin silver prints as a baseline for comparison– including ones by Ansel Adams and Imogen Cunningham. We then viewed prints made on Harman gloss— looking at image tone, surface, reflectance and black values. Everyone who observed the Harman's gloss prints agreed that this paper has a truly outstanding surface. It's gloss and sheen are very similar to traditional prints. Other gloss papers, like Innova F-Type FibaPrint Gloss Ultra Smooth, look like poor imitations of traditional prints. Photographers have been asking for a surface similar to traditional gelatin silver prints, and Harman has delivered. One digital photographer remarked, "This looks like the best silver print I have ever seen."

*Paper Base*

The paper base is part of the experience. Harman Gloss has a base that is a very crisp white, as the baryta enhances the whiteness of the paper base. It also contains some optical brighteners, which all gelatin silver papers, and most archival museum board, also use. Harman is also releasing a warm tone version of this paper, in which the base is less white—more of a creamy color and uses no optical brighteners.

*Gloss Differential*

When carefully scrutinized by an experienced printer, Harman Gloss exhibits a very slight amount of gloss differential. You have to look hard to see it, and I believe that many photographers won't notice it at all. But when the print is illuminated from multiple angles, the print's dark values reflect light in a way that is different from the light that reflects from the highlight values. I compared Harman Gloss to Hahnemuhle Fine Art Pearl by printing the same image on both papers using an Epson 11880 printer. I discovered that Harman Gloss has less gloss differential than the Fine Art Pearl. Prints made with a Hewlett Packard Z 3100 printer on Hahnemuhle Fine Art Pearl display ugly blacks that look like a metallic paint. However, the Harman gloss prints look fine on the Z 3100 printer.

Harman Gloss does have a delicate surface that is susceptible to fine scratching. When printed from rolls on the Hewlett Packard Z 3100, the paper was scratched by the printer. No Epson printers I used scratched the surface of Harman Gloss.

Traditional printers have said that prints made on Harman Gloss are the closest thing they have seen to gelatin silver papers. While not identical, these prints look only "slightly different" than gelatin silver prints. Others have also mentioned that this paper, while not an exact duplicate, is nearly indistinguishable from a darkroom print. Why? The image structure of a gelatin silver print is formed by microscopic particles of metallic silver that are clumped together, and importantly, encapsulated in gelatin. Light is reflected from the prints' smooth gelatin surface.

An inkjet print made with pigments like Epson K3, and the new K3 Vivid inks, have image structure formed by particles of pigment that adhere to the surface of the paper. The pigment particles are less glossy than the paper base, which is why the differences in gloss are noticeable. To solve the problem, Epson encapsulates their pigment particles in resin, and has recently improved their formula. Hewlitt Packard's Z 2100 and 3100 printers use a gloss optimizer that is sprayed through a print head, like a spot varnish on a well-printed book.

*From the The Mists of Huangshan © Richard Lohmann*

*Inkjet Papers*

There are different types of inkjet papers. One that is used with dye-based inks is called a swellable paper where the moisture from the ink causes the paper to swell and absorb the ink. This paper typically has a protective top layer, a second that holds the droplets of ink, and a third that absorbs other ink components. These papers can't be used with pigment inks, which require porous papers. Harman Gloss is a porous type of paper. One of the keys to its smooth surface is the porous coating they call Alumina.

Most inkjet papers use a micro-porous layer comprised of particles between 1 and 5 microns. A micron is one thousandth of a millimeter. Harman Gloss uses nanoporous particles that are roughly one hundred times smaller—around 50 nanometers. The Alumina coating consists of small particles that form pores or tiny cavities that hold the pigments on the paper. Because the pores are so tiny and the coating is so thin, the Alumina coating doesn't interfere with the surface of the paper. Rather, it preserves its smoothness of the baryta, revealing a beautiful gloss surface.

The Harman website says the particles in the nanoporous layer are so small that they do not scatter light and are effectively invisible.

My observation is that when ink pigments are attached to the nanoporous Alumina layer, they *minimally* scatter light, as compared to what happens with a gelatin silver print. There are a few traditional photographers who have told me that they find the light scattering noticeable, and they have expressed some concerns about using Harman Gloss. I, however, have carefully observed the prints made on Harman Gloss and find them stunning. I am starting a new body of work that lends itself to glossy surface prints. I will print these new images on Harman Gloss paper.

*D-Max*

The maximum density an ink and paper combination produces is called D-max. This number describes the depth of the blacks in a print. Deeper blacks enhance tonal separation in the lower values of a print. Many platinum printers and those using fine-art papers are constantly trying to increase the depth of their blacks. One of the advantages of using a gloss paper is that it can achieve deeper blacks, which can create a print

with greater *apparen*t contrast. For years photographers used densitometers to measure film and print values. Densitometers used a number system where 0.00 is white. 0.30 represents one *ƒ*-stop darker than the white.

Platinum prints typically measure 1.42 on this scale. Here are some examples:

| Process | Maximum Density | Lab Values | f-stop Range |
|---|---|---|---|
| Platinum print | 1.42 | L* 23.1 | 4.6 |
| MIS Eboni black printed on Photo Rag | 1.76 | L* 14.1 | 5.8 |
| Selenium toned gelatin-silver print | 2.26 | L* 5.0 | 7.5 |
| Harman Gloss printed on an Epson 3800 | 2.39 | L* 3.7 | 8.0 |

Harman Gloss can produce a black that is darker than traditional photographs, assuring crisp tonal separation and deep rich blacks. In side-by-side comparisons, the Harman gloss produces dark values that look every bit a rich as a gelatin silver print.

*Color images*

I have always believed that color photographers would embrace a fiber-based printing paper when given the choice. Since the early 1970's color photographers have had only two choices—resin coated plastic papers, or polyester base Ilfochrome, formerly called Cibachrome papers. Prior to digital photography the dye transfer print was considered the most permanent and elegant way to print color photographs. Ilfochrome prints made directly from transparencies are archival, but many people dislike their super-glossy surface. Very few photographers were able to make great Ilfochrome prints because of the complicated masks that are required; a notable exception is photographer Christopher Burkett.

Dye transfer printing was so complicated and labor intensive that by the 1980's only fine-art photographers were using this process. Kodak eventually discontinued the process in the mid 1990's, and the world of photography grieved at the loss of this classic process. Even *National Public Radio* covered the story on its news program *All Things Considered*. The dye transfer process used color dyes that were hand rolled onto a receiver paper and had a distinctive look that was created by the glossy paper coated with baryta and gelatin. Charles Cramer, an accomplished dye transfer printer recently gave me a print that we compared to a color image made on Harman Gloss. The similarities are startling.

*Overall Print Quality*

I have been observing two prints from the same photographic image printed both on Hewlett Packard (plastic) satin paper and on Harman Gloss and have been considering the essential *differences* between them. It's hard to find language that adequately describes the visual differences between plastic and fiber-base prints. In the eyes of some, the differences are slight. Certainly some would say that the plastic print is good enough. To an astute gallery director, curator or a master printer—the differences are significant.

The Harman print displays unmistakable crispness. Fredrick Evans--who in the early 20th century made masterful photographs of cathedrals in England, whose day job was as the owner of a bookstore, and who spent much time around literature--used the word "pluck" to describe the brilliant tonality of a great print. And Edward Weston once used the term "leaden" to describe the dullness of a poorly made print. Inspired by the language of the past, I find the plastic print leaden and dull, while the Harman print has sparkle and pluck. It's truly beautiful.

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*The Future*

I believe the population of photographers who have been quietly craving inkjet papers that resemble traditional prints will immediately embrace Harman Gloss. Many of them will also continuing making darkroom prints. I am in contact with dozens of these photographers and they are worried about the continued availability of gelatin silver papers because they have witnessed significant erosion of the choices of films and papers.

As a college educator I have found that students from the ages of 18 to 25 are less enamored with digital printing than the students taking classes who are older. In general these young people prefer making prints in the darkroom. Combine them with the existing black and white photographers still using the darkroom and we are seeing a rising population of traditional photographers. In the last few years most of the colleges and universities in the San Francisco Bay Area have remodeled their darkroom facilities. College of San Mateo's enrollments in traditional and digital courses are robust—which may be a predictor of future trends.

With Germany now the only source of photographic baryta, Brierley of Harman says, with a touch of irony, that the long-term availability of gelatin silver papers may well be secured by increased demand for baryta, driven by the success of the Harman Gloss and Matt inkjet papers.

My hope for the future of photography is that traditional and new digital processes are used side by side, for they each have their place. Harman Gloss is a beautiful inkjet paper that simultaneously remains faithful to and helps preserve the traditions of photography. Sounds like a win-win to me.

*Richard Lohmann teaches photography at College of San Mateo. He has successfully transitioned from 26 years of platinum printing to now making his black and white prints digitally. He is currently producing a body of work titled* **The Mists of Huangshan** *that will be included in a group exhibit by the Ansel Adams Gallery, from September 22 to March 17 at the* **Aperture Gallery** *in Napa, California.*

https://www.anseladams.com/content/customer_service/mumm.html

His prints can be viewed:

- Ansel Adams Gallery: http://www.anseladams.com/index.html,
- Saret Gallery in Sonoma: http://www.saretgallery.com/collections_home.html
- Modern Book Gallery in Palo Alto: http://www.modernbook.com/static.html

Richard Lohmann's website: http://www.richardlohmann.com/
His blog while photographing in China: http://richardstriptochina.blogspot.com/2007/01/5.html