From Salt- to C-Print

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It’s been said that photography was born perfect. The images of Louis-Jacques-Mandé Daguerre floating magically on a polished mirror-like surface appear to confirm that notion. William Henry Fox Talbot’s salt prints exhibit their own stunning precision and quiet beauty. Once you have seen an example of either one of these men’s inventions, you have seen photography as it was—and as it still is—the enchanting result of an alchemical reaction involving such common ingredients as copper, iodine, silver, iron, and mercury.

Both Daguerre and Fox Talbot announced their methods of “fixing a shadow” in 1839. Though Daguerre’s unique photographs exhibit an ephemeral beauty unmatched by any other process, it was the potential for multiple prints from a single paper negative that made Fox Talbot’s salt print, or calotype, the ultimate future of photography. Despite the historical importance of the 19th-century tintype process, it would not be until Edwin Land’s invention of the Polaroid camera in 1947 that another one-off photographic process would rival the significance of the daguerreotype.

Perfect or not, the look of a photograph continues to be the result of the process by which it is made. The particular way a photographer works—with a large camera on a tripod or a small one in his pocket—contributes to the resulting image. And then there is the matter of whether the prints are developed-out in a darkroom or printed-out in sunlight, on paper or on metal. And so on. While the variety of processes has increased over the 170 years since photography’s invention, not one is truly obsolete. Despite the digital age we live in, many artists have turned to antiquarian processes as a way to indulge their need for the magic and transformation that lies at the heart of traditional photographic materials.

This brief survey of photographs includes an exquisite example of an early salt print by Fox Talbot himself as well as a contemporary daguerreotype by Chuck Close, whose newly fashioned version of Daguerre’s original process is as wondrous as any made during the mid-19th century. Accompanying the two men’s work is an assortment of amateurs, professionals, inventors, hobbyists, and artists, who, one by one, affirm the significance of each respective process in the medium’s ever-expanding repertoire.

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Albumen Print
In an albumen print, essentially an extension of the salt print, albumen (the protein in egg whites) is used as a binder to hold the salts and the image to the paper, allowing the image to sit upon the surface. As in a salt print, there is no chemical development in an albumen print: both are printing-out processes. Albumen prints were often toned with a gold solution to mask the yellowing that occurred when the silver deposit weakened.

Ambrotype
An ambrotype is an underexposed wet collodion glass-plate negative placed on black backing. The black coating makes the negative appear as a positive. Ambrotypes were faster and easier to produce than calotypes and daguerreotypes and were popular in the 1850s and 1860s.

Bromoil Print
To make a bromoil print, a process invented in 1907, bleach is applied to a silver print, erasing the image and replacing it with a matrix of hard and soft gelatin. After the paper is fixed, washed, and soaked in water, it is covered in oil-based ink and can be printed. Bromoil prints are often made on textured paper and can be printed in various colors.

Chromochrome
Chromochromes are direct-positive images printed from slides or transparencies. Azo dyes make these prints more permanent than c-prints. They also have a glossy surface and very saturated color.

Collodion (Wet-Plate) Process
Invented in 1851 by Frederick Scott Archer, collodion wet-plate photography is a process by which a glass plate is coated with light-sensitive collodion (gun cotton dissolved in alcohol and ether) then immersed in silver nitrate. The fully sensitized plate is then exposed while still wet, developed in a solution of pyrogallic acid, and left to dry. The resulting image exhibits a rich blue. Like the daguerreotype, this process creates unique prints that cannot be replicated.

Daguerreotype
The daguerreotype was invented in 1839 by Louis-Jacques-Mande Daguerre. It uses a copper plate coated with silver that is polished to a mirror reflection and then exposed to ultra-violet light (such as the sun) then rinsed in water and left to dry. The resulting image exhibits a rich blue. Like the daguerreotype, this process creates unique prints that cannot be replicated.

Dye Transfer
A dye transfer print is produced by color-separating a negative using red, green, and blue filters. The three resulting images are transferred onto gelatin-coated “matrix” surfaces. The resulting positive images are dipped in sublimate developer and transferred to dye-receiving paper to yield a full-color image. It is the most permanent of all the photographic color processes.

Gelatin Silver Print
Gelatin silver prints are the most common type of black-and-white photographic prints. The gelatin process was the first dry-plate process, eliminating the need for portable darkrooms and establishing a new industry for the manufacture of light-sensitive plates. In 1871, R.L. Maddox invented silver gelatin printing-out paper, which replaced albumen with gelatin as the binder between the paper and the light-sensitive salts. Printing-out paper was soon replaced by silver gelatin developing-out paper, which can be exposed to a negative and developed in the darkroom.

Latern Slide
Long before the invention of photography, magic lanterns were used to project images painted on glass. Thanks to the introduction of the glass plate negative in 1851, photographic images could also be projected. By 1936, lantern slides began to be replaced by 35mm slides, which are now being replaced by digital images.

Photogravure
The photogravure is a print-making process that uses a photographic image. A sheet of gelatin-coated carbon tissue is made sensitive to light and exposed to a film or glass-plate positive. The photographic image is then transferred to a copper plate by pressing the carbon tissue to the plate. The plate is etched in an acid bath, and subsequently cleaned, inked, and printed. Photogravures can be printed in large quantities simply by re-inking the copper plate.

Platinum/Palladium Print
These prints are produced by exposing a negative in contact with paper that has been coated with iron salts and platinum, palladium, or a combination of both. After the paper (which runs the gamut from heavy watercolors to thin rice papers) has been exposed to ultra-violet light, the print is developed in potassium oxalate. The prints are extraordinary in their subtle detail and range of tones and are considered one of the most permanent of all photographs.

Printing-out Paper (POP)
POP is a silver-based process that begins by placing the matrix (negative) in contact with the emulsion of this silver-coated paper and exposing it to an ultra-violet light source such as the sun. The result after exposure is a rich eggplant-colored positive that is not yet permanent. After exposure, it must be washed, fixed, and toned. The resulting hue of the finished print will depend on the original exposure and the type and amount of toner used. POP is capable of printing an extraordinarily wide range of tones.

Salt Print/Calotype
William Henry Fox Talbot invented the salt print, or calotype, in 1839. In this process, the paper is coated with a salt solution, dried, and then coated with silver nitrate. The salt solution and the silver nitrate react to create silver chloride, thus rendering the surface of the paper sensitive to light. The image appears on the paper during exposure, which can take ten minutes or more in sunlight. There is no chemical development in this process. Once the exposure is complete, the print is washed in running water, immersed in salt to fix the image, washed again, and toned.

Stereograph
To make a stereograph, or stereo card, two photographs are taken from slightly different positions, and the two resulting images are placed side-by-side on a card. When the card is placed in a stereoscope (a handheld viewer), the two images merge and create the illusion of three-dimensional vision. Stereographs imitate stereoscopic human vision, one image for the left eye and one for the right. Stereographs were extremely popular in the 19th century and common subjects included tourist attractions and other points of interest.

Tintype/Ferrotypes
The tintype is a variation on the ambrotype. To make a tintype, a black-lacquered metal plate (usually iron) is coated with collodion, exposed in the camera, developed chemically, and fixed. Each exposure creates a single direct positive image.

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