

REVIEW FOR QUIZ #2

SOME KEY PLAYERS STUDIED THUS FAR

Joseph Nicéphore Niépce

Niépce (1765-1833) was an educated, fairly well to do (initially) Frenchman who sought to make his living through inventions/innovation after the French Revolution. After patenting an internal combustion engine that he created with his brother Claude, Niepce turned his attention to lithography, as a way to reproduce images for commercial purposes. Conducting his experiments largely on his own, without the input of other scientists/inventors, Niepce began making what he called “heliographs” using bitumen of Judea. He made such an image by putting a coated plate into a camera obscura in 1826/1827, resulting in *View from the Window at Gras*. This direct positive image became an early experiment with the latent image when Niepce exposed it to iodine fumes to intensify its contrast. Niepce later partnered with Daguerre to work toward perfecting a photographic process, but died suddenly in 1833 before he could fully realize his endeavors.

Louis Jacques Mandé Daguerre

Daguerre (1787-1851), considered by many to be the “father of “photography” was a French artist and inventor, famous prior to his photographic experiments for inventing the theatrical diorama. In 1829, he partnered with Niépce to combine efforts on their experiments with cameras and light-sensitive materials. Daguerre was a shrewd businessman with a keen sense of public taste. With the help of Dominique Arago, Daguerre announced his invention in 1839, giving out his daguerreotype process with detailed instructions to the world (although requiring a patent in England), in exchange for a life-long government pension for both Daguerre, and Isidore (son of Joseph Nicephore) Niépce. Daguerre died of a heart attack in France at the age of 64.

John Herschel

Sir John Frederick William Herschel (1792–1871) was an English astronomer, mathematician, and chemist who also studied botany and, in its earliest days, experimented with photography. He had a wealth of knowledge about both optics and light-sensitive chemicals, and was a pioneer in the study of photometry, the measurement of light. Herschel coined many of photography’s terms, including the word “photography” itself, as well as “positive” and “negative.” Herschel provided the missing link for the early photographic pioneers by discovering that hyposulphite of soda (sodium thiosulphide, or “hypo”) dissolves silver salts. Thereby making permanence of images possible by “fixing” them. He freely shared

this information with other experimenters, interested in the democratic nature of the medium. He made several other important photographic discoveries, including making the first glass plate negative, pre-figuring the ambrotype by also realizing that the plate could be made to look positive when viewed against a black backing, as well as printed onto paper. He also discovered the cyanotype, experimented with color photography with some success, and made an early version of miniaturized copies, pre-figuring microfiche technology.

Wedgwood and Davy

Thomas Wedgwood (1771-1805), the son of Josiah Wedgwood (of Wedgwood pottery fame), came from a long line of potters and other artists. At the turn of the century, he began to conduct experiments involving reproducing drawings on materials treated with silver chloride and silver nitrate, including ceramic pots, paper, and white leather. While being treated for consumption at the pneumatic institute in Bristol, England, Wedgwood met the young chemist Humphrey Davy (1778-1829). Davy wrote up Wedgwood's work for publication in London's Journal of the Royal Institution. Wedgwood was partially successful making early versions of photograms, in which he placed objects on silver-sensitized materials (he had his greatest success with the white leather), and exposed them to light. The area on which the shadow was cast remained white while the area around it darkened upon exposure to light. The problem with Wedgwood's experiments was their lack of permanence. In fact, he had to store them in a dark place and show them only by candlelight to avoid further darkening of the light image area. It would take Herschel's hypo to solve the permanence problem.

William Henry Fox Talbot

A British aristocrat, scholar, scientist, linguist, Egyptologist, and early experimenter with photographic techniques. Talbot was almost ready to unveil his own findings when Daguerre's invention was announced in France. He was a frustrated artist who was largely inspired by his inability to draw effectively using a camera lucida while on his honeymoon with his wife Constance at Lake Como in Italy. He made photograms that he called "photogenic drawings," placing objects onto plates and papers made light sensitive through chemistry. By 1834, he had already tried two different ways to fix a photochemical image. He eventually patented his calotype process, believing that those who worked hard to make strides in the medium should be rewarded for their work. He also became the proprietor of the first photographic finishing establishment when, in 1843, he created the printing factory "The Talbotype Establishment," which produced prints for books and reproduced prints of art objects and documents.

Southworth & Hawes

This Boston-based pair of portrait daguerreotypists (operating between 1843 and 1863 in their well-known studio) is credited with helping to raise the standards of daguerreotype portraiture, extremely popular in the U.S. at this time. They made high-quality, full-plate daguerreotypes of (usually wealthy) individuals and celebrities.

Hill & Adamson

David Octavius Hill (1802-1970) was a Scottish painter, introduced to chemist, would-be engineer, and early photographer Robert Adamson (1821-1848) by physicist Sir David Brewster, who was learning the calotype process from Adamson. Hill was creating a painting (*The Disruption*) of the more than 400 ministers Church of Scotland who were breaking away from the church establishment. Adamson was brought in to help him photograph the members so that they could be featured in the painting. Later, the two collaborated on calotype portraits together. These portraits (called "Rembrandtish" by Talbot) made use of dramatic sunlight and celebrated the rough, uneven texture of the paper negatives used. Often, they would "fill in" the deep shadows created by the bright sunlight with reflected light via concave mirrors, furthering the dramatic chiaroscuro effects of the images. They created more than 1,500 portraits together before Adamson's sudden death (at age 27) in 1848.

Nadar (Gaspard Felix Tournachon)

Nadar (1820 – 1910) was a Parisian artist and experimenter, and probably the best-known portrait photographer of literary and artistic figures during the collodion era. Originally a caricature artist, he received his nickname as a shortened version of its original form "tourne a dard," or "one who stings," because of his stinging caricatures. Nadar was a pioneer of lighting technique, both modifying natural light in the studio and also experimenting with early versions of artificial light underground. He was interested not in the mechanics of photography but in the art of portraiture, and in revealing the true nature of his subjects through collaborative and creative portrait sessions. Nadar build a hot air balloon "Le Geant," which had two successful flights, and became the first to make aerial photographs. In 1874, he lent his large Paris studio out to a group of painters whose work was not accepted at the main salon, thus becoming the first to exhibit the French Impressionists.

SOME PRECURSORS

Renaissance Painting

During the Renaissance, painters became particularly interested in using PERSPECTIVE as a way to represent reality in a believable way. This is seen as a precursor to photographic image-making, not least of all because artists like Leonardo da Vinci, Vermeer, Jan Van Eyck and others seem to have employed camera obscuras as drawing and perspective aids.

Limners

Limner is the term used to describe unattributed portraits commissioned by colonial America's rising mercantile class as status symbols. The local landowners and merchants who commissioned these portraits posed in their finest clothes, in well-appointed interiors or in landscapes that identified their position, property, good taste, and sophistication. Limner portraits are important precursors of 19th-Century daguerreotype portraits that were made by uncredited, photographer "tradesmen" for the rising middle class.

SOME IMPORTANT INVENTIONS | INNOVATIONS

Pantograph & Physionotrace

These early drawing aids were used as means of creating mechanical reproductions, particularly of silhouette portraits. The physionotrace is essentially a larger version of the pantograph (recall the animation with the heart being drawn "in stereo" from class), used to make silhouettes that could have detail and color added, revealing a person's essence through their physical traits.

Daguerre's diorama

Daguerre's diorama was, culturally, a precursor of the modern cinema. It created the illusion of space and the passing of time through lighting and images made with the aid of a camera obscura. An audience in a highly specialized theatre viewed it. As many as 350 patrons would file in to view a landscape painting that would change its appearance both subtly and dramatically. Most would stand, though limited seating was provided. The show lasted 10 to 15 minutes, after which time the entire audience (on a massive turntable) would rotate to view a second painting. Later models of the Diorama Theater even held a third painting. Ironically, it was Daguerre's success with this "sleight of hand" invention in the realm of entertainment that caused the public to be skeptical of the truth or actuality of his later photographic inventions.

Camera Obscura

Literally meaning “dark room,” this drawing aid was in use as early as 470 BCE. There is evidence that Aristotle knew of it. The earliest camera obscuras were rooms that were completely darkened except for a small hole cut in one wall (or, as we saw in the case of some cathedrals, the ceiling). This hole allowed light rays to enter, projecting an image of the outside scene (upside-down / reversed laterally) on the opposite wall (or floor). Artists could then trace this image by hand.

CHEMICAL PHOTOGRAPHIC PROCESSES

The daguerreotype

Invented by Daguerre (in conjunction with Niepce, and encouraged/presented by Francois Arago), the daguerreotype was presented to the world in 1839. A direct positive without the possibility of reproduction, the daguerreotype was initially expensive but became more affordable over time. The image, on a silver-plated sheet of copper, was noted for its extreme detail and tonal range – an uncanny ability to represent reality, showing even more detail than the human eye could see at the scene in many cases.

THE PROCESS:

Daguerreotypes are made upon a surface of silver, plated on a body of copper, about the thickness of a half-dime. When the plate is polished smooth and clean, it becomes a blackground or black board [by reflection] upon which to make the picture. In a dark room it receives upon its surface by evaporation a compound of Iodine, Bromine and Chlorine, forming an even and perfect [light-sensitive] coating. The first light admitted to the coated plate is from the desired image created by the light in the Camera Obscura. The light affects the combined elements composing the surface instantaneously, and in exact proportion to the amount admitted. The plate is then placed over a box containing a moderately heated cup of quicksilver [metallic mercury]. The vapor of the quicksilver passes readily through the compound surface of the plate just in proportion to the light acted upon it, and becomes attached to, or amalgamated with the silver. This forms the lights of the picture, and is the white chalk upon the blackboard. The time of the exposure of the plate to the coating, to the image of light, and to the mercury, can only be learned by actual experiments. After the picture is fully developed, it is immersed in a solution of hyposulphite of soda, which does not affect the mercury or black-ground but removes the compound coating. It is then submitted to a process [in a heated bath of gold-chloride] whereby the whole surface of the plate is coated with a leaf of pure gold, which protects it as a varnish does a painting [the plate is then washed and dried]. To secure Daguerreotypes from injury, they are sealed under glass, with a border between, to prevent the glass from resting upon, or chafing them [and are then placed into cases or frames]. To be seen optimally, the image had to be lit at a certain angle and

viewed so that the smooth parts of its mirror-like surface, which represented the darkest parts of the image, reflected something dark or dimly lit.

***Daguerreotype Sizes:**

Whole Plate:	6.5 x 8.5 inches
Three-Quarter Plate:	5.5 x 7.125 inches
Half-Plate:	4.5 x 5.5 inches
Quarter-Plate:	3.5 x 4.25 inches
Sixth-Plate:	2.75 x 3.25 inches
Ninth-Plate:	2 x 2.5 inches

The calotype (or Talbotype)

The term calotype (*Greek*: “beautiful imprint”) refers to both the paper negative and the final print of this process invented in England by William Henry Fox Talbot. Talbot made his first successful camera photographs in 1835 using paper sensitized with silver chloride, which darkened in proportion to its exposure to light. This early “photogenic drawing” process was a *printing-out* process, i.e., the paper had to be exposed in the camera until the image was fully visible. A very long exposure—typically an hour or more—was required to produce an acceptable negative.

In the fall of 1840, Talbot worked out a very different *developing-out* process in which only an extremely faint or completely invisible latent image had to be produced in the camera, which could be done in a minute or two if the subject was in bright sunlight. The paper, shielded from further exposure to daylight, was then removed from the camera and the latent image was chemically developed into a fully visible image. This major improvement was introduced to the public as the “calotype” or “talbotype” process in 1841.

What the calotype lacked in detail, it made in effect. Because final prints were made using a paper negative, they tended to show the texture of the paper itself, and to be very high-contrast tonally. Often, negatives were even retouched with ink, graphite, or watercolor to add highlights, remove surface defects, or create points of visual emphasis.

The calotype never caught on in America, which preferred the detail of the daguerreotype, was not particularly interested in paying a patent fee to a British aristocrat, and essentially skipped this process and moved directly to collodion. However, it shaped the future of the medium, as the first process to foreshadow all modern negative/positive chemical photographic processes still in use today.

The salted paper print (salt print)

The salt print, originated by Talbot, remained the dominant paper-based photographic process for producing positive prints during the period from its invention in 1839 until around 1860, when albumen became the printing process of choice.

Talbot called his negative process calotype printing, while the salt print process was used for making positive prints from the Calotype negatives. They both employ a technique of coating sheets of paper with silver salts, but the Calotype process differs slightly in chemicals used in the sensitization procedure, and uses an extra 'accelerator' step, immediately prior to exposure of the sensitized paper

The cyanotype

Created by John Herschel in the 1840's using iron salts, the cyanotype was a simple and inexpensive way to make imagery using light-sensitive materials, either in a camera or via photogram. It became a favorite of scientists who wished to capture biological specimens, and was widely used to produce architectural blueprints prior to the advent of digital imaging. The cyanotype is an example of a printing out process (POP) and is still used by alternative process photographers today.

wet plate collodion

This early wet-plate process was a major boon to photography, as it solved the problem of needing to combine the detail of the daguerreotype with the calotype's potential for reproduction. Invented by Frederick Scott Archer in 1851, the wet-plate collodion process became the process of choice at mid-century, and remained so for over 30 years. See **Lecture 5 ("Collodion | Pictures on Glass | Applications")** for additional details about the wet-plate collodion process.

albumen printing

Albumen printing involves using egg whites as an emulsion in which to suspend light-sensitive silver salts. Paper is coated in this emulsion, creating a smooth, hard light-sensitive surface. While albumen was not effective as an emulsion for glass plate negatives (because of the long exposure time involved), it became a highly effective and popular ***paper emulsion***, creating a desirable texture, luster, and contrast. First made by Blanquart-Evrard in 1850, albumen paper became the first mass-manufactured light-sensitive paper on the market.

the tintype (or ferrotype)

The tintype (or "ferrotype" – "ferrous" referring to metals containing iron) is a collodion process. It is simply an underexposed collodion negative made to look like a positive. Because the collodion emulsion is applied to japanned metal rather than

glass, the tintype is a durable, inexpensive alternative to the ambrotype (or, of course, the daguerreotype.) This process was used mainly to create inexpensive portraits, often at street fairs. As such, many tintype images are not attributed to specific, named photographers.

OTHER PROCESSES & TERMS

photogram

An image produced with photographic materials, such as light-sensitive paper, but without a camera. Objects are placed directly onto light-sensitive materials and exposed to light in order to produce an image. The “printed out” version of a photogram can be its final version (think of cyanotype images in which the objects are white and the surrounding exposed paper is blue), or can be used as negatives (think of a photogram made on a calotype negative being used to make a positive print, as Fox Talbot did.) Some photographers also make photograms on sheets of film, creating negatives that can then be printed in positive form.

hand-coloring

Early photographic images were sometimes hand-colored in order to compensate for the fact that despite their full and rich tonal range along the gray scale, early images like daguerreotypes did not incorporate “color from the real world.” Artists employed small, soft camelhair brushes (with varying levels of skill) to create effects like adding color to skin-tone in portraits and early erotic images.

latent image

In short, it is a photographic image that is invisible after it is made, and only made visible when additional chemicals are applied. Employed early on by Niepce and Daguerre (and later by Fox Talbot in his improved calotypes), and still used today in modern film (and modern photo-sensitized paper), the “latent image” refers to an image made by exposing light-sensitive material to light, either directly (as with a photogram) or in a camera. In the case of printing from a negative, the latent image is made by projecting light through the negative onto the photographic paper. **The “latent image” is invisible (or barely visible) until subjected to further development.** For example, the image on the daguerreotype plate is not made visible (even after being exposed in-camera) until it is later exposed to (“developed out” in) mercury vapors. In the same way, images made on modern film are not visible until they are bathed in film developer, making them “appear” on the

emulsion, so that they can be stopped, “fixed” (hypo!), and washed, making them visible and permanent.

printing out process (POP)

This term is typically used to identify both a paper and/or process. Essentially, an image is created on a surface through the action of light exposure alone, without any further chemical development (as with the latent image). POP Examples include the cyanotype, the albumen printing process, and the salt print. Recall the in-class cyanotype video demo, in which the artist needed only to wash/fix the paper, after exposure. There was no developer required; the image was visible after it was taken out of the UV box.

IMPORTANT WORKS/IMAGES

View from the Window at Gras (p.12 of your main text)

This direct positive heliograph image was made by Joseph Nicéphore Niépce in **1826 or 1827**. It is considered to be the world’s first permanent photograph. It was made using a metal plate sensitized with bitumen of Judea. Because of its 8-hour exposure time, shadows and light on the pictured structure reflect the passing of time (and changing of the light) throughout the day. The image, not particularly clear or detailed, could not (as a direct positive) be reproduced at the time.

Still Life In Studio (Interior of a Cabinet of Curiosities) (p. 14 of your main text)

This **1837** daguerreotype was Daguerre’s first successful execution of his daguerreotype process, including exposure, development, and fixation. Showing plaster casts, a wicker-covered bottle, a framed drawing and a curtain, this image contains ideal subject matter both for showing detail, and for employing objects that sit still for long exposures! Daguerre would not make an image featuring a person until **"Boulevard du Temple", taken in 1838 in Paris**. This image features one person on the bottom left corner, who apparently was the only human figure to remain still long enough (he appears to be having his shoes shined) to be captured in the image.

Self-Portrait As A Drowned Man (p. 16 of your main text)

This direct positive image was made by Hippolyte Bayard (1801-1887) in **1840**. The direct positive process invented by Bayard involved exposing silver chloride paper to light, which turned the paper completely black. It was then soaked in potassium iodide before being exposed in a camera. The light had a bleaching effect,

lightening the areas of the paper that it exposed. After the exposure, it was washed in a bath of hyposulfite of soda and dried.

Bayard was a French civil servant who made early experiments with photography, and approached Dominique Francois Arago for support with his process, unaware that Arago was already backing Daguerre. Although Bayard continued to make photographs, by the time he announced his process to the public in 1840, it was too late to receive the attention that Daguerre had received the previous year.

The verso (back side) of the print contained a pseudo-suicide note, stating:

“The corpse which you see here is that of M. Bayard, inventor of the process that has just been shown to you. As far as I know this indefatigable experimenter has been occupied for about three years with his discovery. The Government which has been only too generous to Monsieur Daguerre, has said it can do nothing for Monsieur Bayard, and the poor wretch has drowned himself. Oh the vagaries of human life....! ... He has been at the morgue for several days, and no-one has recognized or claimed him. Ladies and gentlemen, you'd better pass along for fear of offending your sense of smell, for as you can observe, the face and hands of the gentleman are beginning to decay.”

***The Pencil of Nature* (p. 30-31 of your main text)**

Published serially in six “issues” **between 1844 and 1846**, this book by William Henry Fox Talbot was the first publication to use photographic images as illustrations and to explain the scientific and practical applications of photography. The book contains 24 “plates,” or images, each one “tipped in” to the book (pasted in by hand). The images feature still lifes, copies of works of art, and architectural studies. To be certain that his readers knew this (it was impossible to mass-reproduce photographs at the time, so Talbot believed some might think they were engravings or hand-made copies of some sort), he included the following:

“The plates of the present work are impressed by the agency of Light alone, without any aid whatever from the artist's pencil. They are the sun-pictures themselves, and not, as some persons have imagined, engravings in imitation.”

Published by subscription, fewer than 300 copies were printed.

***The Open Door* (p. 30 of your main text)**

This **1843** image (salted paper print from a calotype negative) of a humble, domestic scene by William Henry Fox Talbot was “Plate VI” in *The Pencil of Nature*. Called the “soliloquy of the broom” by Talbot’s mother, it shows the photographer’s interest in the artistic treatment of the mundane. This, along with its careful attention to the play of light and shadow, suggests Talbot’s familiarity with and esteem for Dutch genre paintings of the 17th Century.