How does the democratization of portraiture impact an understanding of personal value and identity?

How has the reproduction of images influenced the availability of knowledge about the world?

The invention of photography in the nineteenth century would forever change the way in which we view, experience, and understand the world around us. This Portfolio Guide of photographs features a sampling of works from the Addison’s collection offering varied perspectives and discussion points on the implications of the evolving uses and applications of this continually advancing technology. Educators are encouraged to use this Guide and the expanded Portfolio Image List as a starting point, a place from which to dig deeper, ask questions, and make new connections for class plans and projects.

For online use, click the images in this guide to access digital images in the Addison's online database.

**SELECTED THEMATIC APPROACHES**

Impact of Early Photography — How did photographs solidify one’s presence in the world?

Advancing Technology and Accessibility — How did diminishing exposure times impact accessibility?

Photography and the Dissemination of Information — How did the mobility of photography transform its applications?

Capturing Motion — How has motion photography impacted our understanding of phenomena and perception?

Contemporary Perspectives — How does the evolution of photographic processes influence the dissemination of information via the media?

The Chemistry of Photography — What can we learn about the importance of chemistry through comparing photographic technologies over time?
The Impact of Early Photography

How does the democratization of portraiture impact an understanding of one’s value and identity?

What are the implications of the ability to produce multiple prints?

Before the invention of photography, only the upper classes could afford to have their portraits painted. Louis-Jacques-Mandé Daguerre’s introduction of the daguerreotype in 1839 led to more affordable visual representation and documentation across class and gender. Working class families, such as this family from Lawrence, Massachusetts (A), could sit for a daguerreotypist for several minutes to have their presence in the world solidified on a polished silver surface. Sometimes accented with watercolors, daguerreotypes were often packaged behind glass and kept in a protective case as precious objects (B).

In 1841, Henry Fox Talbot created the first negative from which multiple positive prints could be made. Called at first the calotype, Greek for “beautiful picture,” and later the talbotype or salted paper print, these were printed on a larger scale. Hand tinting (D) was used to heighten realism and to approximate the status of painted portraits. While exposure times of several minutes required stiff and stoic poses, attempts were sometimes made to picture limited interaction and activity (C).
How did advancing technology and diminishing exposure times impact the availability of portraiture?

How did expanding applications influence the market for photography, and vice versa?

By the 1850s, faster and cheaper technologies were arising. Utilizing the simpler and faster **collodion wet-plate** technology invented by Frederick Scott Archer in 1851, the unique positive glass **ambrotypes** (E) patented in the United States in 1854 by James Ambrose Cutting further widened the scope of those who could afford to have their images made.

Unlike the fragile ambrotypes, which were housed in protective cases similar to those used for daguerreotypes, **tintypes** popularized in 1856 realized the desire to share mementos of oneself with friends and family, as portraits made in the studio (F) and outside the confines of the studio (G) could easily be made in multiples and sent by mail. The technology of tintypes decreased both the price of portraiture and the required skill level for photographers while widening the market and demand for the emerging medium of photography. This extension of inexpensive representation to all classes further redefined previous connections between portraiture, self-representation, and social status.
Photography and the Dissemination of Information

**How did the reproduction of images influence the availability of knowledge about the world?**

In the 1850s the albumen print led to the first commercially viable method of producing a photographic print on paper and was made from a collodion wet-plate glass negative. Cartes-de-visite, small albumen prints mounted on boards the size of calling cards, transformed the singular, intimate photograph into collectables, such as the portrait of an athlete (H), which could be accumulated into albums.

**How does the impact of photography change once it leaves the confines of the studio?**

Stereographs (I) paired photographs taken with a twin-lens camera to create a three-dimensional effect when viewed through a stereoscope (J). These served as parlor entertainment that also provided images and information about the world beyond daily experience, as methods of carting portable darkrooms via wagon and mule brought photographers out of their studios. Civil War photographers, such as Timothy O’Sullivan and Alexander Gardner, utilized this technology to satiate the public’s thirst for images from the front (K). Other photographers, including Carleton Watkins, made defining and enticng images of the western frontier despite the limitations of the location and terrain (L).
How did the ability to see imperceptible motion impact people’s understanding of the world?

How did motion photography challenge ideas about “truth?”

As shutter speeds began to outpace human vision, photography proved to be more truthful than the human eye. In 1872, Eadweard Muybridge set up cameras along a racetrack so that a horse heading down the track snapped a string releasing the shutters one by one. Muybridge’s series of animal and human Motion Studies, useful for race horse owners, athletes, doctors, scientists, and artists alike, were initially printed as albumen prints (M) then later as more easily reproducible collotypes (O). Unlike albumen prints which are photographic prints developed in the darkroom, collotypes were made with a printing press and therefore more easily reproducible. Muybridge’s frame-by-frame method of stopping – and then reanimating motion – also became the inspiration for the invention of film.

Harold Edgerton, a scientist working at the Massachusetts Institute of Technology, developed a stroboscopic flash in the 1950s to produce a brilliant burst of light, freezing infinitesimal moments of time on film from which were produced as gelatin silver prints (Q) and the richly saturated dye transfer prints (R).
Contemporary Perspectives

*Note: Digital image is not currently available.*

**How did the development of faster and more mobile technology revolutionize the uses of photography?**

**How does the evolution of photographic processes impact the dissemination of media images?**

In the early twentieth century, the shorter exposure time and longer shelf-life of roll film mobilized photographers, now unburdened by darkrooms and chemicals, to be to where national events were occurring or spontaneously unfolding. Dorothea Lange’s *Migrant Mother* (S) and Stanley Forman’s *Soiling of Old Glory* (V) are images whose immediate newspaper reproduction led to public outrage and activism, and which have since become unwitting icons of their times. Russell Lee’s chromogenic print of a family hard hit by the Great Depression (U) demonstrates the rich new possibilities of social documentary photography by using color roll film, first introduced for commercial use by Kodak in 1935.

Digital technology, developed in the 1970s and made available to consumers in the 1990s, revolutionized the accessibility and spread of images via computers and the internet. Sage Sohier’s inkjet print of a Revolutionary War re-enactor is an exploration of the visual documentation of historical events through contemporary photographic processes.
The Chemistry of Photography

c.1839-1870s The daguerreotype is created on a silver-coated copper plate buffed to a mirror sheen, then exposed to iodine fumes to form a light-sensitive coating of silver iodide. After exposure, the plate is treated with fumes of heated mercury to render the image visible and washed in a hyposulfite of soda solution to make the image permanent. When the finished plate is held at an angle reflecting something dark, the lighter areas are formed by the gray-white deposit of silver-mercury amalgam, while the shadows and darker areas are formed by the polished silver surface itself. Color accents were sometimes painted onto the image.

c.1841-1850s The calotype, talbotype, or salted paper print is printed from a paper negative created as silver iodide decomposes with exposure to light and excess silver iodide is washed away with an application of gallo-nitrate. Potassium bromide is then used to stabilize the image. Prints are made by applying salt to paper, which is coated with a silver nitrate solution and then exposed to light in contact with the paper negative. Images were often hand tinted to situate photographs at the status level of painted portraits.

c.1851-1880 The collodion wet-plate negative is created on a sheet of glass hand-coated with a thin film of collodion, composed of guncotton dissolved in ether, and sensitized with silver nitrate. The plates are exposed in a camera immediately after being sensitized, and then developed in chemical baths shortly after exposure.

c.1854-1860s An ambrotype is an underexposed collodion negative in which the image appears as a positive when viewed against a dark background. A glass plate is coated with a thin layer of collodion and rendered light sensitive with a silver nitrate solution. After exposure, the plate is developed, fixed, and varnished, and appears as a positive as the silver reflects some light while the areas without silver appear black.

c.1856-20th Century Tintypes are non-reflective, one-of-a-kind photographs on a sheet of iron coated with a dark enamel. Like ambrotypes, tintypes rely on the principle that underexposed collodion negatives appear as positive images when viewed against a dark background.

c.1850-1890s The albumen print is made by coating a sheet of paper with the albumen found in egg whites, which gives the paper a glossy, smooth surface. The albumenized paper is sensitized with a solution of silver nitrate, then placed in contact with a collodion wet-plate negative and exposed to the sun to produce a print.

Introduced 1870s A gelatin silver print is produced as light shining through roll film, a plastic film negative coated with light-sensitive silver salts, strikes paper coated with a gelatin emulsion also containing light-sensitive silver salts. The paper is placed in a chemical developing solution of alkali and metol or hydroquinone mixed with water, then a stop bath of a glacial acetic acid and water, and finally a fixing solution of thiosulfate to remove any undeveloped silver halide.

Introduced 1935 A chromogenic print, also called a Type-C or C-print, is made on photographic paper that has three silver emulsion layers sensitized to the primary colors of light. During developing, dye couplers bond with the exposed silver halides and the silver is bleached away, leaving a full-color positive image.

Introduced 1946 A dye transfer print is created by printing three color separation negatives onto a single sheet of light-sensitive paper.

Introduced 1991 Digital cameras record images through an image sensor, rather than on plates or negatives. Photosensitive diodes on the surface of the image sensor convert light passing through the lens into electrical impulses which are measured and converted into a digital number. The final image is composed of a series of square picture elements, or pixels, each with its own numerical value. Images are “developed” either through a digital printer (such as an inkjet) or using a digital enlarger that exposes light-sensitive paper.
Curriculum Connections and Resources

**SUGGESTED CLASSROOM CONNECTIONS**

**History/Social Studies**
- images and the media
- social documentation
- propaganda
- social status and representation
- photojournalism, technology, and historic events

**Art**
- history of photography
- representation
- portraiture
- landscapes
- documentation
- social documentation

**Science**
- media technology
- photographic technology and chemical reactions
- the physics of light and motion
- analog and digital technology
- perception

**English**
- narrative
- intention and format

**CONNECTIONS TO ADDITIONAL THEMATIC PORTFOLIOS**

**Portraits/Self-portraits**
**American Identity**
**The American West/Manifest Destiny**
**Representing the Land**
**Images and the Media**
**The American Civil War**
**The Great Depression**
**Documentation vs. Art**
**Representation and Reality**
**The Power of Photography**

**TEACHER AND STUDENT RESOURCES**

[http://www.eastmanhouse.org/education/k-12/resources.php](http://www.eastmanhouse.org/education/k-12/resources.php). Digitized access to the International Museum of Photography and Film’s Discovery Kits, with lesson plans and downloadable slide shows of photographs documenting various technologies and moments in history.


