

History - What is Photography?

The word photography comes from two ancient Greek words: photo, for "light," and graph, for "drawing." "Drawing with light" is a way of describing photography. When a photograph is made, light or some other form of radiant energy, such as X rays, is used to record a picture of an object or scene on a light-sensitive surface. Early photographs were called sun pictures, because sunlight itself was used to create the image. Mankind has been a maker of images at least since the cave paintings of some 20,000 years ago. With the invention of photography, a realistic image that would have taken a skilled artist hours or even days to draw could be recorded in exact detail within a fraction of a second.

Today, photography has become *a powerful means of communication* and a mode of visual expression that touches human life in many ways. For example, photography has become popular as a means of crystallizing memories. Most of the billions of photographs taken today are snapshots--casual records to document personal events such as vacations, birthdays, and weddings.

Photographs are used extensively by newspapers, magazines, books, and television to convey information and advertise products and services. Practical applications of photography are found in nearly every human endeavor from astronomy to medical diagnosis to industrial quality control. Photography extends human vision into the realm of objects that are invisible because they are too small or too distant, or events that occur too rapidly for the naked eye to detect. A camera can be used in locations too dangerous for humans. Photographs can also be objects of art that explore the human condition and provide aesthetic pleasure. For millions of people, photography is a satisfying hobby or a rewarding career.

Photography as Art

Today photography is widely recognized as a fine art. Photographs are displayed in art museums, prized by collectors, discussed by critics, and studied in art history courses. Because of the special nature of photography, however, this was not always the case. In the early days of photography some people considered the medium something of a poor relation to the older, established visual arts, such as drawing and painting. The arguments stemmed from the fact that a camera is a mechanical instrument. Because the mechanical procedure of taking a picture is automatic, detractors claimed that photography required no coordination of hand and eye and none of the manual skills essential to drawing and painting. They also argued that photography required no creativity or imagination because the photographic subject was "ready-made" and did not require manipulation or control by the photographer.

A camera, no matter how many automatic features it may have, is a lifeless piece of equipment until a person uses it. It then becomes a uniquely responsive tool--an extension of the photographer's eye and mind. A photographer *creates* a picture by a process of selection. Photographers looking through the camera's viewfinder must decide what to include and what to exclude from the scene. They select the distance from which to take the picture and the

precise angle that best suits their purpose. They select the instant in which to trip the shutter. This decision may require hours of patient waiting until the light is exactly right or it may be a split-second decision, but the photographer's sense of timing is always crucial. Photographers can expand or flatten perspective by the use of certain lenses. They can freeze motion or record it as a blur, depending on their choice of shutter speed. They can create an infinite number of lighting effects with flashes or floodlights. They can alter the tonal values or colors in a picture by their choice of film and filters. These are only a few of the controls available to a photographer when taking a picture. Later, in the darkroom, many additional choices are available.

One of the best ways to view artistic photographs is to visit museums. Today most art museums include photography exhibitions, and many have a photography department and a permanent collection of photographic prints. This is a relatively recent development. Another great way to view photographs is to look at a quality magazine like *National Geographic*.

Control of Light

Camera Obscura The camera obscura had been known since ancient times. It was first detailed in writing by artist and inventor Leonardo da Vinci. Meaning literally "darkened room," it was originally a room completely sealed from light except for a very small hole in one wall. An image of the outside world--houses, trees, and even people--could be projected, upside down and reversed right-to-left, onto a wall or white screen placed opposite the opening. Later the camera obscura was reduced in size until it became a small portable box. It was equipped with a lens and a mirror at a 45-degree angle, which reflected the image upward and focused it on a viewing screen. This was a great aid to artists in making sketches on location, but there was not yet a way to capture directly and permanently the camera obscura's images.

Making the Image Permanent

Scientists had known for some time that certain silver compounds, then called silver salts and now named silver halides, would turn black when exposed to light. In England, Thomas Wedgwood, son of the famous potter, experimented with one of these silver halides, silver nitrate, to produce silhouettes. The pictures, however, were not permanent and turned black unless stored in the dark.

1. Niepce: In the early 19th century Joseph-Nicéphore Niepce of France began to experiment with a then novel graphic arts printing method called lithography. His work led him to further experiments using bitumen, a resinous substance, and oil of lavender. Niepce developed a process whereby he could permanently capture the image of a camera obscura. In 1827 he made the world's first surviving photograph from the window of a country home in France. It required an exposure, in bright sunlight, of eight hours.

2. Daguerre: Meanwhile, Daguerre was experimenting with silver-iodide images. Hearing of Niepce's work, he contacted him, and in 1829 they became partners. During the next few years

Daguerre, with Niepce's help, worked out the process that came to be known as daguerreotypy. It was a complicated procedure that demanded considerable skill. A silver-coated sheet of copper was sensitized by treatment with iodine vapor, forming a coating of light-sensitive silver iodide. The daguerreotype plate was exposed in the camera and then developed in mercury fumes at temperatures of about 120 degrees F (50 degrees C). The exposed areas absorbed mercury atoms and highlighted the image. Finally, the image was fixed by washing it in hypo. The daguerreotype's silver image was capable of rendering exquisitely fine detail. It was a single-image process, however--each exposure produced only one picture, incapable of reproduction. Furthermore, the process required exposures of up to several minutes even in bright sunlight, thus constraining its subjects to absolute motionlessness. In spite of this, the process immediately became popular, particularly for portraiture. Daguerreotypy rapidly developed into a thriving business in England and the United States. Superb portraits were made by such daguerreotypists as Albert Sands Southworth and Josiah Johnson Hawes in Boston. The French excelled in landscapes and cityscapes. In 1840 a much faster lens was designed by the Hungarian Jozsef Petzval and manufactured by Peter Voigtlander in Austria. At about the same time a method was discovered that increased considerably the light sensitivity of the daguerreotype plate. This method involved a second fuming with chlorine or bromine before exposure.

3. Talbot: In England William Henry Fox Talbot had developed his own method of photography at about the same time that Daguerre was inventing the daguerreotype. Talbot impregnated paper with silver nitrate or silver chloride. When exposed in a camera, the sensitized paper turned black where light struck it, creating a negative image of the subject. This was made permanent by fixing with hypo. To achieve a positive image, a contact print could be made by placing the negative over a second piece of sensitized paper and exposing the combination to bright light. Talbot's "photogenic drawings," as he called them, lacked the daguerreotype's sharp detail and brilliance but offered the great advantage that from one negative a large number of positive prints could be made. His process, known as the calotype, and later talbotype, process, was at first less popular than the daguerreotype. Most later methods of photography, however, have evolved from Talbot's work. His was the first negative-positive process.

4. Archer In 1851 F. Scott Archer of England made public his wet-collodion process, in which he used a glass plate coated with collodion as a base for light-sensitive silver halides. His procedure, requiring seven steps, was only slightly less complicated than the daguerreotype process, but it was considerably less expensive. It also produced a negative that was much sharper than that of the calotype method. Soon the wet-collodion process had supplanted both the older techniques as the most widely used process of photography. A major inconvenience of the wet-collodion method was the fact that the plate was light-sensitive only as long as it remained wet; after it dried it lost its sensitivity. Thus plates had to be used almost immediately after preparation. Since these plates could not be prepared and stockpiled in advance, a portable darkroom, in the form of a tent, wagon, or railway car, for instance, had to accompany the camera wherever it went.

Reportage & Early Pioneers

Despite this drawback, intrepid photographers made photographs in remote locations and under the most dangerous conditions, creating images that are still considered masterpieces of the medium. **Roger Fenton** of England became a pioneer in war photography with his camp scenes from the Crimean War. **Mathew Brady** and his team of associates, including **Alexander Gardner, Timothy O'Sullivan, and James Gibson**, achieved a magnificent documentation of the American Civil War. After the war, Gardner, O'Sullivan, and William Henry Jackson photographed the opening of the American West and provided a lasting record of its awesome scenery.

In the mid-1850s the **tintype**, an inexpensive imitation of the daguerreotype, was patented by the American Hamilton L. Smith. It was, in fact, not made of tin, but of a very thin sheet of iron specially treated and coated with a light-sensitive emulsion. The tintype became very popular for personal portraits.

Stereoscopic photography also became extremely popular during this period. A special stereo camera with two lenses was used to take two simultaneous photographs of the subject from viewpoints separated by about the same distance as a pair of human eyes. When the resulting pictures were viewed through a special viewing device, they merged to create a three-dimensional image. Stereoscopic images of travel pictures, landscapes, important events, and comic pictorial short stories were sold by the millions.

In **1871** a new era in photography began when an amateur English photographer, R.L. **Maddox**, produced a successful dry plate that retained its light-sensitivity after drying. Other inventors followed his lead, and soon fast, reliable dry plates, much more convenient to use than the earlier wet plates, became available at a reasonable cost.

The dry plate represented a turning point in photography. With the availability of faster emulsions, photographers could make exposures on the order of a fraction of a second, and for the first time the camera was freed from a stand. A new breed of smaller, more portable cameras proliferated, variously called hand cameras or detective cameras. With fast-dry plates, and later with film, photography could be practiced by amateurs without the need for professional training or equipment. As shutter speeds became fast enough to stop motion, a fascinating new world of vision unfolded. Especially notable was the work of the Englishman **Eadweard Muybridge**, who pioneered work in the field of **motion-picture** projection. He photographed sequences of human and animal motion that fascinated artists, anatomists, and the general public alike.

The Kodak Era

In the **1880s** the American *George Eastman* put **flexible roll film** on the market, and in 1889 he introduced the first Kodak camera with the slogan, "You push the button and we do the rest." Thus was launched the era of mass-market photography. Meanwhile, gifted photographers

were exploring the new medium from a creative standpoint, attempting to discover its potential and limitations and define photography as an art form. At first it was only natural that photographers should take their inspiration from painting. Oscar G. Rejlander and Henry Peach Robinson, for example, working in England, used various darkroom techniques, tricks, and manipulations to produce staged photographs that frankly imitated the sentimental, moralistic paintings of the era.

The English amateur **Julia Margaret Cameron** did not take up photography until she was almost 50. Nevertheless, she imposed her own personal style on the medium and produced a collection of extraordinary portraits that were soft focused but impassioned. Another English amateur, Peter Henry Emerson, developed a strong pictorial style of his own and advanced detailed theories of photographic aesthetics that had a considerable influence on late 19th-century art photographers.

The American **Alfred Stieglitz**, a distinguished photographer in his own right, began to promote photography as a fine art in the pages of his illustrated quarterly *Camera Work*, in his Photo-Secession group, and later in his 291 gallery.

A New Generation of Photographers

A new generation of photographers emerged who were determined to turn away from the pictorial style and its soft-focus, painterly effects to a more direct, unmanipulated, and sharply focused approach. This new form was called "straight" photography, and its practitioners believed it most truly expressed photography's unique vision. One pioneer was Paul Strand, whose photographs reveal a deep awareness of what he called "the spirit of place." The movement's most famous figures were **Edward Weston** and his younger associate **Ansel Adams**.

Fenton, Roger (1819-69). English. Best known for his pictures of the Crimean War, which constituted the first extensive photographic coverage of a war. Fenton established his reputation through his high-quality still lifes and landscapes. In 1853 he founded the (Royal) Photographic Society of London. He was sent to the Crimea in 1855 as the British government's official photographer.

Heartfield, John (1891-1968). German. Original name Helmut Herzfelde. Initially a Dadaist, Heartfield was one of the greatest masters of photomontage. Violent contrasts of scale and perspective, ruthless cropping of heads and bodies, the substitution of machine parts for vital organs, and other seeming illogical juxtapositions had a shocking effect. During the German Third Reich, Heartfield's anti-Fascist montages were among the strongest protests made.

Hine, Lewis (1874-1940). American. A master of composition and mood, Hine used his camera in the cause of social reform. In 1908 he published a pictorial record of Ellis Island immigrants. In 1911 he was hired by the National Child Labor Committee, and he used his photographic documentation of child labor abuses to bring about corrective legislation. Hine recorded the

construction of the Empire State Building in 1930. The photographs were published in 1932 in a book titled 'Men at Work'.

Jackson, William Henry (1843-1942). American. One of the best-known Western landscape and Indian portrait photographers in the 19th century. From 1870 to 1878 he was the official photographer for the United States Geological and Geographical Survey of the Territories. His photographs of Wyoming were instrumental in the establishment of Yellowstone National Park in 1872.

Technical Development

Technical developments in photographic equipment continued. Shortly before World War I, Oskar Barnack in Germany, working as a technician for the E. **Leitz** company, invented a miniature camera that used perforated strips of 35-mm film. It was first introduced to the market in 1924 as the Leica. Many dismissed it as a mere toy ill-equipped for serious work, but others were delighted by its compact size and ability to make up to 36 exposures in rapid succession.

Continual improvement over the years established the 35-mm camera, especially in its single-lens reflex form, as the dominant camera for both professionals and serious amateurs. In 1930 the highly dangerous flash powder was largely supplanted by **flashbulbs**. At the Massachusetts Institute of Technology, experiments with gas discharge flash tubes led to the development of the electronic flash, which could produce astonishing images made at exposures as brief as 1/10,000 second. Although they originally required expensive and cumbersome equipment, electronic flash units became so miniaturized that they could be built into a pocket camera.

Color had been the dream of photographers since the medium of photography was invented. The foundation for color photography had been established in 1859 by James Clerk Maxwell, a Scottish physicist who demonstrated that all colors could be reduced to combinations of three primary colors. Many attempts were made to apply this principle to photography, but it was not until many decades later that inventors were successful. In 1907 two Frenchmen, the brothers Auguste and Louis Lumiere, placed on the market their autochrome glass plates. These plates were coated with starch grains that were dyed red, green, and blue, over which was a second coating of panchromatic emulsion. After 1930 the much sharper "integral tripack" color films were introduced, which used dyes rather than grains.

Kodachrome in particular became famed for its sharpness and rich colors. These new films were positive transparency films, but soon color negative films were introduced. Today color negative film constitutes the vast majority of film sold to amateur photographers in the United States. Instant, or self-processing, photography was invented by the American **Edwin H. Land**. He introduced the Polaroid Land camera in 1947, and a color version became available in 1963.

Photography in Communication

Since its invention in 1839, photography's unique powers of visual description have been used to record, report, and inform. People prefer to see things with their own eyes, but when this is impossible the camera can often serve the same purpose almost as well. It is not true that photographs never lie--they can be falsified and manipulated. Nevertheless, a photograph can carry a strong measure of authenticity and conviction.

As a nonverbal means of communication, photography can surmount the barriers of language and communicate through universal visual symbols. Photographs are well suited for use in the mass media. Today they are reproduced by the billions, and they can be found everywhere: in the pages of newspapers, magazines, books, catalogs, and brochures; on display in billboards, shop windows, and posters; broadcast over television; and organized into slide shows and film strips.

In photography's early days some of its most eagerly sought images were those brought back by explorers and travelers. These would satisfy people's curiosity about distant places like China, Egypt, and the American West. That same kind of curiosity exists today. People are fascinated with photographs of the surface of the moon, the landscape of Mars, and the appearance of other planets in the solar system.

Photographs in the mass-communication media have made the faces of political leaders, popular entertainers, and other celebrities familiar to the public. When a newsworthy event occurs photojournalists are there to record it. Photojournalists sometimes spend months covering a story. The result of such labor is often a powerful, revealing picture essay that probes far beneath the surface of events.

Photography is also essential to the advertising industry. In efforts to sell a product, attractive photographs of the item are used. Photography is also widely used in education and training within the academic world, industry, and the armed services.

Photographs are also often used in attempts to sway public opinion. Governments, political parties, and special-interest groups have long used the graphic representation and emotional impact of photographs to further their causes. Such use may result in destructive propaganda, such as that of the Nazis during the Third Reich.

Photography can also help to bring about desirable changes. Photographs of the Yellowstone region were instrumental in Congress's decision to establish that area as a national park, and photographs of child laborers helped to bring about legislation protecting children from exploitation.

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