Brief History of Photography Notes

***** DEVELOPMENT OF PHOTOGRAPHY *****

*** Slide 4 There are those who believe that the Shroud of Turin is the world's first photograph, or to be more technically correct, a pyrograph since the fabric of the cloth appears to be chemically scorched. In his PhD thesis, Nicholas Allen researched, described, and created his own Shroud using the chemicals and knowledge available to Medieval artisans and alchemists. Pictures of the Shroud are typically seen in the negative, such as in the slide, which makes the image more apparent to the viewer.

*** Slide 5 The science of optics, which define photography, are old. It seems that the Chinese and the Greeks developed the concept of the pinhole camera independently in the 5th and 4th centuries BCE (Before Common Era).

In the 6th century, Anthemius of Tralles uses a camera obscura: this was a box that used a pinhole lens and a mirror to project an image onto a piece of paper, or in this case parchment or vellum. Overhead projectors use a similar technique to project an image, again using a mirror or prism and a lens. You can buy pinhole lenses for DSLRs to explore the creative technique of pinhole photography.

In the 10th century, Ibn al-Haytham studies the Greek texts on the pinhole camera and the camera obscura, and writes The Book of Optics, which is later translated from Arabic to Latin, allowing people such as Galileo and Leonardo da Vinci to experiment with light and optics.

*** Slide 6

To the left is an illustration of a portable camera obscura, probably similar in design to what Anthemius of Tralles used. As an image is passed through a lens it is inverted; in your camera a pentaprism flips the image so when you look through the viewfinder you see the image right-side up (note: in cameras with electronic viewfinders, software takes care of the flipping). Here, in the camera obscura, a mirror is used to bounce and flip the light beams so that on the small screen is a picture of what the obscura is pointing at. A thin piece of vellum or paper could be put onto the picture and traced. The drawback to the camera obscura is, besides its obvious bulkiness, is that it requires a lot of light to function, and you can only capture (or draw) still objects.

The picture on the right is a modern day photograph of inside a camera obscura. The artist here visited New York City, found a room in a hotel that has white walls and windows that faced Central Park. The artist then put up covers over the windows, eliminating all source of light other than for a small opening in one of the covers, which be came the lens. Here, the entire room became the camera obscura. Because of the very small amount of light that was let in, a multi-hour exposure on a digital camera was made. Again, anything moving would be invisible on the exposure, so the only thing that was recorded was fairly static images.

*** Slide 7 Albertus Magnus (1206-80) discovers silver nitrate. Silver nitrate is a precursor that was needed for the discovery of silver chloride, a compound that is photosensitive. Silver chloride was discovered by Georges Fabricius (1516-71).

In 1568, Daniel Barbaro describes the diaphragm, a device that is used to control the amount of light that is passing through a tube. Diaphragms are still used today in lenses.

In 1694, Whihelm Homberg describes the how light will cause some compounds spread on paper to darken, also known as the photochemical effect. This effect is used in darkrooms to cause images to be imprinted on photographic paper.

*** Slide 8 Joseph Nicéphore Niépce is credited for creating the world's first permanent photograph in 1826, which was later destroyed. Niépce worked with photo- chemicals that would etch copper plates, using pitch mixed with charcoal as a resist. These exposures were hours in duration and, as can be seen in the image on the slide, of very low quality. Niépce worked with Louis Daguerre in developing the silver process, which became the basis for commercial photography.

*** Slide 9 Louis Degauerre is considered to be the father of modern photography. He created the first commercially economically viable photographic process using copper plates that were silvered and coated with compounds that were light sensitive; the images created by this process are known as daguerreotypes. Other mediums for backing such as glass were also used. The French government buys Degauerre's patent on the silver process and places it into the public domain. The silver process made exposures faster, but exposures were still in the realm of minutes long. In this image you can see a man getting his shoe shined, he stayed still long enough to make an impression; while there was traffic in the road and people walking on the sidewalk, they

moved too fast to leave an impression.

*** Slide 10 In 1840, Fox Talbot developed the calotype, which was a major improvement Degauerre's method. The calotype used photosensitive paper.

In the late 1800's, George Eastman refined Talbot's calotype by putting photosensitive compounds in cellulose: the modern film camera was born. In 1901 the Kodak Brownie camera was sold. This was the first relatively inexpensive and portable camera to be available. You purchased the camera, took your photographs, then sent the camera back to Kodak where the photographs would be developed, the camera reloaded with film, and then camera and pictures were sent back to you.

*** Slide 11 In 1969, Willard Boyle and George Smith, working for AT&T Laboratories, created the charge-coupled device (CCD); a semiconductor that turns photons into an electrical signal. CCDs and CMOSs are used today as the heart of the digital camera.

The first digital images were in black and white. Bryce Bayer invented a filter that sat over the sensor which turned the black and white into red, green, or blue colors. Knowing which picture element (pixel) of the sensor was which color allowed for color images to be produced.

In 1986, Kodak developed the first megapixel sensor. Today, Sony Corporation is the leading producer of CMOS / CCD sensors for digital cameras. Inside almost all digital cameras, regardless of make, sits a Sony sensor. The exception is Sigma, which uses the Foevon sensor.

*** Slide 12 Kodak designed and built the world’s first digital camera in 1975. It was a rather large camera, weighing in at around 8 lbs. It had a relatively small sensor at 10,000 pixels, took 23 seconds to record an image onto cassette tape, and could only produce black and white images. The camera pictured here was more of a proof-of-concept design. Kodak never really made the transition from film to digital, and was overtaken by other companies such as Sony (which produces the majority of sensors used in digital cameras), Canon, Nikon, and others.

*** Slide 13 View the first digital image to ever be put online: the cover band for CERN, known as "Les Horribles Cernettes." This image was posted by Sir Tim Berners-Lee, arguably the father of the Internet.

***** PHOTOGRAPHIC TECHNIQUES *****

*** Slide 14 Stereo photography was a very early technique to be developed. This technique creates a faux three-dimensional image. This is made by taking two photographs of the same subject with each photograph at a slightly different angle and spacing. The two images are then put side by side, and by slightly crossing your eyes you can overlap the two images. Other forms of stereo-photography use a mirror and reflection to create the three-dimensional effect. You can buy a rail for a tripod that will allow you to take stereo- photographs.

*** Slide 15 Photocomposition was something completely new, and the photographer who put together the image of The Two Ways of Life (1857) created several scandals. Oscar Gustav Rejlander, the photographer, created this composition by using a series of 32 separate plates. The scandals surrounding this image are as follows: 1) Photographs, up to then, were single images taken at one setting, not a series of images taken over a period. 2) Photographs were supposed to reflect "real life" and not be an allegory such as this composite which shows the ways of virtue and vice. 3) Nudity. There is female nudity which, for the time, was very scandalous. 4) And finally, Rejlander was rumored to have hired prostitutes for the nude models. This was a time before Photoshop, so all the work in making this image Rejlander had to do in the darkroom. Despite all the scandals surrounding this image, Queen Victoria loved it and purchased a copy of the print.

*** Slide 16 Photojournalism. In the idea that photography was supposed to represent real life events, it should come as no surprise that photojournalism evolved. The most famous early photojournalist in the United States was Alexander Gardner, who photographically chronicled the Civil War (or, for those of you who come from south of the Mason-Dixon Line, the War of Northern Aggression). Gardner also used stereo photography as can be seen in this image. One thing that Gardner did, which would not be allowed today as a photojournalist, was that he took artistic liberty to reposition the bodies for a more pleasing (?) composition. Photojournalists today who edit their photographs are usually terminated from their jobs and can't find work in this field ever again.

*** Slide 17 Photography was used early on for science. Sequential photographs of men throwing a baseball, or of horses galloping to prove that all four hooves left the ground at some point, were made. Aerial photography, first from hot air balloons, later airplanes, gave people a new

perspective on the land. In this image, the left hand image is a telephoto of the lunar surface while the right hand image is an aerial photography of the region around Naples with Mount Vesuvius dominating the upper center. Because the volcanic cones looked similar to the craters on the lunar surface, it was thought that the craters on the Moon were cause by vulcanism; a logical, but incorrect, conclusion.

*** Slide 18 From the advent of photography, there have been almost two common themes: nude photographs (primarily of women), and hoax photographs. This image is a famous hoax; the head of Abraham Lincoln is placed on the body of John Calhoun, a noted proponent of slavery. All these early hoaxes were either photographs of something made up, such as the famed Cottingley Faerie photographs (pictures of faeries were cut out of a book and then photographed by two young girls), or done in the darkroom such as this image.

*** Slide 19 Darkroom manipulation. Ansel Adams is, in my opinion, a good--perhaps even great--photographer, but not a master photographer. His primary claim to fame is photographing areas in the American West that had never been photographed before. Adams, however, was a master in the darkroom and in manipulating the photograph to create the picture that he saw in his head, not necessarily the photograph that he took. For example, in this image, taken in Hernandez, NM, with that phase of the Moon the sky was blue--not black. You can see sunlight reflecting off the stone crosses in the foreground and off the clouds. Yet Adams was able, in the darkroom, of creating the picture as seen here: the picture that he saw in his head. This is where, in my opinion, Adams was a true master.

*** Slide 20 Darkroom manipulation. Here you see a sequence of pictures of the moonrise, from when it was taken in 1941 through 1975 which was Adams' final edit. You can see the progression of how Adams' thought about how to work the image in the darkroom, using selective dodging (lightening) and burning (darkening) to get the image to how he envisioned it in his head.