

THE RISE OF
PHOTO-
MANIPULATION
AND
DIGITAL
PHOTOGRAPHY

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Over the past decade the development of digital camera technology has broken standards and definitions in photography. Asking a professional photographer what they feel about digital photography, applications like Adobe Photoshop, and the rise in amateur photography and you're likely to receive mixed responses. Most negative and pessimistic views are held by traditionalists who believe that digital cameras and photo editing software are responsible for the downfall of professional photography in the consumer market. While others who have utilized the technology simply see it as moving with the times – some are even optimistic and pleased with the change, preferring it over awkward traditional techniques.

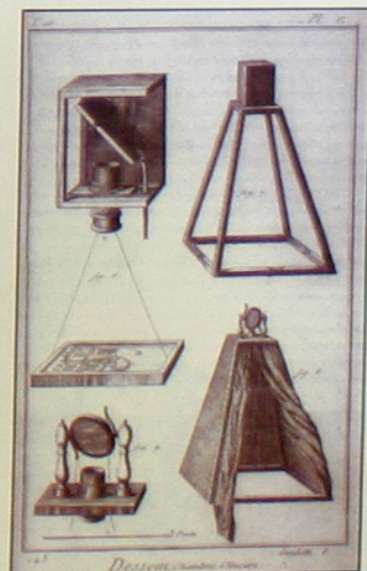
Photo manipulation is commonly thought of as a contemporary form of artistic photography. It is the application of image editing techniques known as photo retouching to create the desired illusion. In past days every possible artistic medium has been used to manipulate photographs – from using paints or scratching away at the surface of the photograph itself to utilising imperfections in photo capturing technology and development techniques to achieve unique effects. In modern times the rise of digital camera technology has been matched by the development of photo editing software. In the 21st century image editing software can make even the most amateur photographer look like a professional, and with the use of home computers almost everyone who can use a digital camera can make at least minor modifications to their pictures.

I aim to explore the world of digital cameras and photo manipulation to discover how the two technologies have worked together to contribute to analogue photography's current position.

Editing photographs from film has largely become obsolete due to the rise of digital photography, although analogue photography itself is still used almost religiously by some connoisseur photographers. Traditional techniques used to edit analogue photos range from painting onto the surface of the photo itself to taking advantage of imperfections in either the cameras themselves or the processing of camera film.

Analogue photography refers to the method of storing a real world image through the reaction of a light-activated compound, such as silver nitrate onto a film. It may also be used to describe processing an electronic signal to translate the image onto film, in which case the amount of electronic current passing through the device is dependent on the amount of light that shines on it.

Historical accounts of the first camera can be tracked back almost 1000 years to the Iraqi scientist Ibn al-Haytham, and is described at length in his *Book of Optics*. Although Ibn al-Haytham is credited



require experience to do correctly. To add additional effects to photos during this process would need the hand of a professional to achieve the desired result.

Developing film in this way has led to some interesting opportunities for creating additional effects. Techniques such as double-exposure, in which two negative images are overlaid during the development process, have been widely used to create some awe inspiring illusions. These little tricks in the processing techniques of photos have allowed for some important artistic creativity in photography – drama and emotion can practically be installed in a photograph with powerful results. In a way many of the imperfections in the technique of use in these cameras gave more artistic freedom to the photographer.

One example of analogue technologies poor standard being beneficial would be the Holga 120 series camera. The Holga was initially produced as a medium format 120 film toy camera, originating from China. It's cheap construction and simple meniscus lens often yields pictures that display vignetting (over saturation around the edge of photos), blurring, light leaks and other distortions. These problems would obviously be considered negative points in a normal camera, although ironically the Holga's quality problems have become its biggest virtue. Due to the unique effects rendered through the camera's imperfections it has become a sought after and is seen as a collectors piece by many enthusiasts. Holga photos have won many awards in art and news photography as a result of their dramatic appearance.



Other techniques such as painting over a photograph by hand have been used in the past to correct distortions, touch up colouring or to add an artistic impression to a photo. Painting and scratching photos to reach desired effects is very rare today however. The downfall in physical techniques for manipulating photos, such as paints or inks, has mainly been due to digital processing and manipulation of film. Despite the aesthetic, professional or personal choices for using an analogue camera, using paint and inks to touch up photos is simply an obsolete technique which rarely yields effects in anyway comparable to a digitally edited image. Although obsolete in professional practice, techniques such as these may be used in some instances for artistic reasons.

Not all "old" techniques have been lost however. Double-exposure and over-saturation are still commonly used and can be equally comparable in quality to digital layering effects when handled by an experienced professional.

as being the first person to build a pinhole camera, the basic optical principles used have been recorded by Chinese philosophers such as Mozi (470 BC to 390 BC) and Aristotle (384 BC to 322 BC) well over 1000 years before.

From the mid 1600's to the early 1800's the basic principles of camera technology stayed the same, although important innovations were contributed by Johann Zhan in 1685 by building the first camera small enough to really be considered portable in any realistic way. Additional improvements were based upon Zhan's camera, such as the inclusion of sliding boxes for focusing and a calotype process invented by William Fox Talbot for recording images on paper. Despite relatively small leaps in the technology used for these cameras the basic principles for a modern camera are accounted for.

At this relatively primitive point there was little room for photography as a pass time, an artistic genre or business service in any way. Instead the application and use of cameras was almost treated as a scientific experiment in optics. It would take almost 150 years from Zhan's first portable camera until technology caught up to any point where it could be used practically.



Throughout the 1850's the collodion wet plate process was introduced and widely used through the late 1800's, although the design of the camera itself stayed relatively similar to previous incarnations. The first colour print was made by James Maxwell Clark in 1861. During this time the process used to create photographs is far from perfect and it's common for photographers to use inks and paints to touch up

imperfections and distortions in photos.

Over the course of the next 100 years cameras evolved into smaller and more practical devices as technology in Europe and America developed faster than ever before. Modern cameras, although based upon the same optical principles as their predecessors, have evolved into much more effective, practical and functional devices than their ancestors could have ever dreamt of. The use of silver nitrate and analogue techniques to store the image on film gave way to what could really be described to the first generation of truly contemporary cameras.

During the latter half of the 20th century photography had become widely available. Commercial cameras were heavily developed and shipped around the world for use in everyday life. Despite monumental leaps forward in technology, analogue photography has always used what may be considered by some as awkward and over complicated techniques for the processing of film.

Unfortunately the process used to develop photographs, which involves a light-sealed dark room and additional chemicals to process the film, is not exactly a user friendly and in-expensive process. Developing photographs would always

analogue cameras. Images were stored on a floppy disc and were comparable in quality to television of the time. Although adopted by newspapers due to their ability to transmit photos over telephone lines they were never commercially successful.



During the 1970's early electronic artists such as David Em and Herbet W. Franke began researching into manipulating electronic of TV images. David Em's work itself has been very influential from an early stage. Pictured to the left is the 1979 piece "Transjovian Pipeline", which was produced during his research with the Jet Propulsion Laboratory (JPL) that later led to the matured style of Em's artwork.

Digital retouching of photos was introduced during this period with Quantel computers running Paintbox. These were still required to be used by professionals and were not available to consumers. Silicon Graphics computers were also used with Barco Creator, a similar program with image editing abilities.

The image on the right, titled "Oszillogramme", was created in 1956 by the German science fiction author Herbet W. Franke, who worked extensively with electronic abstractions in his early career. Franke is recognised as one of the first people to really explore the subject of using computer graphics to create artwork. Although Franke's artwork is largely devoid of captured images it helped in the development of digital editing techniques for photographs.



The first truly digital camera that recorded images as computerised files was the Fuji DS-1P in 1988. The camera was never marketed in the U.S. or Japan although a limited run was made in Europe. In 1990 the first real commercially available digital camera was launched – the Dycam Model 1. Photo quality at this time was still relatively poor in comparison to film, with the first commercially available digital cameras having less than a single megapixel sensor, as well as a starting price of around \$13,000.

By 1990 digitalized photo editing had become dominated by (Adobe) Photoshop 1.0 running on the Apple Macintosh, rendering previous packages such as Paintbox and Barco Creator obsolete.

Artists such as Man Ray produced acclaimed artwork using these early techniques in photo manipulating. Man Ray was a master of experimental photography as well as a filmmaker, poet, painter and a leader of the American modernism movement. He was a contributor to Surrealism and Dada. Ray used techniques such as superimposition, solarisation and the self titled "Rayographs", all of which are very similar to basic techniques of contemporary photo editing. The piece to the right titled "Le violon d'Ingres" was produced in 1924 using superimposing techniques. The symbols on the back of the woman are taken from a cello, implying the female figure to be reminiscent of a musical instrument.



In the 1980's computers were used for the first time to scan in and modify photographs digitally. Digital retouching during this period was done using Quantel and Silicon Graphics computers, both of which would run their respected image editing software to manipulate photographs in ways that would have been done using manual techniques in the past.

During this period analogue camera's popularity had peaked in the commercial sector and moving into the 1990's the use of cameras in everyday life was common-place. However, their eventual successors were already under heavy development at this time, and as technology caught up with digital photography, the demise of analogue photography was slowly realised.

Over the past decade digital photography technology has matured to a point that surpasses traditional analogue photography in both quality and affordability. In less than 5 years digital photography has switched as the format of choice for professionals - almost as quickly as the technology has been developed it has been adopted.

The first digital cameras were designed by Texas Instruments in the early 1970's and used relatively simple technology to capture images. In actuality it was a filmless analogue camera and it is not known whether a working model was ever built. However the system used to produce still photos was used to deliver onboard navigation information to astronauts during space flight. The first recorded attempt to build a digital camera took place in 1973. The camera used state of the art technology to record black and white images onto a cassette tape at a resolution of 0.01 megapixels and took 23 seconds to capture its first image.

By 1981 Sony started to produce Magnetic Video Cameras, which in essence were electronic analogue cameras. Utilising technologies from previous digital photograph authoring experiments and combining them with analogue camera techniques delivered the first real incarnation of modern electronic

In some cases this ability to create or manipulate a photograph so easily has been used for negative purposes. A photographer called Adnan Hajj famously doctored the photo above to create a more dramatic impact on Reuters news service in 2006. Below you can see the doctored photo on the left and the original photo on the right. Hajj manipulated the photo to add more intense smoke and destruction to the scene of an Israeli airstrike on Beirut.



Photo editing can be used for negative as well as artistic purposes. As with the photo above, photographers are able to create the picture they originally wanted and exploit the very profession of Photography for personal gain. Not only that, images edited in the manner of the picture above can be used to evoke reactions from political and radical extremists.

Digital artists who produce work in the area of photo manipulation are common nowadays. Online communities like Deviantart and Elfwood literally encompass thousands of members, all of which upload their own work and create personal galleries for the public to view. The range of talent found while browsing through some of these websites is impressive and it's hard to understand while so many artists are unrecognised.

Inset on the right is a piece titled "Quit being so technical" produced by the digital artist "Starfantazy" or Mrs. Neal for short. While Starfantazy is a relatively unknown digital artist the level of complexity and ability in producing a piece of work such as this is impressive and would be impossible to many digital artists of a previous generation to recreate. The first thing that really struck me about this piece is how subtle and seamless the manipulation is. Many previous



Throughout the 1990's digital cameras slowly progressed along with computer technology to bigger and better resolutions, easier use and enhanced reliability. Unfortunately prices were still too high in comparison to analogue cameras to be the economic choice for any amateur and many professional photographers. Most cameras had introduction prices of roughly \$6,000 and a relatively poor resolution in comparison to analogue cameras. Digital cameras for consumers did not reach over 1 megapixel until 1997.

By the year 2000 digital camera technology began to snowball in development. The advancements in computer technology, coupled with realistic affordability for consumers, created a fertile marketplace for the production of new technologies. Competition between manufacturers constantly pushed products to the next level. With the phenomenal success of mobile phones already established, manufacturers began to integrate digital camera technologies into handsets, pushing the development of digital cameras into a consumer driven market it previous left untouched.

The modern market for cameras is dominated by digital products, largely due to the ability to home-author photos. For a period of time the only way to develop digital pictures was by using a home computer and printer, by the time film developing booths caught up to offer similar services it was too late, home photo printers had been marketed cheap enough to render photo developers redundant. Most digital camera software offers image editing applications for touching up photos and a range of pre-packaged filters for adding artistic effects. In essence, anyone who is familiar in using a digital camera is capable of producing artistic pictures it would that would be impossible to recreate through analogue techniques.

The obvious link between digital photography and computer technology brings us to the internet and the artistic communities influence on modern photo manipulation. Never before has the freedom to manipulate photographs been available to the majority of people without any professional training or oversight, with the communal aspect of the internet strengthening this market it has been possible to reach a worldwide audience with this 'homemade' artwork. Online communities like Deviantart and Elfwood are a forum for artists to exhibit and sell their work.

The ability to manipulate images at a detailed level is no longer purely a professional discipline. The range of freedom given to manipulate photographs on the computer has allowed for the creation of some truly exceptional artistic pieces. Most of which would be impossible to create using old techniques on analogue cameras. Many traditionalists believe that photo manipulation has led to a downfall in professionalism, skill and the craft of photography; while others argue that it has opened the medium to a whole new level of creativity.

By its very nature of digital photography and photo manipulation go hand in hand. Another major advantage of digital photography is the ease of processing images in the first place. As well as analogue photographs being more complex to modify if needed, the process in developing them is often awkward and very daunting to amateur photographers. It would be entirely unreasonable to expect an amateur photographer to have a dark room available for developing photographs, whereas a digital camera user only needs a home computer to not only develop and store photographs, but to manipulate them to any extent required.

Many traditionalists feel that digital and home photography spells a death for the professional photographer. I feel however this is unfair, and that when used properly, photo manipulation can deliver some impressive works of art. The work shown by Teodoru Badiu demonstrates a real move from traditional photography into a form of manipulation comparable to canvas art. Although, in agreement with traditionalist's fears, digital photography has gone some distance in amateurising the medium as a whole. Artists like Teodoru Badiu and Starfantazy are exceptional at what they do; but they are not professional photographers and their ability to manipulate the photos they do take themselves has negated any requirement for a professional photographers' involvement.

Many digital artists who work with photo manipulation also use photographs from stock photo libraries, which have become more common on the internet over the past decade. While this does still keep the professional's in the loop when it comes to the production and economic side of photography, it would still be rare that the original photographer is credited in the final artwork.

These "Photoshop" artists are not of the same background as the photo manipulators and photographers of a previous generation. Bedroom-artists and designers were given the opportunity to produce real artwork by utilising the computer and their digital camera. This has led to a huge increase in artists producing digital artwork. The range of artwork available is immense and due to its relationship with computer technology and the internet it is only going to increase in the future.

In a way, photographers arguments against digital cameras and the amateurising of their profession is similar to a canvas artist complaining paints are available in shops for amateur painters to use. A profession and skill shouldn't be based upon the exclusivity of equipment - if anything the success of amateur photography should simply up the working standard and skill level of those photographers who do consider themselves "professional". So while digital photography as a whole may have contributed to the downfall for some professional photographers in the consumer market, it has also opened the door to so much possibility for the general public and increased the working standard of professionals.

artists' photo manipulations required the most outrageous and flamboyant computer techniques to create colourful and otherworldly images. Contemporary manipulators such as Starfantazy on the other hand appear to direct their work towards more realistic creations. Although obviously unnatural, the image above is designed to appear realistic, futuristic and artistic without visually attacking the viewer's senses.

Some may argue that contemporary photo manipulation has more in common with design than art. The piece pictured above may support this theory; its structure is almost graphical and its layout feels so clean it looks almost too well polished to hold any real artistic depth. But this doesn't mean that all contemporary photo manipulation hold the same pitfalls. Below are three photo manipulations by Teodoru Badiu. From left to right the pieces are titled "The Painted Horse", "Cloudscrapper" and "Pegasus Divided". All three pieces appear to have more in common with the surrealist movement than contemporary photo manipulation. All images are original photos taken and manipulated using Photoshop.



While the manipulations shown above are relatively simple to produce using software like Photoshop, it would undeniably require an artistic eye to conceptualise in the first place. It demonstrates a move to a more artistic side of photo manipulation and would be impossible to replicate using traditional photography techniques. The artistic style demonstrated in these images is far from the clean, sleek, graphic design of Starfantazy's artwork. It feels almost surrealist, similar to Dali's work throughout the 1940s to 1950s.

