

# The Nature Exploration of Photography from Silver Salt to Pixels

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**Abstract:** Photography as a unique visual medium, with the ability of "objective" reappearance of reality, it is regarded as the nature of photography in the more than 170 years of photographic development. It is used to record and reproduce life, and it is also used in scientific discovery, exploration and news reporting, but in fact, this nature is constantly being questioned, absolute objectivity and truth are non-existent, and there is no truth in the picture. In the 1980s, western theorists claim that digital technology will lead to the end of photography and death, this idea stems from two of anxieties. First of all, because of computer-driven digital imaging and widespread dissemination, it makes "fake" photos can impersonate "real" photos, viewers of the ability to convey the objective truth of photography lost confidence. Photography will gradually lose its power as an exclusive message-passing person; Secondly, there is a fear that we will enter an era where reality and virtual property can no longer be separated, that all reliable concepts are collapsing, that the whole world will be made up of man-made nature, and that it is meaningless to distinguish between truth and falsehood. Therefore, photography faces two obvious crises: the first is technical (digital technology over the physical, chemical, optical transcendence of traditional photography); the second is the cognitive level (the virtual nature of the long-term photographic culture taught to people, the concept of space-time, the existence of State and the adaptation of cognitive experience). Under the influence of these two crises, photography will disappear in the near future. But what is the outcome of it?

**Keywords:** photographic nature; reproduction; simulacra; virtual property.

## 1. INTRODUCTION

In general, technology always follows the logic of evolution. New technologies continue to replace old technologies, and photography has continued to verify the correctness of this statement during the 170 years of development. The ever-evolving technology, on the one hand, continues to enhance the ability to reproduce photography, but on the other it has also become a potential threat to disintegrate photography. In the early days of photography, the French painter Paul Delaroche stated: "Since today, paintings have

died." It is now only 170 years later. It seems that everyone wants to talk about the death of photography. For example, Tim Druckrey claimed that the basic status of the photographic documentation has been shaken. Anne-Marie Willis put forward thinking about the possibility of disappearance of photography as "a technique and the aesthetic of a particular medium." According to Nigris Mirzov, "At some point in the 1980s, with the advent of the computer image era, photography itself was facing death." In 1990, Wells realized digitization in his article "Digitisation and the Living Death of Photography". The crisis brought to photography. In 1992, William Mitchell used the "post-photography era" in the book "The Reconfigured Eye: Visual Truth in the Post Photographic Era." This term refers to the era after the end of photography. For William Mitchell, the 1990s seemed to be a new historical stage because "from the moment of its 150th anniversary in 1989, photography was dead — or, to be more precise, completely and Permanently replaced - just like the painting was 150 years ago." Kodak's bankruptcy in 2012, To a certain degree, traditional photography is being replaced by digital photography. The arrival of new technologies is changing the nature of photography that we have known in the past.

## 2. COMPARISON OF SILVER SALT FILM AND DIGITAL PHOTOGRAPHY

What is the essence of photography? How does digital technology change these essences? What is the difference between the recording of new technology and traditional photographic methods?

Since the official birth of photography in 1839, silver salt has been used as a recording material for images. Film (including color film) includes two basic components: a single-layer or multi-layered emulsion layer, a support of the emulsion layer - film base. Emulsions are made of light-sensitive fine particles suspended in a gelatin medium. The photosensitive material suspended in gelatin is silver halide grains. The particles are so fine that they can only be observed under a high magnification microscope. In a 1 square inch typical photographic film emulsion, the silver halide crystals amount to about 40 billion. When shooting, light passes through the lens of the camera and reaches the emulsion layer of the film. When the light reaches the silver halide crystals,

these crystals undergo structural changes and coalesce with silver halide crystals that are also exposed to light. This agglomerate formed by the agglomeration of silver halide crystals is still extremely fine. The more light received by the emulsion layer, the more crystals are agglomerated together. The less light, the less crystalline changes and coalescence. There is no crystal change or coalescence in the emulsion where no light falls. This means that light of different intensity impinges on the film, and in the microscopic field of the film emulsion layer there are different numbers of crystals that undergo structural changes and coalescence. Once the film is exposed, a latent image (an invisible image) is produced immediately. The film must be developed to convert the latent image into a visible, solid silver halide image. The film is developed and the silver halide crystals whose structure has changed are converted into agglomerates of ferrous silver particles, thereby producing images (negative images).

Since the 1980s, the way film analog imaging has been slowly moving toward the micro. Binary computer technology in the recording field has begun to be used to capture images, which is the fracture of the photosensitive silver salt imaging based on chemical materials. Digital light sensing devices are classified into two major categories: CCD and CMOS. CCDs are called charge-tolerant semiconductor devices. CMOS is called complementary metal oxide field-effect devices. They are all semiconductor devices. Light is transmitted through the lens to semiconductors and photons to semiconductors. Absorption, so that the optical image is converted on the light-sensing unit into a charge packet proportional to the illumination of the respective pixel in the optical image. Each charge packet is the brightness information of the image. Finally, the signal is passed through the buffer via the buffer and the signal readout register. The processor performs signal processing and transfers it to memory. If a good image sensor can make the photosensitive unit occupy more specific surface area, then the higher its efficiency, the higher the accuracy of the reconstructed image. Each image sensor unit has a color filter in front of it, which is divided into a primary color RGB filter and a complementary color CMYK filter, and a program is programmed so that the camera CPU CPU knows the corresponding position of each photosensitive unit, so that each photosensitive unit There is a weighted sequence number, the output signal includes not only the color information and the brightness information, but also includes the position information. Finally, after all these weighted image information are combined, an image is calculated by the image processing engine to obtain a restored image, which is also the last obtained photograph. information. This color calculation process is called interpolation. It can be

said that the digital camera's color reproduction is based on the designer's software preparation method to calculate the color information of the original scene. This technology can form a photo with a series of points, that is, Pixels, The encoding form, the pixel is a symbol of the digital revolution.

From the principles of film and digital imaging, it can be seen that the film produces a latent image through a photochemical reaction, and there are relatively few artificial interference factors in the generation of this latent image. In the digital imaging process, the interpolation algorithm is a key link. Interpolation consists of the nearest neighboring meta-method, bilinear interpolation, and cubic interpolation. The core of interpolation is to use unknown information to guess unknown information. With the continuous progress of the algorithm design, the digital fidelity will be higher and higher, and when the digital precision reaches a certain level, it will completely replace the reality of the objective reality.

### 3.THE ROLE OF CULTURAL CHANGE IN THE EVOLUTION OF PHOTOGRAPHY

Of course, the changes brought by digital technology to photography are not limited to the collection and presentation of images. Technology has never been simple or independent, and the evolution of photography has been examined. As a set of technical procedures, photography is not a one-time invention. And stereotypes, photography, camera, film technology, printing technology and the latest digital technology, each undergoes a complex evolutionary process. However, what is more important is that photography is also an important part of the entire cultural system. The evolution of the concept of photography is often influenced by cultural changes. It can be said that cultural change has almost played a decisive role in the evolution of the concept of photography. In the book "The Turn of Visual Culture," Zhou Xian described the three human inventions of mirrors, cameras and computers as the traditional (imitation) visual culture, the modern (replicated) visual culture and the contemporary (virtual). The three concepts of visual culture should be said that the three characteristics of imitation (reproduced), copied, and virtual are exactly the essential characteristics of photography in different historical stages.

The history of the mirror is very long, and it stems from when there is no basis for the text. The earliest appearance in the West was the hand mirror. By the 1st century, there was a large mirror and it was possible to see the entire body. The use of medieval mirrors was already very common. The appearance of ancient Chinese mirrors is also very early. Perhaps earlier than the West. Although the mirror is an extremely common daily life thing, it is of great significance to the visual culture. In periods of low human visual technology, mirrors may be the earliest

visual tool humans use to look at the world and human beings. Its appearance has far-reaching effects on art and even ideas. At the Renaissance stage, the aesthetic "mirror talk" was once popular. Da Vinci said: "The artist's heart should be like a mirror always taking in the colors of what it reflects, how many things are placed in front of it, and how many images are taken in." In fact, it is also good to use a mirror as a reference to understand photography. Angle. The image in the mirror is always the current image. When the object in front of the mirror disappears, the image in the mirror will disappear. The presence of the image in the object is dependent on the field. Photographing can reproduce objects and reality in a real, objective and accurate manner like a mirror. This seems to be a fact born of photography. Whether it is Duggier's "mirror of memory", or Talbot The "natural brush" is the recognition of the objectivity and authenticity of the medium of photography. For most of the 19th century, both the social elite and the general public naturally understood photography as a new reproduction tool and a faithful recorder of the world. People were amazed at its ability to reproduce and enthusiastically embraced photos. The real effect. In 1939 Paul Valery's report on the 100th anniversary of the birth of photography at the French Academy stated: "Photography can motivate us, if it is not rejuvenating, to at least make the old and difficult topic of 'objectivity' resurrect again." He still values the ability of photography to reproduce faithfully. The concept of objective reproduction has been permeated in the development of photography. The photographs were used as evidence, a kind of presence, a testimony, and entrenched existence for more than 150 years. Vicky Goldberg once pointed out: "This new medium is incorrigible proof. It is not subject to subjectivity, memory errors or imagination. Its evidence can almost overturn any degree of doubt."

However, all this collapsed with the advent of digital technology. In 1991, an exhibition called "Photo Video: Photography in the Computer Age" was opened in London, United Kingdom. When the curator introduced the exhibition, he wrote: "Not too long ago, we could at least define photography as an optical device and a photosensitive material. The process of producing photo slides by chemical reaction. Today, this definition is facing changes. The innovation of science and technology has changed photography from the original chemical process to the electronic process. It is no exaggeration to say that the advent of these new technologies will completely change us. The nature of photography that was originally known." William Mitchell compared the photographic revolution triggered by digital imaging technology with the great event of the birth of photography in 1839, and concluded that the two have almost equal significance. The implication is

that digital technology for photography is no different from previous history. In his research, he believes that the chemical photography that lasted for 150 years has provided human beings with an image that is regarded as a true report of the real world. However, the application of computers and digital technology has led to the end of this "innocence era". Digital technology has overturned people's old attitudes and beliefs about traditional images. Digital technology has surpassed old and traditional ways of photography. Digital cameras have been able to achieve tens of millions of pixels, from the provided details and the reproduction of colors. Seeing, far exceeds the level of silver salt particles, high-resolution images have already surpassed the silver salt image, and digital images contain more information, far more objective and realistic than films.

Digital technology makes photography closer to reality. What can be said for a long time is that technological advancement has enabled the reproducibility of photography to continue to increase. However, the concept of photography has not developed along the track of objective reproduction, but it is the concept of objective reproduction. Constantly questioned, and constantly far from the objective reproduction, drifted away. If the photographic image ceases to refer to the external real world, if the photographic image presents something unrelated to the reality, if the photographic practice becomes a psychological activity to track the internal spiritual picture, if instantaneous, time, space, choice Restrictive conditions no longer work for photography. So what do you think about the nature of photography and the legacy of photography in social culture for 170 years? Of course, these problems have always existed in the history of photography. They were once considered moderate, at least not Looming. Now accompanied by the post-photography era and the more radical "photography is dead" argument, digital images are so easy to deal with, the power of photography as evidence, and the true value of realistic records become issues, "gradually, digital Image processing is defined as a practice of transcendence, a departure from the institutions constructed by photographic reality." These discussions on the rewriting of digital photography have become serious and eye-catching. The significance of photography in the age of digital photography is not the size of the ability to change photography, but the weakening of confidence in the meaning of the transmission and construction of photography. The true value of photography is disintegrated.

In 1983, Postmodern scholar Baudrillard declared that the era of "simulated" was coming. The era of "simulated" corresponded to virtual visual culture as scholar Zhou Xian said. He believes that digital technology fundamentally changed the visual culture.

The situation, "If photography is still the original realistic imitation and objective record, then the computerized digital image will bring our visual experience into a new field - the virtual reality (surreal) world." The most basic definition of the word "simulacrum" is "a plausible imitation with an image of its shape but without substance" and "simulated photography" is a photograph featuring this image. "Quasi-image" is the most intuitive understanding of photography. It is an image or image product that has its own shape, but it has no real meaning, meaningful meaning, and no source. This artifact, which was produced in the form of "photography" and existed in the name of "image", escaped the stereotyping of photography directly to reality, and counteracted the simulation and fiction of one or more original visual symbols and images. Or it is a reorganization and reconstruction of some sort of visual experience. If photographic images have long meant that "this once existed" means that the scene reproduced by the image is absent at the moment at the moment, then "simulated" means for photography that "this exists now", meaning "It can be this or that", and the simulation of the photography itself with the image of a photographic look. This recognition is "fatal" for photography, either as a means of recording the nature of a visual reproduction or as a cultural product of a definite nature, because it means the end of a historical mission of photography, and Photography and the changes in the nature of knowledge that people recognize through photography.

One of the words in Baudrillard's "Perfect Crime" is the most incisive commentary on the essential features of "simulated" photography: "The image can no longer imagine the reality because it is reality. The image can no longer make people Fantasy real things, because it is their virtual reality. It is as if these things have greedily passed through the mirror, thinking that they have become transparent, all in their own bodies, in sufficient light, in real time Relentlessly copied, they did not separate themselves from their illusions, but they had to appear on countless screens. In these screens, not only were there no physical objects, but even their images were gone. It was really driven away." In this critical commentary, the virtual image is no longer a tool that people use to imagine the reality, because it becomes a reality in itself. It itself makes up the reality. The reality was deconstructed, thus cutting off the road of people's feelings of entering the reality from the image. For human experience, the reality also became a kind of nihilism. "It was really driven away."

For photographic images in the virtual stage, technologically unprecedented degrees of freedom make it no longer so focused on exaggerated innovation. It rents the appearance of photographic schemas as an easily accepted means of visual communication, with a simple approach. And more

flexible combinations that are integrated and blended into various digital images. They are no longer "photographic" but only rent "photographic schemas." The appearance of the pictorial schema is due to the existence and sense of certainty that the photographic media has constructed over the past 170 years. The way of viewing pictorial schemas has been deeply rooted in people's hearts. When people experience and consume the realistic effects of such photographic schemas, they know that all the scenes in this delusion do not care about whether it is still photography in the traditional sense. When people watch the movie "Avatar," every audience knows that this is a virtual video carnival for self-entertainment, but no one will blame it for fooling the audience. The virtual nature of photography in the "simulated" era seems to negate the true nature and recording attributes of photography. In fact, it insists on the reality and reality of photography and imagery. After many "simulated" photographic surfaces, the sloppy appearance of modernism emerged. In fact, it focused more on the photographic image itself. It reveals the true essence of "extraction" in the image world in a more extreme or even ridiculous way. .

Lost in the East, the mulberry harvest. The acquisition of degrees of freedom for photographic images means the loss of photography in social and cultural terms, namely the loss of photographs as fossils and fingerprints, the questioning of photography as a unique visual medium, and the loss of photographic production and completion. "Since the past, photography has been plagued by the specter of painting, photography has become a ghost itself." The photographic image of virtual reality means the complete liberation of the photographic medium. It has a "photography-like appearance." "Another visual experience was constructed, and this experience rejects us to look at what we are usually familiar with. It can even be said that the death of the photographic media in the traditional sense brought about the omnipresence of photography. They were transformed into various forms, whether it was two-dimensional or three-dimensional images or blended with other visual elements. What's interesting is that the photographic image of this period has the biggest difference from the previous photographic image. When it gets the ultimate liberation of the media through virtuality, it actually appears more as a "zero degree style", that is, constructing an immersion. The image scene that is very close to the daily visual experience, it pursues the visual nature more, that is, for the perfect simulation of the real itself, the computer simulation imaging far exceeds the accuracy and objectivity of the photographic media. The objective and detailed reproduction of the machine has enabled the reproduction beyond the photographic schema, and it has been more real than real. "It can be said that we are living in a 'graphical' culture, and we also need to re-interpret the term

'photographic schema'. For today, 'Photographic' is truly Photo-GRAPHIC, the photo is only for the whole. The mix of graphics provides the initial layer." There are no pure, unreformed real forms and meanings in the vast photographic images. The meaning of photographic images often depends on the mutual interpretation of various pre-set images. Its kernel refers to uncertain movements. . It is undeniable that the disappearance of the boundary between imagination and reality has brought about an epistemological crisis. Photographic images were once an important way and means for people to understand the world. However, when reproduction is no longer believed by people, images are increasingly becoming empty signifiers, and the ever-growing virtual reality has become a reality we have to face. What attitude should we adopt for virtual images and the virtual world deserves our attention? Think deeply. "No picture and no truth" and "There is no picture or truth" may not be the correct choice. To a certain extent, digital technology can realize the transcendence of binary opposition between true and false images. Faced with virtual reality and virtual images, people are really confused, and there is no need to discern because the boundaries between true and false have been blurred. Virtual images constitute an imaginary world. In the foreseeable future, virtual images and virtual Space will create a new aesthetic paradigm. The history of photography has clearly told us that the photographic medium itself is a product of modern human science and technology and industrial civilization, and it constantly changes with every technological change. Every technological breakthrough will cause a breakthrough in the characteristics of the photographic media and eventually lead to changes in people's ideas about it.

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