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## Zone V: Photojournalism, Ethics, and the Electronic Age

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Howard Bossen

Laszlo Moholy-Nagy argued in the early part of the twentieth century that those who were ignorant of the camera would be the illiterates of the future. The future Moholy-Nagy spoke of is becoming the past, and we must add that those who are ignorant of electronics and computers will be the illiterates of the twenty-first century.

Computer scientists have figured out how to digitize the photographic image. Space technology has given birth to image-enhancement systems. The Associated Press (AP) has had an online "electronic darkroom" since the 1970s. Pagination systems incorporating digitized photographs will be in newsrooms before the end of the decade. These technical developments give the media the ability to shape raw information into a structure that looks on the surface like a conventional photographic image but, in fact, is different from the conventional structure of a photographic image. The new technology enables the media to process visual information more efficiently, to manipulate photographic information in ways not previously possible, and to improve the quality of the transmitted image.

This article examines from a historical perspective problems inherent in accepting photography as accurate data, beliefs about photography that Western culture has come to accept, computer-based image technology, and the attitudes toward that technology of the AP editorial staff in New York. An assessment will also be made of some ethical problems the new technology may create for the media, and possible safeguards against the abuse of that technology will be posited.

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## The Photograph as Evidence

When photography was invented, the practitioners of the medium and the general public naively believed that the photographic image showed the world as it was. The belief in the veracity of the photograph quickly became pervasive in Western culture. One photograph that historians have repeatedly cited as an example of the importance of the photograph as evidence is Timothy O'Sullivan's "Dead Confederate Soldier at Sharpshooter's Position in Devil's Den" (Frassanito 1975:191). This picture (Figure 1), erroneously attributed to Alexander Gardner by many historians and frequently titled "Home of a Rebel Sharpshooter" (Newhall 1964:71), was made after the Battle of Gettysburg in 1863. It depicts a slain rebel soldier lying face up, his head on a knapsack. A rifle is leaning against the rocks behind him.

For more than one hundred years this precursor of contemporary photojournalism was cited as an early example of how a photograph could report more accurately than either an artist or a word reporter. For more than a hundred years it was thought that this photograph represented the untampered, grotesque reality of death at Gettysburg. These beliefs were wrong.

O'Sullivan, with the help of Alexander Gardner and James Gibson, constructed the image and incorrectly identified the weapon. These revelations were made by William Frassanito in his book *Gettysburg: A Journey in Time*. Frassanito, an amateur historian with a passion for the Civil War, made a detailed study of all the known photographs of the battlefield from just after the battle in July 1863 to 1866, when the battle scars began to heal. He painstakingly plotted, while visiting the battlefield, where each photograph was made. He concluded that the corpse in O'Sullivan's picture was the same corpse that appeared in another photograph made in a different location on the battlefield (Frassanito 1975:187-192). As grisly as it sounds, O'Sullivan consciously used the corpse as a pictorial element, moving it, according to Frassanito, more than forty yards to compose his report (ibid.:191).

At times a fabricated photograph may reveal a human truth more clearly than a photograph composed from undisturbed elements of an event, but fabrication is not considered an ethical practice for photojournalists today. No news organization could afford to have its credibility threatened by such an act. A photographer who used a dead soldier as a visual prop, no matter how compelling the resulting picture, would be fired.

In the 1860s, however, the belief in the veracity of a photograph was so strong that it probably did not occur to anyone to question the methods of O'Sullivan, Gardner, and Gibson or to question the implications



**Figure 1** Timothy O'Sullivan. "Dead Confederate Soldier at Sharpshooter's Position in Devil's Den" (1863). Courtesy of National Archives, Washington, D.C.



of those methods in relation to the public's perception of the photograph as evidence. People simply did not know enough to ask the right questions to verify the authenticity of a photograph. By comparison, how many people in the mid-1980s know the right questions to ask to verify the accuracy of data outputted from a computer?

People in the nineteenth century came to believe that a photographic image represented truth. They did not seem to recognize that the image was a record optically filtered and chemically produced. Take the same vista and process it through different lenses, different films, different chemicals, and different papers and the final images may look only slightly related. People in the latter part of the twentieth century, similarly, do not seem to understand that the information coming out of a computer has been mathematically filtered. Change the mathematical model and the image that emerges from the computer is different.

William Ivins, in his landmark book *Prints and Visual Communication*, argued that when the nineteenth century began most people held the belief that what was reasonable was true. By the end of the nineteenth century, he argued, most people believed that what they saw a photograph of was true (Ivins

1969:94). A major philosophical concept of truth had been transformed by the invention of photography. Though this concept of the photograph as a representation of truth has always been flawed, it remains for most people even today an operational belief.

The photographers of the Civil War were restricted by their bulky cameras and slow wet-plate film in their ability to photograph the action of the war. Each technological change in image generation altered the process of collecting the news; each technological change in image reproduction altered the process of disseminating the news. For the news media, common threads linking advances in image generation and reproduction have been the drives to produce higher-quality images and to deliver those images to the public with increased speed.

The invention of small cameras and fast films allowed photographers to record events as they unfolded. It also allowed them to record those events in ways that created a sense of spontaneity and fragmentation. Because subjects did not have to remain still to be recorded, movement both actual and implied became a part of the still photograph. As films



became faster, not only could the subject be in motion, so could the photographer. The frame, once thought of as a formal rectangle in which the photographer placed the subject in the center, became an informal frame with odd juxtapositions and truncated forms within it.

The introduction of flash powder allowed events occurring in the insensitive dark to be recorded by the use of a blinding short burst of light. The flash, impossible to ignore, intruded upon events and clearly forced the photographer from the role of observer to one of an observed central player. The inventions of the flash bulb and then the electronic flash made many previously unphotographable situations easy to photograph. Flash photography freezes objects in motion and reveals details the dark hides from view.

To a degree the practice of journalism depends upon the ability of a reporter to observe and to report those observations. The practice of photojournalism requires the journalist to record observations filtered through the camera lens. Many people still hold the naive belief that those recorded observations are objective records of events.

### "Powers of Ten"

*Powers of Ten*<sup>1</sup> is a short film demonstrating that one can always look at an event from a different angle and get closer or move further back. The perception of truth is a function, partly, of determining the most appropriate frame in which to place data to scrutinize them.

*Powers of Ten* forces us to reconsider what is meant by the journalistic notions of complete coverage and objectivity. The film, made in 1968 by Charles and Ray Eames, describes the relationship between the number ten and the universe. It uses photography, animation, and the mathematical concept of powers of ten to make its point. The viewer first sees a photograph of a man lying in the grass in Miami. The powers of ten are used to demonstrate how observations about an object or event are directly related to the amount of information and the relative magnification of that information within a specific field of view. The first half of the film shows a new image each time the view is expanded by a power of ten. The view continuously expands until the viewer is confronted with the infinity of space. The second half of the film quickly retraces the steps until we are once again looking at the person in the photograph lounging in the grass. It then takes us in closer. We see a detailed section of the photograph. We are moving in closer and closer now, exploring negative powers of ten until we reach a model of an atom. In effect we are now at the center of all matter.

This film, made before computer-enhanced imagery was practical if even possible, demonstrates in the second half some of the possibilities for an enhancement system. At least in theory, and to varying degrees in practice, an enhancement system can take a small section of a photograph and show us what is there, even if what is there is too small or too degraded for us to see with the naked eye. The film also demonstrates a limit of enhancement systems. An enhancement system cannot show us what is outside the boundaries of the original frame. To do that would mean that data were being invented, not magnified or corrected.

### "Blow-up"

*Blow-up* (Antonioni 1971)<sup>2</sup>, a commercial film by Michelangelo Antonioni, provides a good example of the limitations of information retrieval found in silver-based photographic enlargement. David Hemmings plays the central character of the photographer, Thomas. He devotes time and effort to making enlargements of several frames of film he exposed in a London park. He thought he was stalking a young couple strolling through the park as they periodically paused to engage in public displays of affection. After realizing that Thomas has been recording her and her companion, the girl, Vanessa Redgrave, becomes agitated and demands that Thomas give her his film. Predictably he refuses, but offers to send her prints. Later he meets with the writer of his book, part of which deals with violence. Thomas tells his associate about the scene in the park. He comments that the pictures he made of the couple are a peaceful contrast. He suggests they might be a good way to end the book.

When he goes back to his studio the girl from the park arrives wanting to know where the pictures are. In a scene in which the girl attempts to entice Thomas to give her the film, Thomas realizes that this film contains something much more important than anything he saw when he made the pictures. The girl tries to steal his camera loaded with what she thinks is the film Thomas used in the park. Having anticipated her act, he has the film safely stored.

He processes the film he had hidden. He makes blow-ups of the individual frames. He lines them up and studies them. He begins to see that the girl, far from being relaxed, appears quite tense. She appears to be looking at something in the background of the image. Thomas begins to make sectional enlargements. He examines these. He sees a shape that suggests that a person is in the bushes. He sees a shape that suggests a gun. He carefully examines these images. He thinks he has witnessed an attempted murder. He thinks his actions have thwarted the deed. He makes another sectional enlargement.



This time he uses a view camera to copy a section of the sectional enlargement. He makes another sectional enlargement. Now he sees something that makes him think that there is a pool of blood. He becomes convinced that a murder has taken place. He goes back to the park at night and finds the body. He gets scared. He runs. When he returns to his studio, it has been ransacked. All the film and all the pictures have been taken. He hunts through the studio and the darkrooms. The intruders missed one photograph. It is a very grainy blow-up which shows the dead man. Patricia, his friend, says it reminds her of a painting. She does not relate to it as a record of a murder. Who is the murdered man? The image Thomas is left with is too technically degraded to be used to identify the victim.

Had *Blow-up* been made in 1985 rather than in 1966, Thomas might have sought the services of a computer image-enhancement expert to solve the identity riddle. Use of the correct model, the correct data, and an image-enhancement system would have solved Thomas's problem.

### "The Enhancement Effect"

Computer enhancement of a photographic image allows for all the information on a piece of film to be extracted. It is neither an easy process nor an inexpensive one, but with the correct supplemental information and the correct computer programs, one can now make a clear, sharp, accurate image based on an out-of-focus fragment of a total picture.

Dr. Willi Heimssohm (1982) describes a 1980s version of *Blow-up* in his article "The Enhancement Effect," which appeared in *American Photographer* magazine. It is prefaced by the claim that:

The technology described either exists or can be anticipated in the near future. Its applications in all aspects of photography from science and art to the humble snapshot, represent what may be the next major advancement of the medium. [ibid.:95]

Heimssohm describes a fictitious successful assassination of Colonel Muammar Kaddafi. There is one Western news photographer present as Kaddafi is shot. The photographer thinks he has some useful footage of this momentous event. Unfortunately for him, the authorities confiscate his film. Fortunately for him, however, the woman sitting next to him on the plane out of the country is a tourist who just happened to photograph her friend about 150 yards in front of Kaddafi just as the ruler was shot.

The photographer strikes a deal with the tourist to purchase for his news agency her Kodak disc camera and film for \$5,000 plus a 40 percent royalty arrangement. When the plane lands in Rome, he

quickly calls his office in New York and tells his partner the bad news and the good. The partner approaches the country's leading news magazine and makes a deal to sell to them, for \$10,000, one-time rights to the pictures. As part of the deal the magazine insists that any artwork derived from the original material will be the exclusive property of the magazine. This seemingly innocuous clause becomes the pivotal point for a legal battle over what constitutes the original photographic information.

The magazine publisher contacts a computer whiz who operates a fictitious company called Media Magic and Computer Graphics. The whiz kid developed his skills while working on image-enhancement problems for the Jet Propulsion Laboratory and Atari. He also developed some contacts in the CIA. After striking a deal, which involves the whiz kid's getting his friends at the CIA to provide reference photographs and a computer link in exchange for a complete copy of the results of his enhancement project, the magazine publisher has the camera and a test roll of film put through a series of tests the computer expert requires. The camera lens is checked to determine specifically how it is at variance from the manufacturer's specifications. Only after the tests are completed on the camera and the test film is the film containing the hoped-for images of the Kaddafi assassination developed.

With the naked eye all that is discernible on the negatives are a female subject on one side and a very overexposed image of the place where Kaddafi was shot on the other. There are five such frames. The computer expert asks for 11-by-14-inch enlargements of each of the frames that were exposed near the assassination scene. The darkroom technician who carries out the work cannot understand what the fuss is about. He can't see more than a small, overexposed, out-of-focus blob that bears a faint resemblance to people in the relevant section of the images.

Stevens, the computer whiz, returns to his studio with the test data. He asks that the film and prints be delivered as soon as possible. He writes a program that takes into account the characteristics of the lens, camera motor, film, and assumed motion of the photographer. This information is necessary for him to develop a program that allows his computer to construct a sharp image based upon the fuzzy recording on the film. "This was the kind of gonzo science he relished—'Whatever you can fantasize, I can write a program for,'" the author tells us (ibid.:98).

Stevens's program enabled him to do four types of enhancement: focus, contrast, dynamic range, and color. It begins by submitting "all of the negatives on the disc to analysis by a specifically modified laser scanner" (ibid.:102). The scanner scans each image in four colors and converts each "micron of image area into an information package of digitally encoded





**Figure 2** Unembellished image of newlyweds Charles and Diana. Courtesy of Douglas Kirkland/Contact.



**Figure 3** Embellished image has seven alterations. Courtesy of Douglas Kirkland/Contact. Copyright © *Discover Magazine*, April 1983, Time Inc.

dots which [are] then stored in [the] computer system" (ibid.:102). Each image may then be called up on a screen. Sectional enlargements can be made and each section processed for each of the four types of possible enhancement. In this way whatever information that was encoded, however faintly or abstractly, can be reconstructed so that it will be useful.

Stevens was convinced that there were enough elements there to make a good story-telling picture. It just required some editing on his part and the addition of a few colorful details from his research department. [ibid.:104]

Puffing on cigars, Stevens works through the night. After nearly eighteen hours he has a sharp image of the slain Kaddafi. He only needs to add color. "All he had to do was fill in certain areas with color based on what he knew to be true, and the rest would be left to his imagination" (ibid.:106). This aspect of computer-enhanced imagery certainly seems to recall the hand-artists of the nineteenth century who made engravings for publications. The engravings were based upon photographs and the artist's imagination.

The final set of images look like conventional photographs. They, of course, are not. We never know what the public is told about these images. We do not know if the news magazine asserts that they are photographs of the Kaddafi assassination or if they are an artist's reconstruction based upon less than perfect data. Heimsohm is content with raising our consciousness concerning the possibilities of photographic manipulation with image-enhancement systems and with pointing out that the contract with the news agency had not been violated by the image manipulators. He does not raise questions of ethical standards.

Appearing in the April 1983 *Discover* magazine is "The Fiendish Hell Machine" by Gary Taubes (1983:68–80). The title of the article is derived from the name of the inventor of an image-enhancement system rather than from the manipulations the computer can perform. The article deals with how one can remove a portion of a photograph and insert extra information into a photograph through the use of an image-enhancement program. The examples for this article were made on a computer owned by Time-Life. In one example, a portion of the New York skyline was removed. In the other, a picture of the wedding procession of Prince Charles and Lady Diana was altered. Inserted into the background was an extra soldier, apparently a skillfully doctored version of one of the two soldiers in the original image. Only if the two images are compared side by side would one begin to think that one version had been altered (Figures 2 and 3). Taubes wrote:

The ethical and legal implications of such photographic foolery could be serious. A man and a woman who had never seen each other could be caught *in flagrante delicto* by a mischievous computer operator with the right raw material. The fake would not be undetectable; however, if analyzed mathematically, doctored pixels would stand out like convicts in striped suits. [ibid.:70]

One, of course, must first suspect that the image is less than accurate in its portrayal of a scene or event. Then one needs a computer with the right program to detect the fraud. To the eye the image looks like a conventional untampered photographic record.

Ironically, if anything is replacing the photograph as the purveyor and ultimate arbiter of truth in the last part of the twentieth century, it is the computer. The



computer does computations faster and more accurately than man ever could. As photography did in the nineteenth century, the computer has opened ways of thinking and seeing that man had not imagined possible just a few years ago. Like photography in the nineteenth century, the computer is an information transformer.

Computer science allows models to be built and predictions made that industry, government, artists, and scientists use in their work. The computer, at least metaphorically, has a mind of its own. The information it processes is beginning to be thought of as truth simply because it has been processed through a computer. This notion, which is becoming culturally popular, may ultimately become as pervasive as the nineteenth-century notion of the photograph as truth. This notion is just as naive and at least as dangerous, possibly more so. What a computer is capable of doing to what we think of as a "real and truthful" photographic record of an event forces us to reconsider our notions of reality.

### Electronic-Computer-Still Photography

Still photography has entered the electronic age. The rules of the game have changed. As still photography leaves its optical-chemical past and enters the optical-electronic-computer future, new possibilities and challenges emerge for the news media. Long-held notions of what constitutes credibility of source, credibility of information, and philosophical concepts of truth are rapidly becoming outmoded. It is alarming that most of the players are not yet aware of the changes and have not thought deeply, if at all, about the consequences of those changes.

Almost everyone is familiar with the optical-chemical process of photography. Even small children use snapshot cameras. The optical-chemical darkroom has been known to people through a century and a half of folklore and actual exposure. If one has not been in a photographer's darkroom, then one has at least seen a darkroom in a picture, the movies, or on television. Whatever one thought of the photographer, "Animal," on the "Lou Grant" show, the darkroom scenes in that series allowed millions of viewers to see what an optical-chemical darkroom looked like.

Almost no one, by contrast, is familiar with electronic-computer darkrooms. They exist in research departments of corporations, advertising agencies, government, and universities, in the Associated Press headquarters in New York, and in the *Deutsche Presse-Agentur* offices in Frankfurt. Artists are beginning to work with digitized photography, using home computers like the Apple and the IBM. Sony has mar-

keted the first electronic still camera; however, the image quality is not nearly as good as a conventional photographic image.

Just as computers were confined to corporations, research institutions, and consumers of great wealth only a few years ago, so too is electronic-computer-still photography at the present time. And just as computers have become accessible to those with a few hundred dollars to spend, so will electronic-computer-still photography. It may not be for another twenty years; it may be, as David Herbert, computer consultant to the Associated Press, argues, only two or three years away.<sup>3</sup>

Computer scientists have figured out how to digitize the photographic image so that it can be captured by a computer, stored within its memory, manipulated and altered by the computer operator, transmitted to other computers, and finally reconstituted as a hard-copy photographic image indistinguishable to the eye from its optical-chemical cousin (Figure 4). Once a photographic image has been digitally captured within a computer system, it can be enhanced or degraded. To what extent it can be enhanced or degraded, in effect altered, is a function of the limits of the computer hardware, the cleverness of the program for that hardware, and the skill of the computer operator. The ease with which one can do manipulations, the kinds of manipulations one can do, and the degree to which one can do a particular kind of manipulation with ease represent problem areas in the electronic darkroom that the media need to address.

The invention of the halftone process in the 1880s eliminated the need for the hand-artist to interpret the photographic image in order for the information to be reproduced in mass quantity. However, there was a price to be paid. Mass reproduction of the photographic image necessitated loss of image quality when compared to an original photograph or etching. Loss of image quality directly translates to loss of observable detail, loss of data, and degradation of information. The quality of the image has been an issue since the early days of photography. The ability of computers to make images exactly the same and transmit them without degradation of image quality are major attractions of electronic-computer-still photography for the news media.

The main function, however, of the electronic darkroom, as news agencies perceive it, is to process and distribute photographic information faster. As a by-product, images are enhanced or degraded through operator manipulations. The function of image enhancement, which is a computer-based electronic process, is to replace degraded, but not missing, information through the use of algorithmic equations and computer science. The problem for the news media is that the electronic darkroom is subject to the same manipulations as any image-enhancement system.



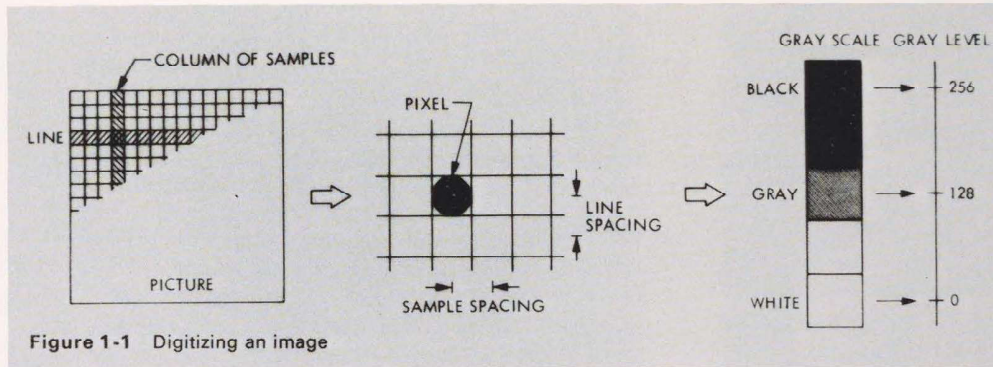


Figure 1-1 Digitizing an image

Digitization of the photographic image is the computer equivalent of the halftone process. In the halftone process the photograph is rephotographed using a dot matrix screen in order to break the photographic image into dots. Each dot carries the same amount of ink and has the same black value. The size of each dot and the distance between dots determine the tonal value of an area.

The digitized image is also composed of dots (Figure 5). These dots are called pixels. Unlike the halftone dot, the pixel is not automatically a black value. In fact, in most systems each pixel can be assigned on either a planned or an arbitrary basis any value from white to black on a 256-value gray scale.

Unlike the halftone process, in which only the entire image area may be lightened or darkened, the digitized image may be lightened or darkened pixel by pixel. In effect, the computer operator has total control over the tonal and linear values in a digitized image. This means, at least in theory, that the computer operator can turn a smile into a frown and even create entirely from imagination an image that a viewer would perceive as a conventional photograph.

Figure 4 Kenneth R. Castleman, *Digital Image Processing*. Copyright © 1979, pp. 4, 5. Reprinted by permission of Prentice-Hall, Inc., Englewood Cliffs, New Jersey.

## Ethical Considerations

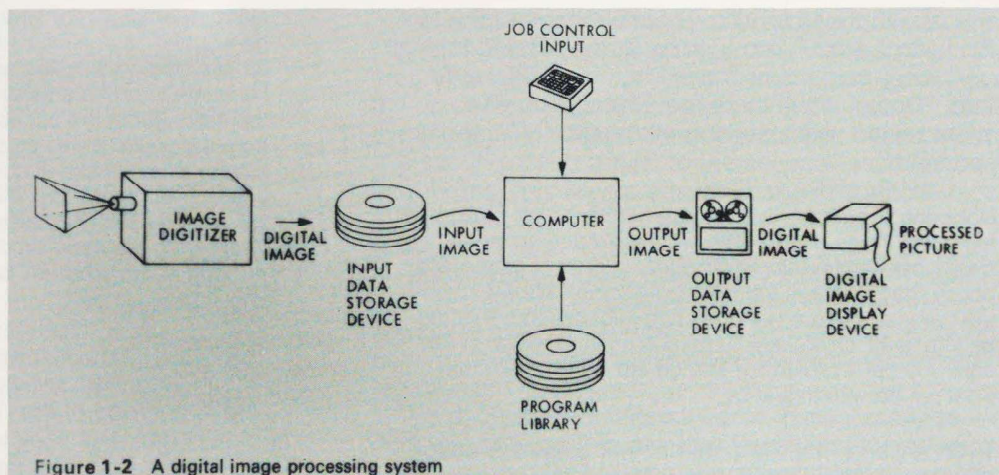
As the electronic darkroom replaces the conventional darkroom in news organizations, the media have an increased ability to shape raw information into a structure that looks objective on the surface, but in fact is not. It is both subjective and manipulative. As we move into an age when out-of-focus images can be transformed into in-focus images through computer manipulations, and when computers can be used to create images that never existed in the real world but are visually indistinguishable from conventional photographs made of the real world, journalists are confronted with important new ethical questions. And as the technology of image creation, processing, and dissemination becomes more sophisticated and the ability to disseminate information almost instant, determination of the ethical limits of degree and kinds of image manipulation becomes an important matter for the media to consider, if they wish to avoid abuse and misuse of that technology.

In an attempt to pinpoint the procedures, possibilities, and problems of electronic-computer-still photography in today's media, informal discussions were held, taped interviews were conducted, and on-site observations were made with members of the Associated Press News Photo editorial staff. David Herbert, the computer technician retained by the AP to maintain the present system and design a new one, was also interviewed. These interviews were conducted in the AP headquarters in New York in October 1983.

The systems that are in use at the AP and the *Deutsche Presse-Agentur* rely on an initial image made with a conventional camera using silver-based film. For several reasons people in the news field think this is an interim stage. Silver for paper and film is getting scarce. Paper is expensive and clumsy.



**Figure 5** Kenneth R. Castleman, *Digital Image Processing*. Copyright © 1979, pp. 4, 5. Reprinted by permission of Prentice-Hall, Inc., Englewood Cliffs, New Jersey.



**Figure 1-2** A digital image processing system

And, most important for the needs of the news media, there is no processing time in electronic-still photography. Eventually the 35-mm Nikon will give way to an electronic cousin just as 16-mm film has been supplanted by videotape in broadcast news. For the present, however, electronic-computer-still photography in the news context only involves working with images made with conventional cameras.

Hal Buell, assistant general manager for News Photos, was one of the principals involved in overseeing the development of the AP's electronic darkroom. The electronic darkroom plan originated in the early 1970s. AP directors decided to explore this technology because their system for transmission was deteriorating. The AP's electronic darkroom is the first online computer-based photographic image management, enhancement, and transmission system within any news organization. Since the mid-1970s it has been the prototype system for the news industry. Other systems used in government, research, and industry—especially in the advertising industry—are more sophisticated than even the AP's second-generation system. They all work, however, on the same principles.

In layman's terms Buell described the AP's electronic darkroom:

The electronic darkroom takes a picture signal which is transmitted analog, converts that analog signal into digital information, puts that into a computer. Simply by working with the digital information an editor can do anything he wants with the picture. He can enhance it. He can lighten it. He can darken it. He can crop it. He can rewrite the caption. He can then order the picture to be sent to any one of a number of places he wants the picture to go all out of the computer. And that is done in the computer. . . . Any work in a chemical-optical darkroom of that kind results in a loss of technical quality. There is no loss of technical quality in the electronic darkroom.<sup>4</sup>

David E. Herbert, in October 1983, had been working on the electronic darkroom project for the AP for about four and one-half years. He described the electronic darkroom in a slightly more technical way:

We have a computer which digitizes the wire photo facsimile transmissions which is essentially using the facsimile transmitter as a scanner. The transmission itself then becomes a serial stream of picture data. The computer intercepts that, digitizes it and stores it on disk as a rectangular image of digital picture elements. We can then reproduce the facsimile stream on an output device and forward that picture then to a facsimile printer. . . . In order to be able to see . . . what you are doing you have video displays of various resolutions and qualities for viewing what you have in the computer.<sup>5</sup>

The function of the electronic darkroom, as the AP calls it, or the electronic picture desk, as the *Deutsche Presse-Agentur* calls it, is to process and distribute photographic information quicker and with less loss of image quality than was possible with conventional systems. Said Klaus Sprick, technical director for *Deutsche Presse-Agentur*:

The Electronic Picture Desk will greatly improve our service in a number of ways. One main advantage is that newspapers will be able to receive pictures sooner, not faster because transmission times remain the same, but processing here will be considerably speeded up. [Sprick 1983:24]

AP personnel said their problems with electronic-still photography are technical. They described the electronic darkroom as a tool that speeds up the news process but does not alter it. Only when pressed by the interviewer did the topic of ethics come up. When the question was raised, the AP staffers said the ethical considerations for electronic-still photography are



identical with those for conventional photography.

Bill Lyon, Laser Photo II editor at the AP and formerly vice-president for News Photos at UPI, was asked, "Do you think there are ethical problems that are raised when working electronically?" He responded:

No, I don't see anything. We are not changing basic information in the picture. We are simply attempting to overcome transmission difficulties, overcome perhaps a poorly made print at the originating point. We are changing gamma. We are not changing information within the picture itself. Obviously, if there is no information in an area you can't create it. I see no ethical problem with what we do with this at all.<sup>6</sup>

Lyon argued that the controls that allow the editor to lighten, darken, crop, and enhance an image are the same controls one has in an optical-chemical darkroom. In the first-generation system, this might be functionally correct, even if it is not theoretically accurate. The program written for the AP system allows the operator to interact with the image. The operator can add tone to the image or subtract it from the image. At present the operator cannot control tone with finesse. In the first-generation system, one can only lighten or darken the entire image; one cannot selectively lighten a small section. The new system allows for more fine-tuned control. But it too is by design a system that does not easily permit extreme manipulation.

However, with more sophisticated systems such as the Hell Chromacom owned by Time-Life, it is possible for the operator to control every intensity of every pixel. When this happens, one has control over image formation that is impossible in the conventional darkroom. With pixel-by-pixel control it would be possible to remove a single hair on someone's head. And as we have seen, the image of a soldier in the original picture can be extracted, altered, and inserted into a new version of the future king of England's wedding procession.

Hal Buell, when asked if the controls that the editors use in the electronic darkroom could be used to distort the image, replied:

You can't do any more to a picture than you could ever do to a picture. I am going to anticipate a question. . . . I don't think your ethics can be any better or any worse using electronic methods than they are using the classical methods. Ethics is in the mind. It is not in the tools you use. And because one tool is easier to use than another, I don't see how that will lead to either a reduction or an improvement in the ethical standards. Ethics is something else, I think. I guess you could say, well, a skilled airbrush artist is one thing, but your everyday editor isn't that. But your everyday editor can come close to assuming the abilities of an airbrush artist. . . . Using electronic means he can quickly attain the skills of an experienced

airbrush artist. Yeah, sure, I don't know whether or why he would if he is ethical. If an editor wants to be unethical he can go find a skilled airbrush artist and do whatever he wants to on an artboard. There is a Catholic doctrine that talks about the occasion of sin. . . . As I recollect it from my youth, it was as sinful to put yourself in the occasion of sin as it was to commit the sin. . . . If you extend that . . . you could say, if it is easier to be unethical there will be more lack of ethics. Well, that is a philosophical question. I am just a simple picture editor. And it will not happen in this place as long as I am sitting here. Or it will only happen once!<sup>7</sup>

Buell has hit upon a key to the problem of media ethics in the electronic age with his mention of the Catholic doctrine of the "occasion of sin." If it becomes cheap and easy to manipulate visual information in questionable or unethical ways, it is not a certainty that it will be done, but it does seem likely.

The AP computer system, like any other computer system, is capable of being abused. It is not immune from being unethically manipulated by people inside the AP, although the AP staff believes that possibility is slight. More important, just because the small number of people who are using the prototype AP system have high ethical standards does not mean that when that system, or ones similar to it, moves out into newsrooms all over the world, others will have the same high standards of ethical conduct the AP claims to have.

Jerry Mosey, an AP picture editor in charge of monitoring the national desk in New York, suggested that the primary problem with computer-enhanced photography is not with what the news agencies do but with what the suppliers of pictures to news agencies might do.<sup>8</sup> He suggested that in the near future the government certainly will have—if it does not already—systems capable of sophisticated manipulations. He claimed that the wire service would not consider doing these manipulations because of ingrained ethical standards. He gave as examples selectively changing the tones in an image to turn a white person into a black person and removing a person from an image. He questioned whether the news services could trust any picture the government might release once a news service was aware that a government agency had a computer image-enhancement system. One needs to add to his list of suspect sources any source with possible motivation to present itself in the best light and with access to an enhancement system. This includes advertising agencies, corporations, and possibly scientists as well as government and news media personnel.

The question Mosey raises opens Pandora's box. It is fundamental and disturbing. If Mosey is correct, then one possible solution is for the media to invest in computer systems that can detect alterations or fabrications of images. If it is known that an image a news



organization thinks might be faked can and will be subjected to a computer analysis that reveals fraud undetectable to the eye, then it is much less likely that sources of pictures would attempt to alter visual data.

Although there has been minimal discussion of changing ethical considerations within the news media as they confront electronic imaging and enhancement systems, computer scientists have discussed the general problem of ethics in the computer age. Computer scientists are aware that their technology presents new kinds of problems in ethics as it changes the ways in which information is transferred. They also recognize that while fields like medicine have had hundreds of years to develop ethical codes, their field, little more than thirty years old, must confront the issue of ethical conduct immediately and forcefully because of the profound impact computers have already had upon civilization.

One attempt by the computer industry that might serve as a guide for the media to emulate is a self-assessment procedure dealing with ethics in computing. It was written by Donn Parker and published in the journal for the Association for Computing Machinery. In Parker's self-assessment procedure issues are raised that merit the immediate attention of media professionals using computers to process words and pictures. He states, "Computer-specific ethical issues arise as the result of the role of computers." The media have barely begun to discuss this issue as it relates to images. They have begun to discuss it as it relates to privacy, but here the discussion tends to deal with how to deal with the data of others as opposed to the media's own data storage and use.

Parker sees computers as "instruments of acts." He asks:

To what degree must computer services and users of computers, data, and programs be responsible for the integrity and appropriateness of computer output?

Parker also makes explicit the concern of the computer industry with computers as "symbols of intimidation and deception":

*The images of computers as thinking machines, absolute truth producers—infallible, subject to blame—and as anthropomorphic replacements of humans who err should be considered.*<sup>9</sup> (emphasis added)

These concerns seem fair, relevant, and important. If the media are going to accept responsibility for the output from their computers, they must address issues related to proper input—including security—and operator manipulation. And the media need to deal with the computer as symbol as well as machine, if only to protect their own credibility in the eyes of the public.

Richard Dubes, Professor of Computer Science at Michigan State University and a researcher in the area of computer image enhancement, suggests that the only way to attempt to guarantee the integrity of the image is for people to recognize that the problem is a security issue similar to the security issue banks face.<sup>10</sup> The only way to ensure image integrity is to encrypt it at the point of origin and decode it at the point of delivery. As the film *War Games* and arrests by authorities suggest, even encrypting information does not entirely guarantee security. The determined computer hacker may still find a way into the system. Encrypting information, however, certainly minimizes the problem.

The encrypting of information to make it more secure is a solution that requires foresight. One needs to anticipate possible ethical manipulations and build safety codes into the computer program that will make unauthorized access and undesirable manipulation extremely difficult. This kind of partial solution is one that media professionals may not consider if the allegation Hodding Carter makes in the preface to the book *Media Ethics* is true. Carter states:

... the domain of the mass media today is an ethical jungle in which pragmatism is king, agreed principles as to daily practice are few, and many of the inhabitants pride themselves on the anarchy of their surroundings. . . . when it comes to ethical values, the media would rather punt than play.<sup>11</sup>

Carter's words may sound overly critical. However, the interviews conducted at the AP suggest that these professionals do not think the use of the electronic darkroom has hidden ethical traps for journalists. But the traps are there. It may be only a matter of time before an ethical journalist falls prey to a supplier of pictures with a vested interest in the public's perceiving an event in a particular way and the skills to operate an image-enhancement system. It may be only a matter of time before a visual equivalent of Richard Nixon's eighteen and one-half minute gap haunts the body politic. It may be only a matter of time before the electronic darkroom falls prey to an electronic equivalent of Janet Cooke, who invents pictures of such power and believability that even the Pulitzer committee is taken in.

Hal Buell and the AP staff are partially right in their assessment. One must be able to trust the conveyor of information. One must be able to trust one's source. Journalists will be able to place more trust in their sources in the electronic age if they begin to recognize that the digital image processed through computer-enhancement systems represents a different medium from the conventional photographic image. Because it is a different medium means that the old rules cannot be assumed to apply. The game has changed. The profession of journalism needs to ac-



tively build security into its electronic darkrooms, and it needs to make some decisions concerning the ethical limits of the games journalists can play with a computer. The profession needs to write a new rule book for a new information-transfer medium.

## Notes

- 1 *Powers of Ten* is distributed by Pyramid Films.
- 2 This version of the screenplay includes photographs from the film as well as commentary by Antonioni and an interview with him.
- 3 Interview conducted by the author with David Herbert, October 24, 1983, at the Associated Press headquarters in New York.
- 4 Interview conducted by the author with Hal Buell, October 24, 1983, at the Associated Press headquarters in New York.
- 5 See Herbert, Note 3.
- 6 Interview conducted by the author with Bill Lyon, October 24, 1983, at the Associated Press headquarters in New York.
- 7 See Buell, Note 4.
- 8 Based on notes from conversations with Jerry Mosey, October 24, 1983, at the Associated Press headquarters in New York.
- 9 Edited by Eric A. Weiss from the book *Ethical Conflicts in Computer Science and Technology* by Donn B. Parker, "Self-Assessment Procedure IX: A Self-assessment procedure dealing with ethics in computing" in *Communications of the ACM* 25:3, March 1982, p. 183.
- 10 Based on notes from a conversation with Richard Dubes, November 1983, at Michigan State University.
- 11 Hodding Carter III, Foreword in *Media Ethics: Cases and Moral Reasoning*, by Clifford Christians, et al. (New York: Longman Inc.), 1983, pp. xi-xii.

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