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Masters in Journalism and Media Studies

An analysis of digital photojournalistic practices: a study of the *Sowetan's* photographic department.

Thesis submitted in partial fulfillment of the requirements for a Masters in Journalism of Rhodes University.

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Abstract

Photojournalism in South Africa is in the process of undergoing a shift from an analogue past to a fully digital future. This shift to digital has already been completed by many of the newspapers in the United States of America and Europe, and the new technology is seen to have made fundamental differences in the way that journalists do their job. This thesis attempts to explore the differences brought about, as well as the problems experienced by the photographic department at the *Sowetan* newspaper as a result of the shift to digital.

How the development of technology has affected the photojournalist throughout is focused upon in a brief history of photojournalism and examples of how technology has shaped different aspects of journalism in both a positive and negative manner is considered.

Exactly what digital photography is, how it has been integrated into American Photographic departments and the changes that the new technology has prompted are also explained.

The manipulation of images in the past as well as the relative ease of digital manipulation are covered and concerns are raised about the future implications of digital manipulation.

By conducting participant observation and holding interviews, research data was compiled which allowed conclusions to be drawn about the impact that the shift to digital had had on the *Sowetan* photographic department.

Intentional and unintentional consequences were expected and revealed in the research. The job of the photojournalist and photographic editor was found to have changed but perhaps not as dramatically as expected. Third world factors such as crime, poverty and lack of education were discovered to have resulted in problems

that differed noticeably from those experienced by American and European photographic departments. Some expected difficulties were not experienced at all, while other major obstacles, specifically the repairs that must constantly be made to the digital cameras, continue to hamper the operations of the new digital department.

Some understanding of the problems that might be encountered by future photojournalism departments that are considering making the shift to digital are arrived at, in the hope that they may be foreseen and overcome.

Acknowledgements

Thanks to my supervisor Larry Strelitz for guidance and understanding; to Chrissey Boughey for extremely thorough proofreading; to the memory of Montgomery Cooper for enthusiasm and advice and helping me discover the passion in the first place, and to my parents for their love, support and faith in me.

Many thanks also to Paul Velasco and the photographers of the *Sowetan* Photographic Department.

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Chapter 1

Introduction:

This chapter attempts to provide the context of the research in order to explain why the research was undertaken. It will clarify the direction that the research took by stating both the goals and the research questions.

1.1 Context of Research

Photographic technology is currently undergoing a shift from analogue to digital imaging. As a result of this change, the photographic departments of newspapers can reduce the time and money spent on developing and printing and operate more effectively by cutting out the use of film and transmitting images to the either from the field or from a computer terminal at the newspaper itself.

Thus we see that digital technology has fundamentally influenced the way journalists do their jobs. For example, Russial (1998) describes how photographers and photo editors now work with their images on a computer screen instead of in a chemical darkroom and how this has resulted in "a shift of responsibilities for photo reproduction within the newspaper" (Russial 1998:1). As he points out, with digital technology, photographers and photo editors have "greater control of their work from image capture throughout most of the pre-press process" (Russial 1998:1).

In his exploration of the introduction of any new technology into society, Williams (1974) identifies the consequences that follow such a technological shift. These can be either intentional or accidental. An intentional consequence in the context of the research explored in this thesis would be the fact that the introduction of digital photography, as Bossen points out, has "enabled the media to process visual information more efficiently" and has also given the media the ability "to manipulate photographic information in ways not previously possible and improve the quality of the transmitted image" (1985:22). There have also been a number of unintentional consequences. These include the apparent "increase in workload to photo departments" (Russial 1998:1), as the photojournalists spend more time on production oriented tasks like colour correction and separation that were traditionally performed in production departments. There has also been an increase in responsibility on the part of the photojournalist (Pavlik 2000) as these duties are taken on, and the need to ensure training in computer literacy (Russial 1998).

The photojournalist needs to be present at the news scene in order to record the event in a visual medium and the digital transmission of both stories and images from the field has made the news gathering process much faster. The shift in responsibilities stems from the photojournalist being able to skip part of the editorial chain, by personally selecting and transmitting captured images from the field. Normally the responsibility of selection of images rests entirely with the photographic editor.

Photo editing can now be done in hotel rooms after downloading the images to a laptop computer or simply on the back of the camera. Although the final selection is done by

the editors at the newspaper itself, the initial selection, as well as the opportunity to retouch the photographs in *PhotoShop* (computer program designed for the handling of digital images) before they are transmitted, forces the photojournalist to make editing decisions, including those that demand ethical consideration. The photojournalist has always been what Shoemaker (1991) refers to as a boundary role input gatekeeper, but now more internal gate-keeping responsibilities have to be assumed by the photojournalist. Before he/she could rely on the gatekeepers of the organisation – the news editors or photographic editor, to edit the copy and the pictures before publication (Cooper 2001: 160), thus editorial responsibility was shared on a more equal basis for every photograph that made it to the printed page.

Even though the photographic process might still find the photojournalist back at the newspaper after a shoot, changes continue to be apparent. The use of film, printing paper, chemicals, processing equipment and traditional darkroom areas, disappears. Tirohl (2000) found in his studies, that while the language used by electronic picture desk users with regards to image treatment is largely similar, or identical, to that used in traditional darkrooms (e.g. "dodging" and "burning), these darkrooms no longer exist for newspapers. While the language stays misleadingly the same, the methods by which the images are created have been radically altered. Pierce (2000) suggests that digital photography offers a darkroom on a desktop without the time and space that a conventional darkroom requires. Computer terminals replace the processing areas and the costs of shooting are vastly reduced because film and chemicals no longer need to be purchased. Initial expenditure is high however, as electronic cameras cost more than the

equivalent film cameras (Linford 1994), making the switch to digital difficult for some newspapers.

Central to the concerns of many photographers are the ethical issues that are forced into the spotlight with this new technology. The photojournalist's ability to make the correct ethical decisions in both photo choice and manipulation is now highlighted as the "individual reporters come under increasing pressure to act as one person news and production crews" (Pavlik 2000: 231).

Other ethical problems that have concerned photojournalists in the past become more visible with this new medium that makes manipulation so much easier and less detectable. Bossen remarks that "the concept of the photograph as a representation of truth has always been flawed (but) it remains for most people today an operational belief" (1985:23). He goes on to point out that, as the electronic darkroom replaces the conventional darkroom in news, the media have an increased ability to shape information "into a structure that looks objective on the surface but in fact is not. It is subjective and manipulative" (Bossen 1985:28).

Do the photojournalists at South African newspapers such as the *Sowetan* have the adequate training to handle 'tricky' situations when in the past these decisions have been made by the experienced? A preliminary visit to the *Sowetan* suggested that photojournalists in the department, especially those that were younger and less experienced, relied heavily on the guidance of the, Paul Velasco. If the photojournalists

were put in a position where they would have to make their own "editorial decisions" as a result of digitisation, what would be the end result? As Halestead remarks, "The mentoring relationship between the editor and the photographer is the prime casualty in this process" (http://dirckhalestead.org/issue9804/editorial.htm). But regardless of whether or not newspapers such as the *Sowetan* are ready to make the switch, "digital has become so powerful in its visible advantages, that even the most traditional press photographer should not be able to resist it" (Cooper 1994:5).

The *Sowetan* newspaper in Johannesburg has been able to manage the switch and had been issuing their journalists with digital cameras for two years at the beginning of the study. Although this is a substantial period of time they are still in the early stages of a digitization process that should sweep through all of South Africa's newsrooms in the next few years. If recent trends continue, South Africa will follow the United States in their technological development and the use of digital technology will become widespread. The widespread adoption of digital technology by the United States is evidenced by the fact that three quarters of all the press images captured at the 2001 Superbowl were digital (http://poynter.org/centerpiece/020100-index.htm).

The introduction of a first world technology into a third world environment might be expected to lead to difficulties, however. Issues such as low computer literacy levels that were not important in a previously visually concentrated job become evident in a medium that suddenly requires high levels of computer literacy in order to operate the technology involved in the selection and transmission of images. There is the added risk of carrying

even more expensive equipment into dangerous areas and situations as well as the standard photojournalist's paraphernalia that already places him/her at risk. How does the *Sowetan* deal with these issues?

Issues that have arisen in making the change to digital in the United States will be drawn upon in the study of the *Sowetan* which is the focus of this thesis. New issues that have come about in the different context offered by South Africa, will also be explored. The new role of the photojournalist will be explored taking into account, ethical, practical and economic issues.

1.2 Research Goals

The purpose of this study is to investigate, using interviews and participant observation over the time period of a week, the change in photojournalism practice in the photographic department of the *Sowetan*. Questions of finance, training, availability of computers and feasibility of transmission of pictures need to be explored. Both the intentional and unintentional consequences are examined and discussed. How the switch to digital has affected the responsibilities of the photojournalists and photographic editor, if indeed it has, and the effects that any shift in responsibilities might have had on the photographic process are also investigated at the *Sowetan*. The goals of this research are to create an understanding of the problems that might be encountered in order to inform the future training of photojournalists.

The questions the research reported in this thesis sets out to answer are therefore:

1. How has the practice of photojournalism changed at the *Sowetan* with the introduction of Digital Cameras
2. How have the roles of the photojournalist and the photographic editor changed?
3. What problems were encountered by the *Sowetan's* photographic department in the conversion to Digital?

Chapter 2: Photojournalism

Introduction:

> "The History of photography is as much a story of technological development as of aesthetic or artistic concerns." (Rooney 1981:8)

This chapter is intended to give a background and history to the development of photography and specifically photojournalism. It will pay particular attention to the way in which the development of the technology used in the profession has affected the job of the photojournalist. The traditional roles of both the photojournalist and the photographic editor in an analogue department are also provided.

2.1 The Development of Photojournalism

According to Rooney (1981) the first optical image recorded using chemical means was produced by Louis Jacques Mande Daguerre (1789-1851). The photograph or Daguerreotype was made on silvered copper plates, polished and sensitized to light by exposure to iodine vapour, which produced a layer of silver iodide on the plate's surface. It was then developed by vapour from heated mercury.

Following on from this development, one of the first news photographs ever produced, according to Demarest (1958), was a Daguerrotype of Hamburg Germany after a four day

fire, made only three years after Daguerre had introduced his photographic process to the world in 1842. Thus photojournalism was introduced to the world.

Roger Fenton became the first accredited war photographer during his coverage of the Crimean War which, as Foss (1988) explains, he covered with five cameras, seven hundred glass plates, four horses and a wagon fitted out as a darkroom.

Mathew B. Brady also became a pioneer in the field of photojournalism when his "what-is-it" wagons appeared on the battlefields of the American Civil War (Demarest 1958). Brady had teams of photographers covering every major battlefront using the wet plate process which required "sensitizing the glass plate in his portable "What-is-it" darkroom wagons prior to making the long exposures with a bulky camera mounted on a tripod. These traveling photographers had to carry a large stand camera, tripod, plateholders, dark tent, glass plates, chemicals, dishes, glassware, and a supply of water" (Coe 1981). The exposure was followed without delay by developing the still wet plates right on the field of battle before the plates had time to dry" (Demarest 1958:87).

The heavy 8 by 10 inch glass negatives were packed carefully and transported across the rough terrain of the battlefields to the studio where prints were made. Woodcuts were then prepared from the prints and the final product appeared in the pages of *Harpers Weekly* (Demarest 1958).

Photographs were first used as models for artists and engravers to work from until the advent of half tone engraving. In 1877, the press set out definitively on the direct reproduction of photographs when *Le Monde Illustre*' published the first photomechanical reproduction in half tone ruled screen zincogravure (chemical engraving of zinc plates) of a portrait of the polar explorer Nordenskjold (Albert & Feyel 1998). At the end of the 1890's half tone techniques became quicker and more reliable which facilitated the launch of the first photographically illustrated magazines: *La Vie Illustre 'e* and *Lecture pour tous* (1898) (Albert & Feyel 1998). Big Press houses equipped themselves with half-tone studios while the smaller magazines had their half-tones made by independent studios. Photographs were supplied either by specialist businesses or were taken by reporter photographers (Albert & Feyel 1998).

The commercial manufacture of improved gelatin dry plates had begun on a large scale in the late 1870's after an important breakthrough in creating faster emulsion in 1871, and in a few years the wet collodian process was virtually obsolete (Coe 1981).

Foss (1988) states that photography was opened to the masses, when George Eastman developed the first Kodak box camera, and followed with the release of roll film. Developments in technology as well as the "increasing use of photographic illustration created a new sort of journalist, the reporter photographer" (Albert & Feel 1998:363).

The discovery of the principles of photo-telegraphy by a German, Arthur Korn, resulted in the transmission of photographs by electrical signals between Berlin and Paris and

Paris and Lyons (Albert & Feyel 1998). He demonstrated an electrical system using a photocell, which could transmit and receive a picture over a telegraph wire (Kobre 1985). This was improved by Edouard Belin who made it possible to transmit a photograph in a few minutes by linking it to a telephone or telegraph wire (Albert & Feyel 1998).

In 1925 a permanent commercial transmission line was set up in America between New York, Chicago and San Francisco by *AT&T* and was sold to Associated Press nine years later (Kobre 1985). The AP bought Bell equipment, leased AT&T wire and set up twenty-five stations "and the age of rapid wire transmission began in the United States"(Kobre 1985:30).

In the 1924 Leica offered its first 35mm cameras the 1a and 1b. They were soon the leading manufacturer of the cameras. These 35mm cameras, or "minis" as they were named, were adopted by some photographers but it was not until the 1950's and 1960's that the real transition from press camera to miniature camera occurred (Gleason 1998). Gleason remarks that, although the equipment photographers use does not determine the final image, it does impact on the way in which photojournalism is conducted and cameras utilizing film 2 ¼ by 3 ¼ inches or smaller were much less obtrusive than the traditional press cameras and allowed for more candid photography. The speed of the lenses was also an advantage when using the minis as the "press cameras", Graflex or Speed Graphic cameras "had to cope with lenses with apertures of 4.5" while "users of the 35mm cameras "could use lenses with apertures of 1.5" (Gleason 1998:4). At the

same time film manufacturers increased the sensitivity of their film which meant that the photographer could forgo tripods and flashes in many situations (Gleason 1998).

Gleason (1998) explains how newspaper reporters were reluctant to change, and those newspapers that had established large photography departments kept miniature cameras largely as supplemental gear to be used where press cameras and flash bulbs were prohibited.

War coverage contributed to a growing respect for photojournalism as those photographers that were familiar with the miniature camera "utilized the smaller camera to make themselves more accessible to front-line coverage" (Gleason 1998:5). This was seen in the work of photographers such as Robert Capa who provided dramatic photographs that could not have been taken without the use of the faster, smaller camera.

According to Hicks (1972), fundamental changes in the thinking of editors, together with mechanical advancements of the camera, had revolutionary effects on the production and use of the journalistic photograph from 1925 to 1935. New techniques originating from the United States and Europe underwent intensive growth in that time and thus gave birth to the photojournalistic form as it is known and practiced today.

Following this growth, the role of the photojournalist changed in the mid-late 1940's. No longer was he seen as the " 'tool' of the reporter acting on the orders of the man with the

notebook. Now, in this picture-minded world, the lensman was a "photo reporter" (Scherschel and Kalish in Gleason 1998).

The traditional photographic department was developed gradually, and the photographer was given more status in the newsroom as the importance of pictures and their attention-grabbing story-telling capabilities were realized.

Wire rooms were soon installed to transmit and receive pictures more easily, however Hodgeson (1996) recalls how the idea of a wire room handling the input and output of pictures was altered with the advent of computerization. No longer was there a wireperson who went with the photographer to operate the heavy transmitter in the field, nor was there a darkroom printer waiting to unscramble the picture on the receiving drum and turn it into a print. The job could be done solely by the photographer.

He goes on to say that the film could be developed on the spot and the photographer could use a highly transportable mobile transmitter, which was connected by a modem to a telephone with the result that the pictures would be sent in negative form, down the line, back to the office. For remote assignments satellite phones could be used for the same purpose.

Hodgeson (1996) predicted that filmless cameras would speed the process even further and continues by describing how images are now received on an electronic picture desk, where they are viewed and edited by the photographic editor, and then passed on

electronically to the next stage in the process. They are retouched electronically and then pasted onto the pages of the newspaper, as it exists electronically.

Even with the huge technological advancements that photography went through until it reached the era of computerization, the photojournalist was still burdened by his equipment and tradition. This prevented him from creating the masterpiece he was capable of (Demarest 1958:89). Demarest (1958) predicted the elimination of chemical processing and added that advancements in electronics would make many camera adjustments obsolete, "freeing the photographer to concentrate even more on subject matter"(Demarest 1958:89).

Even though sections of photojournalism are becoming more and more mechanized, for example the focus is now automatic as is the exposure, Demarest (1958) states that there will still be a very definite and important need for skilled photographers as the selection and composition of subject matter cannot be handled electronically.

2.2 The Traditional Roles and Practices of the Photojournalist in an Analogue Photographic Department

In order to accurately identify the changes that the digitization of the photographic department has brought about, the roles of the photojournalist in an analogue department need to be set down.

Although the responsibilities and duties of the photojournalist vary from newspaper to newspaper, the primary responsibility remains the same and is to provide "clear easy to read, high quality, truthful images to their newspaper for publication, that communicate a meaningful message for the readers of the publication that they work for"(Ford 1998:1).

Ford (1998) suggests that other duties that photographers may be expected to perform include developing film, editing film, scanning pictures into a computer, adjusting tone and colour of pictures in *Adobe Photoshop* and mixing chemistry. They may also be required to work with reporters in order to generate picture ideas to accompany stories, and communicate with sources in order to set up photo shoots.

Ford (1998) runs through a typical day of an analogue photojournalist:

- Photojournalist arrives and reads messages and mail left for them
- Photo assignments are picked up, on average three per shift

- The photographer reads over the assignments, makes sure of the details, contact names, telephone numbers and directions, questions are directed at the reporter or desk editor
- After completing one or two of the shoots the photographer returns to the newspaper to process film
- While the film dries the photographer may take a lunch break before proceeding to the next shoot
- After completing the next shoot the photographer returns once again and while the negatives develop he/she may edit and scan the first two sets of negatives
- The photographer will then get to view the negatives with the photographic editor
- They will critique the negatives and choose the suitable frames
- The photographer then crops, adjusts colour balance, contrast and burns and dodges if need be, on the computer
- The photographer must also write caption information for each picture.
- At the end of the shift the negatives must be filed and the assignments logged in the diary

2.3 The Role of the Picture Editor

The role of the photographic editor will vary from newspaper to newspaper depending on the size and structure of the newspaper (Ford 2002). Once again the roles that were played by the photo editor of the newspaper before the advent of digital photography must be taken note of in order to establish differences in the roles that will be played in a digital department.

Ford, photographic editor of the Observer-Dispatch, states the following as the roles of the photographic editor:

- Discussing assignments with photographers so that the angle of the story and the types of opportunities that are available to them on assignment are clearly understood
- Editing film and critiquing the photographers' approach to the assignment.
- Attending meetings, talking to editors and reporters about the stories and writing up, or assisting reporters to write up, photographic assignments
- Scheduling photographers' shifts and scheduling photographic assignments
- Communicating with the design desk about the sizing, cropping and placement of a photograph.
- Educating and training staff members
- Motivating staff and writing up annual performance reviews
- Handling complaints from editors and readers

- Ensuring that equipment is in good working order
- Managing the department's budget and writing proposals to obtain new and updated equipment.

Ang (1996) states that the editing of pictures operates at two main levels: at an organizational level and at the more specific level of particular projects and tasks. He goes on to say that the photographic editor tends to have more control over specific projects but the editing is still directed at a specific aim which depends on the specific task at hand which will be considered and reinforced in the text that is to accompany the photograph.

Kobre (1985) suggests that the photographic editor must not only be able to generate pictoral story-ideas but he must also be able to predict the world's future news events so that photojournalists can get coverage on stories that might break.

According to Kobre (1985) the photographic editor plays other roles such as providing available information on the upcoming story, so that the photographer can return with better coverage of the story. He proposes that, ideally, the photographic editor and the photographer should review the contacts together, after the film has been shot and processed, and select the frames that best fit the story, before arguing for space to print the pictures in that edition.

Wilson Hicks, executive editor of *Life* believed that "Photographers are too emotionally involved when taking pictures to evaluate the pictures objectively during the editing process" (Kobre 1985:207). But Will Hopkins, art director of *Look* magazine at the same time, upheld an opposing philosophy whereby "photographer and photo editor, as well as the writer and art director operated as a closely knit group, each contributing to the final story, without letting job titles limit each participant's input" (Kobre 1985:207).

Evans (1997) believes that it is the picture editor that occupies the pivotal position as he holds the power to determine what is photographed. He is able to select, suppress, distort and manufacture stereotypes of heroes and villains in his selection of frames from a take. Mark Godfrey recalls how he would send back film from the Vietnam War and the photographic editor in Saigon would pick the frame he felt would make "high drama out of a situation that was boring and tedious"(Godfrey cited in Evans 1997:xvii).
O'Dowd (1996) makes a similar point when she says that, unlike reporters who can gather facts in retrospect, photographers can only record that which is physically in front of them at any one moment. Thus editors covering a news event are likely to have only very limited aspects available to them in pictures, and that is often only the aftermath of the incident. Although the photographer may be the only person to have witnessed the event that is recorded on the film, "the context in which the image is set is likely to be wholly determined by other people- the sub-editors who write the caption and the headline, the reporter who writes the accompanying news report, the designers who lay out the page" (O'Dowd 1996:22).

In a publication where the photographer performs the duties of the photographic editor, Kobre (1985) puts forward the idea that, what the system gains in efficiency, it loses in objectivity. At the same time, he argues that as the photographer has a better idea of what actually occurred in comparison to the editor who was not at the scene, the photographer should be involved in the picture editing process at all stages.

In considering a situation where photographs are being taken of a gruesome scene or event Kobre (1985) suggests that the photographer does not have the leisure to determine if a particular picture should appear on the paper's front page. "Only when the film has been contacted can the photographer and the editor study the images with an impartial eye toward deciding if the photos are too indecent, obscene, or repulsive for publication"(Kobre 1985:213).

Selection is ideally about choosing the most "powerful" image according to O'Dowd (1996). This frequently means selecting which frame best illustrates the text, or which fits into the space available. It is also about making decisions about printing graphic images of violence or dead bodies, and considering questions of compassion and taste with regard to the policies of the newspaper itself.

O'Dowd offers her view:

> "There is no one clear route to the selection of a photograph. A variety of factors come into play in any situation and to understand the selection choice, one needs an understanding of those factors" (O'Dowd 1996:23).

2.4 Conclusion

Since the development of the Daguerrotype, photography has been a means of recording and documenting significant events in history. Rapid developments in technology have lead to the equipment becoming smaller and therefore more portable as well as easier to use. Both changes in size and the developments in printing, developing and film have influenced the manner in which photojournalists go about their job and the photographs that they produce.

The photographic editor plays a pivotal role in managing the photographic staff and controlling the input and output of the photographic department in a newspaper. He or she also plays the role of an objective expert that is not emotionally involved in the pictures that are edited, but that also need to involve the photographer in order to have a clear idea of what it is that was photographed.

The photograph appears in the newspaper and in all likelihood is perceived by the public to be "no more than a perfect copy of a moment in reality" (O'Dowd 1996:26). However as O'Dowd (1996) points out, this simplicity hides a complex process of selection and modification that this "moment in reality" passes through before it is presented in the newspaper. This process involves gatekeepers that make decisions at each gate that alter

that moment captured on film in some way, and certain potential meanings are accentuated to the detriment of others.

This complex gatekeeping process changes as new technology is introduced and the different gatekeeping roles are redefined.

Chapter 3: The Impact of New Technology

Introduction:

Chapter 2 showed how technology has changed for photojournalists in the past depending on their needs. This Chapter will attempt to demonstrate the types of impact that new technology can have on an institution, and specifically on journalism and newspapers, with a mind to eventually explaining the impact digital technology has had on the photographic department of a newspaper.

It will deal with the impact from a managerial point of view, a structural point of view and from the point of view of the journalists whose jobs have changed as a result of new technology.

New technology should never be introduced without first considering carefully the changes it will have on the area into which it is being introduced. Past experiences can be drawn upon in order to try and predict what might happen but "the complexity of much new technology makes it more difficult to anticipate how it will do its primary job and what its second order consequences will be" (Hetman 1980:7). Raymond Williams (1990) echoes this sentiment, in his belief that the invention of new technology may have consequences that are accidental.

3.1 The Impact of New Technology on Journalism

In 1879 a journalist, Whitelaw Reid, said:

> "The business of making a newspaper is in a state of constant growth and change. You might almost say that it is revolutionised once every ten years. The veteran returns to find the old methods useless, the old weapons out of date, the old plans of action out of relation to the present arrangement of forces ... The history of journalism, for 50 years, has been a rapid succession of revolutions and no man knows as well as the hard working editor that perfection has not yet been evolved" (Cited in Rucker *et al* 1969:101).

Pavlik (2000) believes that journalism has always been shaped by technology, and in fact came about as a result of a technological invention which facilitated mass literacy and eventually lead to the invention of the newspaper. That invention was Gutenburg's printing press.

The death of photojournalism specifically was announced by many with the advent of digital photography, but as Wells (2000) notes it was an ill founded claim typical of the fears which radical technological change tend to generate amongst practitioners of a

traditional medium. She also mentions that this reaction echoed the fears that artists held about photography in the nineteenth century.

3.1.1 The Impact of Technology on the Job of the Journalist

First and most important in the context of this thesis is the way journalists do their job. The majority of stories that journalists cover are done so under pressure from the approaching deadline. Any time saving advancements in technology are readily employed in order to lessen that pressure and make the deadline. Pavlik (2000) says that increasingly journalists are spending less time out in the field observing directly the events which they report.

Technologies including the telephone and email have prompted this change in behaviour. No longer does the journalist have to visit the sources in person in order to interview them. This, according to Pavlik (2000), does raise certain problems when it comes to identifying the person at the other end of the line.

Conversely, however, he comments on the advantage of being able to gather news from public records and corporate information that is published online, especially when on deadline or in after hours situations.

The effects of the Internet are so widespread in newspapers that research by Middleburg and Ross (cited in Pavlik 2000:230) found that 93 percent of respondents say that their staff use online services in some way at least occasionally. Respondents reported going online to obtain information, story ideas and images.

Pavlik (2000) also recognizes that the editorial and production processes are also greatly influenced and shaped by technological change. Analogue technology limits the journalist often making it difficult to work close to deadline without risking breakdown of the whole process, while digital tools make it possible to work right up to deadline.

He also says that now there is more frequent communication between the audience and the newsroom staff in the form of email and this can influence story selection and coverage.

Digital technology is enabling journalists to do more of the production by themselves out in the field. Provided with a digital newsroom, digital video journalists can "perform any editorial or production operation on the video. Thus, any reporter can provide video editing in the field and/or on deadline"(Pavlik 2000:231). Pavlik (2000) again raises a negative concern in that individual inexperienced reporters come under increasing pressure to act as one person news and production crews, the only consolation being that their tools are increasingly easy to use.

An obvious parallel can be drawn between the video journalist and the photojournalist with regard to Pavlik's concerns, in that photographic processing, editing and transmission can take place in the field without the input of the perhaps more experienced photographic editor.

3.1.2 The Impact of New Technology on the Nature of News Content

It is worth mentioning that as the journalists tools change, so too will the products of his or her labour change. "In today's digital, online world, content is once again undergoing a profound transformation, largely enabled if not driven, by technological change" (Pavlik 2000:231).

According to Pavlik (2000) there is undoubtedly an increased speed of news flow as stories can be sent around the world via the Internet in a matter of seconds. Pavlik goes on to question the quality of the journalism that results from high-speed news. Is it better to have unconfirmed news with errors sooner, or confirmed news with fewer errors later? The pressure is increasing to be the first to break a story in spite of the fact that the damage that can be done by printing a story that differs from the truth can be substantial.

The online publication of news has also profoundly influenced the nature of storytelling and the presentation of news, as the once basic inverted pyramid style is becoming obsolete online and is being "supplanted increasingly by immersive and interactive multimedia news reports" which Pavlik (2000:232) suggests perhaps helps the audience come closer to the truth by removing one level of filtering.

3.1.3 The Impact of Technology on the Structure and Organization of the Newsroom

It is perhaps inevitable that the introduction of new technology into the newsroom will lead to some significant changes in the staffing structure and how the newsroom is organized.

Pavlik (2000) has noted that technology, and especially online communication, has affected the centralization and hierarchical character of the newsroom. He says that the Internet has changed the structure, especially in online editions, and it is now flatter than in the past where an Editor or News Editor exerted powerful control over the news operation followed by other news officers in the chain of command.

In studies done on the introduction of computers into different companies, Reif (1968 in Carter & Cullen 1983:22) found that computer usage leads to centralization of decision making within the management hierarchy. Reif attributes this to the computer's ability to take over the making of routine decisions usually made by middle managers. He also notes that "As computer utilization increased, staff personnel tended to become more powerful and make more decisions having direct effects on the internal affairs of the operating departments" (Reif 1969 in Carter & Cullen 1983:22).

Whisler (1970 in Carter & Cullen 1983:22) also observed in a similar study that there was an increased centralization of decision making, that clerical jobs became more routinized and that the trend for supervisory jobs was on the increase.

From the above examples one can deduce that the time saving that results from the introduction of technology in many instances of newspaper operations comes from giving up the routine jobs and decisions involved in tasks like printing and typesetting to computers.

> The computer's integration into each aspect of technology served to justify the contention that, for this industry, the computer can be construed as core organizational technology affecting organizational structure through an automated workflow, operations, and information control. (Carter & Cullen 1983:39)

3.1.4 The Impact of Technology on the Nature of the Relationships Between News Organisations and their Public

According to Pavlik (2000), the old models of twentieth century journalism have been altered with the online publishing. No longer is the model based solely on an asymmetrical one-way communication, fulfilling an agenda setting role, it has become much more of a dialogue between the press and the public. Email has become a "vital and instantaneous link between readers and reporters, often shaping reporters' knowledge and attitudes as much as an initial report may have influenced the public" (Pavlik 2000:235).

The emergence of the Internet has allowed virtually any person with a computer and Internet connection to reach a local and global audience, thereby redefining the notion of a journalist. There is now, as Pavlik (2000) points out less need for the journalist to serve as a middle man between the source and the public, as the source may now bypass the gatekeeper and go directly to the public, as both the Government and many companies seem to be doing. This raises problems as the sources will have "vested interests in slanting the information they provide to reflect positively on their organization or the issues they support"(Pavlik 2000:236).

3.2 Conclusion

Technology plays a major role in shaping every aspect of journalism. Time saving technology may lead to inaccuracies as pressure mounts to be the first to print a story. The structure of news organizations has changed as well as the models of communication that represent the flow of information from the source, to the public, with the arrival of new technology.

It is clear that there is an important role for journalism to play in the digital networked, technologically advanced world of communication, but that role is still taking shape and will, as Pavlik (2000) points out, involve the re-establishing of credibility and impartiality of news organizations.

Chapter 4: Digital Photography and it's Introduction to Photojournalism

Introduction:

The last chapter showed how new technology plays a role in shaping Journalism. This chapter will attempt to explain how a new technology, digital photography, works. It will describe how it has been integrated into newspapers in the United States of America, and the different changes that it has prompted in the industry and in the individual jobs.

4.1 What is Digital Photography- How does it differ from Analogue Photography?

Linford (1994) presents a basic explanation of an electronic camera as a camera that does not use film but can record an image electronically and store it in a digital form that computers can understand. The basics of the camera, shutters, lights and lenses, are still used, but the image is focused to fall on a light sensitive chip. He continues, saying that "unlike film, there is no subsequent development procedure required: as soon as the camera's electronics have done their job, the image is available for use on the computer" (Linford 1994:18).

To say that the photograph exists in a digital format means that it exists as a bit map made up of bits or *Binary digITs* and these digits are stored in the computer's memory as

switching an electric current on (1) or off (0). Wright (1999) explains that a digital image is made up of a series of bits that amount to a mosaic of information, which is used to form the image on the computer screen.

The light sensitive chip or charged coupled device (CCD) records the pattern of light in a digital code, and, like the retina of the eye, once the image is stored in the camera's memory, the device is reusable. There is no latent image recorded and no film to wind on. It is largely due to the development of the CCD that digital photography is possible. According to Wood (2002) CCD's are constructed on a wafer of silicon in clean room conditions, with absolute precision. Each pixel is an integrated circuit etched into the surface of the silicon wafer that is the CCD, consisting of one charged cell and one cell of an opposite charge. By recording the amount of electrons released from a charged well of electrons into the waiting empty well as the photons pass through the silicon wafer, the frequency of each photon is measured. Each value is calculated and converted into a colour point and the whole image is then reassembled.

According to Wright (1999:152), images are mostly stored on removable hard drives and can be transferred onto a computer via a fire-wire eliminating the "need for film, processing chemicals or prints". These "removable hard drives" are also known as storage cards and can be regarded as a kind of "digital film" used to store digital images. Depending on the type and the size of the cards different numbers and sizes of images can be stored.

Once the image is on the computer, it may be cropped, captioned, edited, modified seamlessly, placed on a page and published. Wright states that this process "has dramatically accelerated the operations of photojournalism, whereby a publication can receive images from remote locations – almost anywhere in the world – in a matter of seconds" (Wright 1999:152). It is now possible to publish photographs of up to the minute news much closer to the deadline, thereby reaching the public sooner than was possible in the past. Other advantages that Wright (1999) mentions are that the digital photographer is able to transmit images from a mobile phone and capture sound-bites so that an audio-caption may be added by the photographer at the scene of the event, eliminating the need for a notepad and pencil.

Wright (1999) makes an interesting point about the theoretical shift that has taken place with the introduction of digital cameras. The camera, as an *input device*, plays more of a subservient role as it supplies information to the computer, thereby losing its status as the central apparatus in photography.

Although there are many differences between analogue and digital photography, if the end product is a print, then, superficially, they are not obvious. Unless viewed under magnification, the images appear almost exactly the same and, given they have both been taken through a lens and have been subject to the same framing, focusing and light metering, this is not surprising. Wright (1999), however, points out that as there is no negative behind the digital photograph, copies can be made endlessly without the loss of any quality. This is not the case with an analogue photograph, where the process of

copying interferes with the information that is being transmitted and the result is a loss of quality.

4.2 Digital Photography in Newspapers

> 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. (Bossen 1985:23)

Although, digital imaging became widely used in the US newsroom in the early nineties according to Russial and Wanta (1997), it was in the early eighties that the first photographs were digitized for use in full page assembly and output. Electronic picture desks were commonly used by the wire services but were not common in newsrooms until 1990 when Associated Press announced that "it would make a digital darkroom system the standard receiver for Photostream, its new high-speed digital transmission system" (Russial & Wanta 1997:2). It was not long before the shift to all-digital handling of photographs at many papers raised questions about storage and indexing of image files, and digital archiving hardware and software was developed and offered by vendors.

Russial and Wanta (1997) say that although both wire services and newspapers experimented with digital cameras in the late eighties and early nineties, cost and quality considerations restricted their use to coverage of high profile news events.

The new technology has, according to Bossen (1985), enabled 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.

It has been during the past ten years that, according to Lister (1997), traditional and chemical processes of photography have been augmented by the use of digital cameras and scanners, image processing software, new digital storage techniques and the transmitting and exhibiting of images online. Some practitioners have integrated digital technology into their post production processes while others have completely replaced analogue technologies with digital, "optical lenses are replaced by digital and virtual cameras, films by discs, physical darkrooms and optical enlargers by computers and software" (Lister 1997:305).

Lister (ibid) lays out some initial implications that the digitizing of photographs has had:

- As previously mentioned, there has been a shift in the location of photographic production: from the chemical darkroom to the "electronic darkroom" of the computer.

- Single photographic originals have an expanded range of output forms, from print to the computer and TV screen.

- Enhancing and manipulating images can now be done invisibly with unprecedented ease and sophistication.

- Photographic images can now enter into a global information and communications system as they become instantaneously transmissible in the form of electronic pulses and pass along telephone lines and via satellite links.

- News images are no longer containable within territorial and political boundaries.

- Existing photographs can be converted into digital files and stored in digital storage banks which can be accessed at the screens of remote computer terminals.

- The still photographic image can now converge with previously distinct media: digital, audio, video, graphics, animation and other kinds of data in new forms of interactive multi media.

Pierce (2000) remarks that a conventional darkroom requires time and space that an "electronic darkroom" does not require. Even digital printing now rivals the quality of the conventional commercial print, and with more ease. He also mentions the cost effectiveness and convenience that is offered by darkroom that allows certain corrections

that could not be made in a conventional darkroom. Print costs are essentially the cost of the paper that is chosen for the printing.

The introduction of electronic picture desks was not entirely unproblematic, however. Tirohl (2000) did a study which revealed that most of the staff in the photographic departments he researched found the use of the electronic picture desk problematic at first, remarking that it altered their perception of image treatment. They agreed however that "the digital methods for dodging, burning, and spotting ('traditional' image enhancement practices for cleaning up images) were far easier and quicker than they were in the chemical darkroom"(Tirohl 2000:346).

Russial and Wanta (1997) have said that digital technology may be bringing the photojournalist's struggle to be recognized as an equal to other journalists to the fore once again. In the past, photographers have struggled to convince their newsroom colleagues that they were professionals rather than mere technicians, a situation that was not helped by the close kinship between technology and photography.

They go on to say that, as digital technology allows photographers to "get out of the darkroom and into the newsroom" it will present opportunities for photographers to work alongside reporters and editors (Russial & Wanta, 1997:4). There is a down side however in that the new technical demands of computer-based image-processing require more specialization of photographers, making them appear even more out of touch. Of more concern is the issue of control mentioned by participants in interviews in Russial

and Wanta's study: "Because digital imaging can be done in the newsroom, some photographers and photo editors have expressed concerns that photojournalism may be increasingly shaped by people who have little photo training"(Russial & Wanta 1997:4).

According to Russial and Wanta (ibid), digital imaging technology makes it possible to promote a convergence of jobs within the newsroom. Photo handling no longer needs to take place in an area separate to the newsroom, and the digitization of text and photos has made it possible for photographers to take on the reporting and visual presentation tasks that are typically done by reporters, editors and designers.

Other important points revealed in Russial and Wanta's study were that photographic editors ranked traditional photography skills such as shooting and providing accurate caption information as most important, with picture editing also ranked highly. Processing skills such as scanning, the use of *Photoshop* and digital archives were also regarded as important.

With the elimination of negatives must also come the considerations regarding the storage of images that exist purely in a digital format. Whole rooms used to be dedicated to filing cabinets filled with negatives, and now this space can be more effectively put to use as filing cabinets are converted into hard drives. There are, however, problems with this conversion as Pierce (2001) comments that digital formats and mediums are constantly being outmoded, become obsolete and therefore disappear. As each format disappears or is improved, images stored in the old format are lost.

Other problems come to light as the new digital process is considered. Cooper (2001) comments that there is a temptation for the digital images that are not chosen for printing from a shoot to be deleted permanently without backups being made due to space restraints or forgetfulness on the part of the operator. This means that a part of history that would have been stored in analogue days is lost forever.

4.3 Changes in the role of the Photojournalist

Technological advancements have always been an impetus for change in all media. New technological tools require new skills. The change to digital cameras should have a profound effect on the way in which the photojournalist goes about doing his/her job. Although Bloom refers to the camera as "a dumb gadget in the hands of a creative person" that "merely forms a part of a chain of events which leads to an image" (Bloom 1994:19), how the camera operates, its limitations and its capabilities influence the photographs that appear in the newspaper when it goes to print.

However, a study undertaken by the Associated Press Managing Editors Photo/Graphics/Design Committee in conjunction with the Poynter Institute and the University of North Texas Department of Journalism in order to determine the effect of new technology on the photojournalists' role, found that three quarters of the respondents believed that "digital photography has not changed the type of pictures the photographers shoot" (http://poynter.org/centerpiece/021601APME.htm). Those respondents that did believe there had been a change in pictures believed that it was due to the lack of latitude

for exposure and the learning curve for digital cameras that were the cause of the change. Russial and Wanta (1997) agree saying that shooting digital is akin to shooting colour transparencies in that they are less forgiving than colour negative and photographers must therefore pay greater attention to correct exposure and lighting.

The same Poynter study revealed that other changes to the work routine brought on by the use of digital cameras included additional time that could be spent in the field shooting and the modification of deadlines due to the elimination of processing time and the submission of photographs from the field.

Some of the other implications of the new digital technology found in this study were that the technology allowed the professional roles of both the photojournalist and the photographic editor to evolve and expand into positions of greater authority, with more control over the use of images. It goes on to highlight the importance of this as it breaks from the service department mentality that has been associated with photographic departments in the past.

It is important that the basics of good journalism should not be sacrificed or overshadowed by the use of new technological tools and, according to the study, strict guidelines should be put in place in order to avoid the altering of content. The conclusion is that the change to digital has occurred and the working roles of photographic staffs have successfully adapted without sacrificing content.

Although a successful transformation to digital has been the conclusion of many investigations, these have not covered the increase in workload to photographic departments with the shift to digital processing, that has been revealed by Russial (1998). Russial's study concluded that the technology has enriched and enlarged the job at the same time. It has increased photographers' flexibility and autonomy in working with images but has made photographic work more routine and has lead to a greater priority on production. Russial (1997) goes on to ask whether greater responsibility for production oriented tasks limits the time photojournalists have to spend on journalistic tasks, perhaps adversely affecting quality. Shooting photographs still takes up the greatest part of a photographer's day but according to Russial's research, the "highest ranking task after shooting was 'working on a computer'" (Russial 1997:7). This included tasks such as editing, archiving and scanning.

Some other more technical changes that photographers have to consider are presented by Andrews (2000) when he points out that photographers have to adapt ways of shooting to account for the limitations of digital sensors. He says that shots have to be tighter as low resolution sensors allow little room for creative enlargement and cropping, and "adjustments have to be made to angle of view calculations because of the 'apparent' increase in lens focal length due to CCD arrays being smaller than a 35 mm frame" (Andrews 2000:14). He mentions that the lower ISO ratings of the digital cameras means that the photographer has once again become dependant on portable light sources to ensure that the CCD sensors receive enough light. Most importantly, however, Andrews states that more and more of the editorial decisions are being made at the point of

shooting rather than back at the 's desk, and only a fraction of the images shot at an event are being kept, eliminating the opportunity for the re-use of "out takes" at a later stage as the story develops.

Cooper (1994) mentions that some digital cameras have been equipped with microphones to allow for voice captions or note taking during shoots. Another advantage of being able to transmit from the field, he adds, is that there is no longer a need to try and smuggle film cassettes past security police as images can be viewed and edited on a laptop and transmitted via a cell phone to distant destination.

In a later article Cooper (2001) focuses on the problem of gatekeeping pointing out that, in the past, photographic editors performed a gatekeeping function by editing copy and pictures before publication. The advent of digital photography now meant that it was easy to transmit copy and images straight to the page designers, sidestepping the picture desk especially if the images are of an event occurring close to deadline. The role of the gatekeeper is thus eliminated.

4.4 Changes in the role of the Picture Editor

The Poynter, AP, University of North Texas department of Journalism study mentioned in the previous section found that the photographic editor is seen as a "key-player" in the newsroom "with complete decision making authority"

(http://poynter.org/centerpiece/021601APME.htm) and his/her role has become that of a neo-renaissance job which has grown to encompass a plethora of duties.

The report goes on to say that eighty percent of the respondents cite that, since the conversion to digital, planning a visual strategy in cover stories was the primary role of photo editors, with photo editing for the newspapers as a secondary role. Other tasks that make up the job include making photo assignments and participating in budget meetings.

Seventy percent of the respondents to the Poynter study agree that the use of digital imaging is the major force of change in the working role of the photo editor.

Russial (1998) found that the shift to a computerized news production process has increased the photo editors' control but has limited the amount of time that they have for journalistic tasks and, in effect, has thus changed the nature of editing work. Despite opinions to the contrary found in other reports, Russial's study also found that, because photo processing no longer had to be done in a conventional darkroom, concerns were raised that news editors might assume the responsibilities for image handling and, in the process, that photographers might lose some autonomy and control of their images. Throughout the study, the greater flexibility and control of images, which results from the move to digital, is mentioned as a reason that the photo editor is willing to accept greater production responsibilities and greater routinization of his/her work.

Still another opinion is offered by Dirck Halstead (1998a) in the *Digital Journalist* where he says that digital photography threatens to reduce the power of the photo editor as the photographer can take the photographs and transmit his or her own selections to the newspaper thereby eliminating the photo editing that would have been performed on all the photographers negatives by the photo editor . Halstead (1998b) also expresses concern over the loss of the mentoring process that takes place between photo editors and photographers if current trends continue. It seems that the aforementioned digital process, which distances the photographer from the photographic editor, would add to this situation.

4.5 The Advantages and Disadvantages of Digital Imaging

Many of the advantages and disadvantages of digital imaging have already been explored in the previous sections of this chapter. It is, however, worth reviewing and extending the list in order to understand fully what implications the switch to digital may have on the *Sowetan* photographic department and the newspaper itself.

Ang (1996) lists the advantages and disadvantages as follows:

Advantages:

- The image is available for viewing without chemical processing provided viewing equipment is available.
- The image is immediately available for transmission through modem or satellite.
- The same photographic techniques apply as with analogue equipment.

- Image storage is very compact, hundreds of images may be stored on a hard drive the size of a calculator.
- The colour balance is easy to adjust without the need for correction or balancing filters.

Disadvantages:

- The basic equipment is very costly.
- Ancillary equipment such as computers and monitor screens are also expensive.
- Short-term memory storage for images is costly.
- 'Image noise', the equivalent of photographic fog, is present and gets worse in hot weather.
- Equipment is less robust and more susceptible to cold and moisture than film based kit.
- Exposure needs to be more accurate than with colour negatives and is comparable to working with colour transparencies.

Victorin and Shadd (2001) add a few more concerns including simply the fact that the camera is more complex than in times past and that may lead to difficulties. The characteristics of the lenses also have changed adding one more challenge to overcome in the pursuit of visual reliability.

They also express concern about the chance that the editing atmosphere may be compromised due to the faster technology and just as much time should be spent editing

the images. Subtle differences in images are more easily missed on the monitor than on the light table so as many images as possible should be enlarged and examined. Being unfamiliar with the image software may lead to problems which can be avoided by proper training.

4.6 The Introduction of the New Technology and the Training of Photojournalists

As technology changes the roles of the professionals, in this case photojournalists, so training must change in order to ensure that students are properly prepared to take on the tasks that the profession expects of them. The study mentioned in 4.4 above (http://poynter.org/centerpiece/021601APME.htm) found that fifty-three percent of the respondents agreed that university-level photojournalism programs are not addressing the issue of how photojournalists should be trained and educated.

Russial and Wanta (1997) conducted a national study in the USA that looked at technological change in newspaper photography and the implications that it had for the training and hiring of photojournalists. The study concluded that new technical skills, including the use of digital cameras and the web, were growing in importance. The shift from chemical to digital processing has meant that photo editors have a relative lack of concern about the need for darkroom skills and yet many journalism programs continue to focus on these skills. Skills that reflected the convergence of photo jobs with others within the newsroom, such as design and graphics were, according to the photo editors,

growing in importance. The study also found that skill with video, which reflects cross media convergence, was unimportant at the time of the study and only slightly more important for the near future.

Kuntz (2001) offers advice for the introduction of new technology into the newsroom, with specific reference to visual journalism. He comments that there is a fear among visual journalists that new technology will ruin photojournalism, and that control of the image will be lost in the process. He states firmly that "education of the photographic and newsroom journalists is essential to becoming a technologically advanced newspaper" (Kuntz 2001:1).

Kuntz (2001) suggests an expert on the staff should be put in charge of the project to phase in the new technology. This person should have a good understanding of both the new technology and the newsroom and should set goals and responsibilities taking both of these into account. Teamwork between departments is also suggested as a must to integrate new technology.

In order to negotiate the way around problems that might occur, Kuntz advises that a visit to a similar newspaper that is already using the equipment should be made whenever possible as it is unlikely that the technology will work properly the first time it is installed. It is a good idea to learn from the other newspapers' experiences, and to follow a picture through the system to ascertain just how the workflow is likely to change

The calibration of the new equipment to the newspaper's specifications, including the tracking of pixels through to output, is time consuming but necessary in order to ensure good reproduction.

Only after the equipment has been tested and proven reliable and those in charge know how it will be used in the daily operation does Kuntz (2001) suggest that the training of the staff is undertaken. He warns against giving the staff a new digital camera without any training and expecting everything to flow smoothly. He suggests training a group of "superusers" to help in the training of employees, usually those who are in control of major points of workflow, which in the case of photography, is the picture desk and photographic editors. Training should take place in small groups of two or three. Job descriptions should be updated and there must be a realization that training employees on new technology is an ongoing situation which does not cease after the initial training classes.

He stresses the importance of communication during the training process, between the users of the new equipment and those that receive the output from the new technology.

Importantly Kuntz (2001) advises having a backup plan. He suggests running dual systems while new equipment is being phased in, so that if it fails a paper can still be produced.

4.7 Conclusion

This chapter has given a basic explanation of the workings of a digital camera and how it might be used in the field of photojournalism. A more in-depth look into digital technologies' integration into newspapers has been presented and the significant changes as a result of the integration have been highlighted. The positive and negative implications of digital photography for both the photographer and the photo editor have been stated, and opinions about future implications including the effect of the faster, more complex technology on photojournalism, offered. What digital has meant for the training of photojournalists is also covered and advice on how it might be properly executed is offered.

One may conclude that, although digital technology has been welcomed because of it's obvious advantages and is being used increasingly more widely, there are many areas of uncertainty and many worries about the direction that digital photography might take the industry.

Chapter 5: Manipulation in Digital Photography

Introduction:

As discussed in Chapter 4 there are concerns about the direction that the introduction of digital photography will take the industry especially with regard to the manipulation of images. This chapter will attempt to show that the manipulation of photographs is a practice that has always been a part of the profession and will continue to be a part for years to come. It will explain how digital technology has made the manipulation of photographs easier, and raise concerns about the fact that manipulations are virtually undetectable. Taking these concerns into account a view of the future is offered and suggestions made about the regulation of manipulation.

5.1 Manipulation of News Pictures

Manipulation in photography is not a new thing. As Grundberg puts it, photographic images "can no longer purport to be innocent witnesses devoid of intentions" (Cited in Wright 1999:162). Every image captured is taken from the point of view of the photographer at a specific time, from a specific angle with a specific lens, film, shutter speed, framing, focus and depth of field. All these factors can be altered and, lend to the meaning of a photograph before it even reaches the darkroom, chemical or electronic.

People in the nineteenth century believed the photograph to be an image that represented the truth. They did not seem to recognize, as Bossen (1985) points out, that the recorded image was optically filtered and chemically produced. The same scene recorded through different lenses with different films, chemicals and papers may look only slightly related. Similarly the image that appears on a computer screen has been "mathematically filtered" (Bossen 1985:23). If the mathematical model changes so too does the image that emerges on the screen.

Although the belief that the photograph is a representation of truth has always been flawed, "it remains for most people even today an operational belief" (Bossen 1985:23). It has given news photography a credibility that stands to be lost with the mis-use of digital manipulation.

According to Lazaro (1997) burning, dodging, colour enhancement and cropping have been accepted forms of making photographic meaning in the chemical darkroom, but retouching, bleaching, negative composites and deleting or moving elements are seen as changing the denoted meaning and thus deviating from accepted codes of production.

Neri (2001) states that computer manipulations can lead to disorder and can cause distortions in history. However, she is not concerned as she comments that laboratory techniques had been introduced before digital technology, that allowed one to touch up the image according to one's needs, and due to the publics dislike of such manipulation, the practice of digital manipulation is bound to disappear.

5.1.2 With the Advent of Digital Technology

The electronic darkroom was not developed with the manipulation of photographic images in mind. According to Bossen (1985) the main function was, and still is, to process and distribute photographic information at greater speed. A secondary result of this development is that images can be enhanced or degraded through operator manipulations. The function of image enhancement is to replace degraded, but not missing, information.

However, as Bossen (1985) continues, as the electronic darkroom replaces the conventional darkroom, there is an increased ability to shape raw information into a structure that looks objective on the surface but in fact is not. Computers can be used to create images indistinguishable from real photographs, that never existed in the real world. The more fine tuned control offered makes it possible to remove, pixel by pixel, a single hair off someone's head. "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" (Bossen 1985:28).

The retouching that used to be done in a chemical darkroom need not be done by a skilled photographic practitioner as once was the case, but by anyone in the newsroom with a basic knowledge of the computer software used in the department. It is this ease of manipulation, and the fact that if they are done carefully the changes are, according to Gottlieb (cited in Cooper 2001), virtually undetectable, that worries practitioners.

Wright (1999) is concerned that the traditional mode of delivery, from the photographer to the picture desk is no longer appropriate as images come down the line "with little opportunity for the photographic editor to check whether the image is genuine" (Wright 1999:164). Virtually anyone may make these undetectable changes at any point along the line.

Hall Buell (in Bossen 1985) assistant general manager for news photos at AP involved in overseeing the development of the AP's electronic darkroom, argues that ethics are not determined by the tools that are used, and they will not lead to either a reduction or improvement in ethical standards. He likens being able to operate an electronic darkroom to having the skills of an airbrush artist, and the option of hiring an airbrush artist to change elements in a photograph was always open. Bossen (1985) comments on the statement saying "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" (Bossen 1985:30).

5.1.3 Implications for the future

In order to circumvent the problems foreseen in the previous section it is, according to Cooper (2001), necessary to identify the problem areas and consider new ways of operating. He suggests transmitting all the images that the photographer captures as opposed to only sending a selection and deleting the rest on the camera in order to rescue images for permanence, although this may be too time consuming in reality. He also

suggests educating photojournalists for the gatekeeping roles that they will have to perform while shooting and before transmitting.

It is naïve to think that digital manipulation will not be used by respectable publications since Cooper (1995) points out that magazines such as *Time* and *National Geographic* already use digital manipulation regularly. This may lead to a situation where the public no longer recognizes images as the truth, knowing, as Cooper (1995) puts it, that photographs now can be freely dismantled and seamlessly reassembled via digital manipulation.

It is common practice for the front page of magazines to be touched up digitally and, according to Lester (1991), editors argue that this can be done as the image is designed to attract the potential buyers' attention just like an advertisement. Lester (1991) asks what the result might be if newspaper editors treated the front page of the newspaper in the same manner. It could be said that the truth could be altered in such an instance, by an editor who considers the front page to be the sales tool it essentially is. Lester (1991) identifies similar pressures that could be felt by art directors to show results after the installation of retouching systems that could cost millions.

In order to combat unethical retouching, Cooper (1995) suggests that a focused ethical skeleton surrounding digital manipulation be put in place to rescue the credibility of news images before it is too late. The National Press Photographers of America Association, has an ethical code that has been tried and tested through the embryonic period of digital

manipulation in the United States and perhaps this could be used to build up an ethical code that may assist photojournalists in their decision making on a daily basis.

5.2 Conclusion

This chapter explained that although the common belief is that photographic images are exact representations of the truth, manipulation of photographs for both the changing of meaning and the improvement of aesthetic appeal has existed as long as photography has existed. This said however, the added ease in manipulation of images is considered a secondary result in the development of digital photojournalism. Different concerns are raised, and the direction that digital manipulation may push the industry is discussed.

Chapter 6: Research Methodology

Introduction:

This study aims to establish how photojournalism practice in the photographic department of the *Sowetan* has changed. Shifting responsibilities, the disadvantages and advantages of digital, the change in structure of the department, and any other difficulties that have been experienced are investigated and considered, in order to answer the research questions asked in the first chapter.

1. How has the practice of photojournalism changed at the *Sowetan* with the introduction of Digital Cameras
2. How have the roles of the photojournalist and the photographic editor changed.
3. What problems were encountered by the *Sowetan's* Photographic department in the conversion to Digital?

6.1 Qualitative or Quantitative?

The decision had to be made as to which research discipline would be used to extricate the information that would answer the research questions. First an understanding of what each discipline comprised would have to be acquired before deciding which was better suited to the research topic.

According to Denzin and Lincoln (1994), qualitative research is multimethod in focus and it involves an interpretive, naturalistic approach to it's subject matter. The attempt is

made by qualitative researchers to study things in their natural settings in order to make sense or interpret phenomena in terms of the meanings people bring to them. It involves the studied use and collection of a variety of empirical materials including case study personal experience, introspective, life story, interview, observational, historical, interactional and visual texts. Qualitative research stresses an "intimate relationship between the researcher and what is studied and the situational constraints that shape inquiry" (Denzin & Lincoln 1994:4).

Quantitative research on the other hand according to Bryman (1984), is depicted as an approach to the conduct of social research applying a natural science approach to social phenomena. Operational definitions, objectivity, replicability and causality are all terms that preoccupy the methodological literature of quantitative research. The social survey is therefore considered the preferred instrument of research in this tradition, as it is able to produce results in line with the aforementioned concerns. However, in order to form the survey the researcher has to be aware of the particulars that need investigating in the research area. Qualitative research "emphasizes discovering novel or unanticipated findings and the possibility of altering research in response to such serendipitous circumstances" (Bryman 1984:78).

Due to the minimal amount of research in South Africa on topics related to that of this thesis, any research done would be exploratory in nature. Thus a qualitative approach was preferred. The qualitative research techniques employed were participant observation as well as the interviewing of key informants.

The interviews attempted to record how the switch to digital was made by the *Sowetan*, the kinds of problems that were encountered, how these problems were overcome and what sort of future problems the interviewees anticipated. All of these issues either took place before the researcher arrived at the newspaper or will take place after he has left. This information could therefore not be gleaned from simply observing the journalists at work. Interviews also allowed the researcher to investigate more fully the reasons for certain behaviour of the journalists as well as identify other areas of interest.

Participant observation was suited to this research as it allows the informed researcher who is aware of background issues and basic areas of research interest, to glean data, as Hansen (1998) puts it, with "the help of a theoretically informed and selective process aiming for valid interpretations and findings of possible wider generalisability" (Hansen 1998:37). At the same time the researcher is able to pursue unforeseen lines of enquiry that he was not made aware of in his background research, which may result in revised understandings. Preliminary research at the *Sowetan* over the period of a week, also gave added insight into other lines of enquiry that might yield interesting data.

6.2 Participant Observation:

Wimmer and Dominick (1991) support the idea that field observation can provide data rich in detail and subtlety and can allow the observer to identify variables that might not be exposed with other methods. In this project, unstructured interviews with the picture

editor and staff photographers were then used to give context and meaning to the observations.

The research involved shadowing the photographers throughout the digital process from capture to the loading of the images onto the *Apple Mac*.

The photographic editor was observed carrying out his daily duties, including the assignment of stories, the editing of images, and the location of past images from archive.

Notes were made while accompanying photographers on assignments of issues that should be raised at the interviews or at another suitable time, if the photographer could not be approached at that moment. For most of the time, photographers were able discuss and explain their behavior while on the assignment as opposed to the photographic editor who was mainly only able to answer questions during interviews whether planned or impromptu. This meant that, as the research project progressed, the list of issues to be raised with the Photographic Editor had to be updated continually so that interviews could be conducted whenever he had time.

The ability to observe both the photographers and the Photographic Editor in real working conditions allowed first hand knowledge of the way in which the shift to digital technology affected their work patterns to be obtained. Had interviews alone been used to obtain the information, it might not have been as accurate since, as Fielding points out, respondents in an interview might try to give "those answers that they anticipate the

interviewer wants to hear" (Fielding cited in Gilbert 1993:139). These answers might not truly reflect their behavior when under the pressure of having to perform on the job.

Hansen et al (1998) suggest that the success of the research depends on forming useful and informative relationships. It was therefore necessary to gain the trust of both the photographers and the Photographic Editor. As a result, the interviewees were more frank and open in their answers to the interview questions than might have been the case if this had not happened.

6.3 The Research Interview

The research interview is "flexible, context-sensitive, and dependant on the personal interaction of the interviewer and interviewee" (Kvale cited in Cass 1998:27). The interview as a choice of research technique, gives a more detailed investigation into the topic. It complements participant observation and allows a certain amount of triangulation "to achieve broader and often better results" (Fontana & Frey 1994:373) than a single research technique could yield. It not only facilitates the identification of facts but also allows cause and effect relationships to be explored and opinions to be sought in order to supplement observations made in the field. The research technique is more qualitative in nature and although this fact will not allow sweeping generalizations it may allow the pin pointing of certain problems through investigation.

The interviews took place along the guidelines offered by Fielding (1993) which suggest that interviewers have a list of topics that they want the respondent to talk about but the

interviewers are "free to phrase the questions as they wish, ask them in any order that seems sensible at the time, and even join in conversation by discussing what they think of the topic themselves (Fielding cited in Gilbert 1993:136).

In this research project, a certain amount of time was allowed for a comfortable relationship to be established between the interviewer and the interviewees. This also allowed for the discovery of points of interest as the subjects were observed at work, that could then be raised in the interviews.

It is important to point out that the object of the unstructured interview was "to find out what kinds of things are happening rather than to determine the frequency of predetermined kinds of things that the researcher already believes can happen." (Fielding cited in Gilbert 1993:137) As there were no other South African studies which will allow a comparison of findings, the research was more investigative in that respect and similarities and differences to European and American situations were searched for and commented on.

6.4 Selection of Interviewees

The following people were interviewed on a more extensive basis:

- The photographic editor. Paul Velasco started transforming the *Sowetan*'s photographic department into an all-digital department soon after his appointment to the post. He was able to answer questions about the structural, economical, quality, staff and gatekeeping changes, that have been a result of the introduction of digital photography. He was also able to supply a view of the future.

- The head photographer, Patrick Seboko, is the most experienced of the photographers on the staff of the *Sowetan*. Seboko's input was sought as he was shooting for many years before the change and has therefore experienced first hand the problems and advantages of digital.

- Two staff photographers, A. Mushave and C. Lekanyane were interviewed in depth in order to establish the normal photographers opinions about the new technology in its every day usage.

Other photographers in the department were also interviewed, but not as extensively as the above subjects.

All of these interviewees were accessible as they are on duty most days of the working week.

Each of the interviewees could offer a slightly different perspective on the same topics. As photographic editor, Velasco could offer his experience of the pressure exerted by management to save money and still offer excellent performance. At the same time, he was still able to give insight into the situation as a whole as someone who has to ensure that the department works and as someone that has had experience shooting with digital for *Associated Press*. As senior photographer, Seboko gave an account that contained both elements of the photographers' experience out in the field and the experience of ensuring that other parts of the process back at the office ran smoothly. Photographers were able to reflect upon the experience of actually using digital cameras on assignment.

6.5 Research Interview Procedure

The interviews were conducted by following guidelines which were focused on certain themes that presented themselves as issues worth investigating in background research. A more open ended approach was used when asking the questions in order to allow the interviewees to talk more about the issues that interested them, or that they deemed most important. Some specific questions were put to all those interviewed in order to compare their responses to the research done on the shift to digital that was experienced by newspapers in the United States and Europe.

Because it was difficult to determine when exactly a photographer would be free to do an interview, any free time was utilized to ask the questions and, typically, interviews would take place at the *Sowetan*, in the car on the way to an assignment and at quiet times during the assignment. Very often impromptu interviews would take place in the middle

of the photographic department as photographers arrived back from, or were on their way out to assignments. Opinions would be offered and points debated as the different photographers became involved in the conversation.

On assignments photographers were questioned as to their behaviour either as soon as the incident that was to be queried occurred or as soon as possible afterward. All the while their actions were compared either to the analogue photographers from other newspapers that were often shooting nearby or to my own actions as I covered the event with an analogue camera.

6.6 Areas of Concern in Methodology

A possible problem in the research could be that some of the interviewees do not speak English as a first language. This might have an effect on the interviewee understanding the questions and on the interpretation of their answers. However, as the photographic editor's mother tongue is English and, as English is used to communicate his ideas throughout the department, it is doubtful that this was a problem of any significance.

There is also the question of the professional image of the newspaper and the interviewees needing to maintain that image at all costs. It might be presumed that being the first newspaper to take the risk of going digital there might be a feeling that the decision should be defended even if it was the wrong one to make. However, interviewees' honesty about the downside of the decision lead the interviewer to believe that the subjects interviewed were fairly objective in their responses to questions.

Chapter 7: The Introduction of Digital Photography

Introduction:

This chapter contains the findings of the research undertaken at the *Sowetan*. It gives a brief introduction to the beginnings of the use of digital photography by photojournalists in South Africa, and goes on to describe its introduction to the *Sowetan*. The problems that were experienced by the *Sowetan* are described by the photographers and the photographic editor, and key areas of interest are explored. The changes in the roles of both the photojournalist and the photographic editor are discussed and a view of the future is offered by the photographic editor.

7.1 The Introduction of Digital to South Africa

Cooper (2001) states that during ongoing research in South Africa he has found that the media are relatively naïve about the pitfalls inherent in the new digital media and are relatively unprepared to cope with the complex new digital world. According to Cooper, the reason for this is the high cost and lack of available digital cameras for professionals. This situation is then compounded by a lack of access to information about the mistakes made in the past by western professionals and what was done to resolve the issues.

Before any photographic departments in South Africa had considered changing to digital, many photographers, specifically those working for AP and Reuters, started the journey towards digital photojournalism. Paul Velasco describes how, in the early days photographers staying in hotels while on assignment, "Had to make a darkroom out of the bathroom and make a print," before transmitting each print using the drum scanning and transmitting process.

> It would take between 21 and 25 minutes later if you were lucky before the first picture went through. If there was a slight hitch .you have to resend the whole thing again. It was like a nightmare.

Velasco describes the introduction of the Leafax, which "was basically a negative scanner and transmitter" in a large sized briefcase, as an improvement as one only had to process the colour negatives before scanning and transmitting could commence.

Developments happened rapidly over the next few years, the 'wires' always leading the way in the digital field as Velasco describes. He continues, " By 93, 94 I bought my first little negative scanner ... it would take ten minutes to scan."

7.1.1 The Sowetan's Experience of the Introduction of Digital Photography

Velasco arrived at the *Sowetan* in October 1998 with four to five years of experience with digitizing. He describes the beginnings of digital photography at the *Sowetan*:

> *So when I arrived here and saw the print machine, I switched that off ... bought two little R10,000 scanners ... guys would come in, put the negs in sleeves and I would then dot the pictures I liked and the guys would just scan them, usually about five or six scans.*
>
> *Then along came digital cameras... We were spending a hell of a lot of money on film and a hell of a lot of money on processing, that processor was costing us a fortune. I investigated digital.*
>
> *At the time the units were 80 000 bucks (*Rands*) each so we bought thirteen.*

The department was equipped with 9 *Apple Macintoshes, Photoshop* and other software to manage the archiving and the loading of images and a laptop computer.

This took place in 2000, by which time most of the big newspapers in the United States and Europe were already fully digital. As stated earlier, Russial and Wanta

(1997) recall that digital imaging became widely used in the US newsroom in the early nineties, even though the first photographs had been digitized for use in full-page assembly and output in the early eighties.

Although Russial and Wanta (1997) commented that both wire services and newspapers experimented with digital cameras in the late eighties and early nineties, cost and quality considerations restricted their use to coverage of high profile news events. The situation was different for the *Sowetan*.

> *By the time I made the decision the quality was there. By the time we were on the bandwagon with the DCS 520 ... the quality was fine ... I knew immediately it was the way to go at the time. It was the state of the art, very expensive.*

The expense of the switch was a cause of concern for the *Sowetan* and a plan was drawn up regarding the purchase of the eight Kodak DCS 620's (Nikon body), three Kodak 520's (Canon body) and one Kodak DCS 720x (Nikon Body).

> *The digital cameras belong to us ok. They've (management) got a special scheme that they've arranged with the photographers. There are tax implications that are beneficial to them because of this scheme. They pay us a set amount to use the cameras on their behalf. So lets say the repayments on the cameras are R3000 a month including insurance, they pay for that. So once the cameras are paid off we*

keep getting it (the R3000), but we should invest it in another camera. It's like a camera allowance. It's a very good scheme.

The advice that Kuntz (2001) offers, mirrors to a certain extent, how the introduction of digital cameras at the Sowetan occurred. The expert in charge of phasing in the technology that Kuntz (2001) suggests be put in place, was in fact Paul Velasco the Photographic Editor.

"Call me a super- user or whatever, I knew that camera backwards."

The introduction of the cameras was not as structured as perhaps Kuntz would recommend. The Photographic Editor and, later, the senior photographer could be approached at any time about problems with the camera itself and people named the "scanners" who are situated in the photographic department, could be approached with any problems that photographers might have with the operation of the computers. The main use of the computers for the photographers is in the captioning and downloading of photographs. This was a necessary situation as many of the photographers cannot read at a level necessary to fully understand the instruction booklets provided with the cameras. Mushave commented that some of the photographers did have, and still do have, problems downloading their images to the computers and suggested that their underprivileged background might be the cause of this.

Although Velasco was available at the disposal of the photographers in order to assist the photographers in learning how to operate the cameras effectively, he expressed disappointment as he believes that the cameras are still not being used to their full potential. He believes that the photographers see the camera as a means to survival not as a way to win photographic awards. He suggests that perhaps the cameras are not looked after as well as they could be due to that reason.

Kuntz (2001) also suggests a visit to a newspaper already using the technology. Unfortunately this was not possible for the *Sowetan* photographic department as it was the first of its kind in South Africa to attempt the conversion. Despite this, the photographers point out that there was only a short period where both digital and analogue were used simultaneously in order to backup for mistakes made while shooting in the new medium.

7.2 Problems Experienced at the *Sowetan* During the Shift to Digital

Expectations were that although the *Sowetan* had the advantage of being able to learn from the mistakes of those overseas who had already been down the digital path, many of the problems that they would experience would be similar to those mistakes discussed in previous chapters. Velasco however, expressed great frustration that the biggest problem was the amount money which needed to be spent on repairing cameras that had been expensive to buy in the first place.

> *Everything went hell of a well for about a year or two and then we started having the problems.....There is not a single camera that has gone out that hasn't had a (repair) quote for between ten and forty thousand. You gotta take more care with digital cameras, that thing there is not just a camera, it's a camera with a Macintosh in it. You gotta understand, it's a computer and you don't use computers in the rain. They are brilliant when they work.*

> *I am at that stage where I get depressed daily about the cameras... they need a lot of servicing. You reduce costs ... but they (management) get used to it and then when one year you have a lot of repairs... (shakes head).*

> *If any photo department is just starting (with digital) I would take two or three guys and send them for training and open a little desk, and that would be the camera servicing desk. I recommend that highly.*

The cameras used at the Sowetan were considered to be the first digital single lens reflex cameras that could be effectively used by photojournalists in their day-to-day assignments. Months later other similar digital cameras were produced and were at least cheaper than the Kodaks. Velasco admits that:

> *It was borderline a mistake, I should have maybe waited a year and bought the D1 for 40 000.*

Whenever an opportunity presented itself on assignment, photographers were observed deleting unwanted images on the back of the camera. When queried about this pre-editing Velasco commented that:

> *It shouldn't be an issue because each photographer should have more than enough disks (memory cards) with him. My guys don't.*

Velasco said that the reason they did not have enough cards was that the memory cards are either too expensive or the right cards were not available.

Both Velasco and the photographers also identify a problem regarding the different magnification of the lenses when attached to a digital camera. Wide-angle lenses approach a more standard 50 mm lens which means that photographers have to adjust the manner in which they shoot certain news events. They all claim however, to have adapted, and are now used to the change.

Another point raised by Velasco was the photographers' difficulty captioning photographs.

> *I do (expect my photographers to come back and write captions) but they can't spell. They can't write. Writing captions is an art in itself*

When asked if the microphone on back of the camera placed there specifically for captioning purposes had altered the situation at all, Velasco answered:

> *I would use it all the time. I don't think my guys use it.*

Patrick Seboko, senior photographer, claims that some difficulties that the *Sowetan* photographers experienced when learning to use the computers at the newspaper stemmed from the fact that very few, if any, of the photographers owned a computer. This means that photographers are not able to view their own photographs after work nor become proficient with the available imaging software. At the time of the research Seboko did not have a computer at home and commented that the storage and management of personal images was a problem for him, however, he said that during his career he had had to use computers enough for the shift to using them for the handling of images on a daily basis, not to be a major problem.

According to Peter Mogaki (*Sowetan* photojournalist), the photographic department experienced only two to three weeks of technical problems after the introduction of the digital cameras before the department started running smoothly.

7.3 Archiving

Velasco believes that, when converting to digital, the way in which images are archived is one of the greatest challenges that a newspaper will have to deal with. A large amount of his time as Photographic Editor seemed to be taken up by journalists from different sections in the newspaper approaching him in order obtain images from the archive. In each case the required image was located in a few minutes by entering key words and sorting through the available images of the person or event required.

> *When we were scanning from film we were doing 20 to 40 pics a day to the database, it's a lot of scanning, today we captured 200 digital pictures to the database, because we have 13 digital cameras.*

> *You now gotta store all that shit. You gotta have the preparation. You need to have an archiving system that is foolproof, ready to rock and roll. Things are very cool for us because we were prepared, I had the vision. If you come with digital you had better know how to manage it. And that was done and we are sitting now with over a hundred thousand images.*

Other newspapers are burning to CD Rom. Okay so say they need a certain picture, they search for the number... disk 5987/4320... then walk to the library and search for it (the corresponding CD).

So it's made it a lot easier for us because we were ready. If you are not ready you are not going to crack it.

If you go digital, be ready to manage that increased amount of digital images. We've got an archive, we've got something like a hundred gig on hard drive ... on a server... and we back that up with tape. (The photos) are backed up two times at the Sowetan. All protected by firewalls.

Pierce (2001) raises the concern that digital mediums and formats are constantly being outmoded with the result that images are being lost. Velasco, however, responds that the *Sowetan* has not experienced this sort of problem yet due to their late entry into digital. Velasco explains that in order to prevent that situation or something similar from ever occurring he keeps up with current trends.

Do you know what I do? I keep an eye on what the wires are doing. AP and Reuters. They are my kind of guiding light.

Although the Sowetan photographic department occupies the same office space as it did when they were analogue, Velasco points out that the conversion to digital allowed them to convert an upstairs darkroom into a photographic studio.

7.4 Immediate Transmission

Patrick Seboko recalls how, in the past, photographers would hand their films to highly unreliable taxi drivers, pay them a fee, and ask them to deliver film back to the *Sowetan* before deadline while they continued to shoot wherever the story was occurring. It is now possible for photographic images to enter into a global information and communications system as soon as the image has been captured as they become instantaneously transmissible in the form of electronic pulses and are able to pass along telephone lines and via satellite links.

Velasco mentions the obvious time saving advantages of being able to transmit images digitally, meaning that the newspapers can be out on the street within and hour or two of the image being captured, and recalls how this was the case at the last Olympic games. He does not believe, however, that the *Sowetan* takes advantage of this situation unless it has to.

In the third world here we lack the money and motivation, it's a team thing.

A matter of concern for Velasco is the fact that the photographer is often the only person amongst those reporting on an event to have witnessed it first hand (cf O'Dowd, 1996) yet the photographer then has the responsibility to select images to represent the story properly:

> *Ethical journalists want to be as accurate as possible and tend to be so when called upon. The moment of a day's task does not allow time to try and be creative with the message sent out by the images selected.*
> *Ultimately I expect a photographer to have a selection of several images of an event that in his opinion best tell the story of the event - from there, the would select the image that in his final opinion would be placed in the paper. However consultation and other opinions are part and parcel of the selection process at least wherever I would work.*
> *One person is not always right.*

Senior photographer, Patrick Seboko, spoke of an ideal situation where every photographer had his own laptop and was able to shoot 'off beat' until receiving an email or call with an assignment and hardly ever having to go into the office. At the moment he says that the laptop is used on average once a week to transmit images mostly of weekend sport.

In the working week over which the research was conducted, the transmission of images from the field was not witnessed. This was probably because transmission from the field

mostly occurred in relation to weekend soccer games at a location far from the newspaper.

7.5 Digital Manipulation

As stated previously, one of the major concerns in the digital era of photography is that digital manipulation will become the norm and photojournalism will lose integrity and credibility. Lazaro (1997) stated that burning, dodging, colour enhancement and cropping have been accepted forms of making photographic meaning in the chemical darkroom, but retouching, bleaching, negative composites and deleting or moving elements are seen as changing the denoted meaning and thus deviating from accepted codes of production.

As also noted earlier, Bossen (1985) argues that the function of image enhancement via available software packages is to replace degraded, but not missing, information.

Paul Velasco's views on the subject of manipulation appear to be the similar when considering a current news picture, but they differ with regards to other photographs. He has embraced the capabilities of the software packages in order to arrive at a visually appealing image provided that the photograph does not depict a current news event.

> *I generally try not to move objects in pictures but if you are running a poster, a big poster, of Benni Mcarthy, you got Benni in action you got the ball, but for the poster to work you are cutting off half the ball, why can't you move that ball?*

I will not tamper with a news photo. But if it's a photo about a future event with Mbeki, that I've pulled from an archive... and there is a little pipe sticking out his head, hasta la vista pipe. If it is a new news pic, no. If it's a topical current picture, it's happening, I won't even touch it.

I would do nothing to an image that I can't do in the darkroom. If you manipulate with what that picture is telling you, if you change the message of it, that I would never do.

Paul Velasco agrees with Hall Buell (in Bossen 1985) who argues that ethics are not determined by the tools that are used which will not in themselves lead either to a reduction or improvement in ethical standards.

That's media for you. In my experience I recall several incidents of such a nature during the apartheid era. One that stands out was a Mass Action march which was relatively peaceful despite a massive police presence. A drunk ambled into the march and was swiftly sent packing by the protestors towards the police who in turn apprehended the chap who was seriously wobbling. Of course being inebriated he protested and pulled. By then three or four police had arrived and they whisked the lush into a van. Those pictures were shot and sent onto the wires because they were dramatic in a dramatic period, at an event that was peaceful. The true mood of the protest was distorted by an isolated unrelated incident. The bigger the story the bigger the pressure to produce something exclusive and that

is where the morality of a photojournalist will be called into count. In the above incident my editor at the time (Ulli Michel, Reuters) moved the picture but I insisted that in the caption must be included that the man was drunk. After all there were so many images in that period of cops apprehending people that to 'bullshit' in the caption would bring my integrity and that of who I work for into question.

Ultimately its an individual's conscience that dictates and that, alas, we cannot dictate....

The photographer's role is imperative in upholding the truth of the image. And once you find a bullshitter you become aware, and hasta la vista baby. Bullshitting photographers and Photo Editors would not last long in a job.....

7.6 The Latitude Offered by Digital

Research done by the Poynter institute indicated that, if indeed there was a change in the type of pictures shot by the photojournalist as a result of digital, one of the reasons for this change was the lack of latitude in exposure offered by the digital camera. At the Sowetan, this does not appear to have been the case to the extent, as Velasco points out:

With digital cameras you can be out four stops, I've seen stuff so blown out ... so you've got major latitude. I shoot this thing like I shoot slide film, I under expose by half a stop expose for the highlights.

A lot of photographers have let their quality drop.

Clement Lekanyane a Sowetan Photographer was observed loading images from a Pop Idols interview some of which were under exposed and some of which were over exposed due to bad lighting and a non-dedicated flash. He explained that, provided the photograph was within two stops of the ideal exposure the picture could be easily 'rescued' in Photoshop. He went on to say that his focus has moved from concentrating on the correct exposure, to framing the image and making sure that he 'gets the shot' even to the point of overshooting as there is no wastage of film.

7.7 The Changing Job of the Photojournalist and Picture Editor

For the purpose of comparison Ford's (1998) typical day of a photojournalist is followed by Velasco's typical day for the digital photojournalist.

1. After completing one or two of the shoots the photographer returns to the newspaper to process film.

2. While the film dries the photographer may take a lunch break before proceeding to next shoot.
3. After completing the next shoot the photographer returns once again and, while the negatives develop, he/she may edit and scan the first two sets of negatives.
4. The photographer then gets the to view the negatives with him/her.
5. The critiques the negatives and chooses the most suitable frames.
6. The photographer then crops, adjusts colour balance, contrast and burns and dodges if need be, on the computer.
7. The photographer writes caption information for each picture.
8. At the end of the shift the negs must be filed and the assignments logged in the diary.

At the *Sowetan:*

1. The photographer arrives back from a job.
2. He then does an edit, sometimes with the assistance of the Photo Editor.
3. A comprehensive caption is then written.
4. Selected images are added to the database.
5. A thumbnail contact sheet s printed for the photo desk.
6. The photographer readies himself for the next job.

The aforementioned Poynter study revealed that other changes to the work routine brought on by the use of digital cameras included additional time that could be spent in the field shooting and the modification of deadlines presumably due to the elimination of processing time and the submission of photographs from the field.

Velasco agreed that digital saved time, but notes that the *Sowetan* photographers had become used to having more time to complete set tasks with the result that significant time advantages do not accrue from the shift to digital.

It was observed that photographers saved significant amounts of time in not having to change film after shooting 36 frames as is the case when shooting with film. The possibility of missing defining shots as the film reached the end of the role or was winding on was also eliminated as the analogue photographer's digital counterparts captured the images and recorded at least twice as many frames on a shoot.

Other changes in shooting noted by Seboko, were that it was possible to ensure that the required shot had indeed been recorded by simply looking at the lcd monitor on the back of the camera. The only doubt which would then remain would concern the sharpness of the image as this cannot be properly gauged on the back of the camera.

Another point made by Seboko was that since shooting with digital he was much more aware of the fact that the equipment that he now has to carry on an assignment would be valued at over 100 000 Rand and he felt that this made him a 'target'. The expensive

equipment restricts where he is able to shoot without being concerned about putting himself and his equipment into possible danger.

> *"I can't go into some places to document what I would like to, like squatter camps and central Johannesburg at night."*

He went on to say that he would rather leave all his expensive equipment at the *Sowetan* and leave with a less expensive 'point-and-shoot' digital camera if he was concerned about his safety on an assignment.

Mushave however felt that although it was a worry for him, it was important to put the job first. He believes that if he allowed concerns about theft to prevent him from shooting, he would never go out on assignment.

A major problem raised by Velasco was the many repairs that had to be made to the digital cameras. Both Mushave and Seboko agreed that this has meant that they are now much more careful with their equipment. It is a constant concern while on assignment as repairs are not only expensive but leave the photographer without a camera for many months, as often the equipment needs to be sent overseas for repair.

Contrary to Andrews' (2000) statement that the lower ASA ratings means that the photographer has once again become dependant on portable light sources, Peter Mogaki, explained that he found a significant change in his shooting resulted from the fact that he was able to make less use of flash as he just adjusted the camera to shoot at a higher ASA. Another advantage of shooting digital that he found was not having to change to

tungsten or any other film in order to adjust for the lighting as this could be set on the digital camera.

Russial and Wanta (1997) have said that digital technology allows photographers to get out of the darkroom and into the newsroom and have suggested that this will present opportunities for photographers to work alongside reporters and editors. Velasco comments on this point.

> *I haven't been a picture editor in the era of film. I would say the photographer is more accessible, but that is within the parameters of individual newspapers. I would say that these days the photographers have a lot more interaction with the rest of the newspaper than we did.*

On this same topic Russial and Wanta (1997) have said that digital technology may be bringing the photojournalists' struggle to be recognized as an equal to other journalists to the fore once again. In the past photographers struggled to convince their newsroom colleagues that they were professionals rather than mere technicians, a situation that was not helped by the close kinship between technology and photography.

> *The reality is that photographers have become far more empowered in terms of capturing life as photojournalists but they are still looked upon as those guys that work in the darkroom.*

Halstead (1998b) raised a concern that the advent of digital results in the loss of the mentoring process between Photo Editors and photographers. A situation which sees photographers transmitting from the field, and which distances the photographer from the , would add to this situation.

Velasco disagrees saying that it was not an issue at the *Sowetan*.

> *I would say the ideal photo department is one where all the photographers are shit hot, (don't need mentoring). I'd like the photographic department of the newspaper to be like the national team, (training takes place before they get to Sowetan in smaller newspapers and universities and technikons.) The ideal scenario: I'd like to have that kind of work force. If I had the right staff I would say look, I want to see you Monday, you Tuesday, you Wednesday, you Thursday. (The communication the rest of the week would take place via email, i.e. the issuing of assignments and the transmitting of images.)*

Mushave pointed out that the majority of the photojournalists at the Sowetan did not own a personal computer, which made the initial switch to having to use them in order to function as a photojournalist problematic. He was quick to point out however, that for the most part this initial hiccup was quickly overcome and the use of the Department computers daily by most of the photojournalists is now commonplace.

Seboko mentioned that when it does come to hiring new photojournalists they will not be considered unless they are computer literate. The *Sowetan* had organised a Photoshop course for the whole photographic department that would commence after completion of the research.

Contrary to the findings of the Poynter, AP, University of North Texas department of Journalism study, that found that the role of the Photographic Editor had grown to encompass a plethora of duties, Velasco said that he did not think that the responsibilities of the photo editor had changed significantly following the shift to digital.

Victorin and Shadd (2001) voiced concerns that the editing atmosphere might be compromised because of the need to spend just as much time editing images in spite of the faster technology. Subtle differences in images are more easily missed on the monitor than on the light table. Velasco felt that this was not the case

> *I disagree I mean you can't compare a contact sheet to a digital contact sheet. I think the editing is so much easier and you can do a far better job.*

7.8 The Future

Paul Velasco offers a view of the future.

> *I think photographers have progressed from the Life golden era where their role was simply that of going out to get images and the Life legendary lab experts*

would perform miracles in the darkroom - darkroom printing was a major specialisation in those early days, an art and a craft that not all photographers wanted to master.

As we move towards the 21st century the tools of the trade have become very accessible and one person, namely the photographer, can master all the skills from capture of image to delivery. After all most photography courses start with a darkroom course.....

Today I believe the ideal scenario is a close tight knit group photographer-photo editor-designer working close together however it is crucial that the photographer is of an accepted technical level and consistently reliable.

There will always be a space for film.... but I don't see it in my domain, photojournalism.

Chapter 8: Conclusion

8.1 Introduction:

The purpose of this study was to investigate the change in photojournalism practice in the photographic department of the *Sowetan* which could be used to inform the training of future photojournalists.

This chapter is intended to concisely state what findings were made and if they were in accordance with the researchers expectations. It will also point out weaknesses in the research and areas of possible further study in this field.

8.2 Significance of Findings

At the *Sowetan,* the financial pressures placed on the department played a part in the decision to convert to the digital medium. Huge savings were made as the materials needed before digital need not be purchased. Despite this, the financial constraints are still evident as is seen in the inability to equip the photographers with extra memory cards. The financial situation is worsening due to the high maintenance/ repair costs of the digital cameras. Concerns about the fragility of the equipment could very likely also be playing a role in restricting how the photojournalists shoot in the field.

Although it is probably fair to state that initial training following the introduction of digital cameras was not considerable, the photographers seem to have a good working knowledge of the cameras. However not all of the functions available on the camera are utilized suggesting that perhaps more training in this area is required. The photographic editor is available as an expert in the workings of the camera and there is evidence that training is ongoing as the weekend after the completion of the research the whole department was to start a *Photoshop* course.

Although reports might have been expected about problems in transmission this was not the case. For the photographers, one of the most important problems related to the fact that they did not own their own computers and, as a result, the initial two weeks following the conversion to digital proved difficult.

The above statement points to the third world context that this study is located in, and that has to a certain extent, added problems to the introduction of digital photography to the *Sowetan* that European and American newspapers may not have had to contend with. Although it was not witnessed first hand it was reported by both the photographic editor and one of the interviewed photographers that perhaps an underprivileged background has meant that some of the photographers have trouble captioning and downloading images to the computers a year after the conversion to digital.

Another restriction that has resulted from the introduction of the digital equipment comes from concerns about the increased danger that the photojournalist is placed in by carrying

the vastly more expensive equipment. Photojournalists are now less likely to shoot in unsafe locations and will be constantly considering the safety of their equipment and themselves instead of concentrating on the task at hand.

Although the option of transmitting from the field was available to the photographers, it was very seldom used. A major reason for this could be the fact that only two laptop computers are available and these are only for use by the more senior photographers.

A point stressed by the photographic editor was that the conversion to digital was smooth at the *Sowetan* because he ensured that the systems were in place to handle the digital images, from archiving to transmission. User-friendly software to be used when downloading the images was also made available.

As Raymond Williams (1974) predicts for the introduction of any new technology, the *Sowetan* experienced both intentional and unintentional consequences. Intentional consequences included that the newspaper was able to save money, time and space. Unintentional consequences would be that the photographers are able to focus on capturing the most powerful news image instead of on the more technical problems of selecting the appropriate aperture, due to the latitude offered by digital. The money spent on repairing the cameras was another unintentional consequence as well as the increased interaction between the photographers and the rest of the staff at the newspaper.

Although it is certain that the photographers' job has changed with the introduction of the new medium, the extent to which it has changed is not as vast as anticipated. Work output was similar as photographers used up the available "spare" time saved by using digital cameras. This time could maybe have been used to achieve more extensive coverage of events, but this could not be ascertained in the available study period.

It appears that the status of the photographers in the newspaper has not changed, even though it would appear, according to Velasco, that they have become more empowered in the sense that the new equipment allows them to 'capture life' more readily.

Technical changes did not appear to have been as big as a problem as anticipated. Photographers adapted relatively quickly to the new limitations and advantages. Apart from the ability to make sure of an image on the LCD, and the fact that less time was spent having to change film as even the smallest flash cards could hold many more images than film, the shooting process was observed not to differ too significantly from the time the photographers shot with film.

Velasco believed that the role of the photographic editor has not changed, although he also pointed out that his experience of the use of film at the *Sowetan* was relatively limited. It might therefore be difficult for him to judge the change in duties of the position.

8.3 Weaknesses in the Research

The research might have been more useful, and yielded more information had it been undertaken when the shift to digital was actually taking place. A longer period of time spent at the *Sowetan* might also have yielded more useful information especially with regard to the transmission of images from the field, which was not witnessed. Due to limitations of time and resources however this was not possible.

As mentioned earlier, a concern is that, as the *Sowetan* was the first to make the shift to digital, the department might feel the pressure to defend the decision in order not to lose face. Although it is my impression that this was not the case, it is not possible to state that interviewees were not influenced by the need to defend the decision in any categorical way.

There was a concern at the beginning of the research that I might not be able to form a relationship with the photographers because of differences in background. According to Hansen et al (1998) the formation of field relationships is key to successful participant observation and can be one of the most difficult things to do. In the case of this research project, it is probably fair to say that a common interest in photography facilitated the formation of relationships in the field. The week of preliminary research conducted months before not only helped with the forming of the relationships but also helped to familiarize the subjects to my presence and get used to working under scrutiny.

As the person overseeing the change to digital and being in charge of the department as a whole, the study was always going to be heavily reliant on the interview and comments of Paul Velasco, the photographic editor. There was an advantage and a disadvantage to only having an in depth interview with him at the end of the week. Areas of interest that were discovered during the week could be and were raised with him in the interview, however this meant that his responses to issues raised in the interview could not be as thoroughly verified by returning to study the department further or by recording the reaction of the photographers to those responses.

8.4 Areas of Further Study

It became apparent while doing background reading in the area of photojournalism that very little South African research exists. Although there is an abundance of information about digital cameras and software, there is virtually no research on photojournalism in South Africa that reflects what is actually happening in the photographic departments.

This means that countless topics are available for further study. Digital manipulation is a hotly debated topic in the United States yet it has hardly been dealt with in South Africa. According to Cooper (2001) South African photojournalists rely on the codes offered by SAPA (South African Photographers Association) and guidance given by the NPPA (National Press Photographers of America Association) for case to case guidance. He

predicts that Southern African photographers will follow their seasoned counterparts in the United States who have had another ten years of mistakes in the uses and misuses of digital photography (Cooper 38:2001).

Two months after the end of fieldwork at the *Sowetan,* criticisms of the newspaper for the manipulation of photographs became evident.

Through the study of the case of the *Sowetan,* the goal of this research was to create an understanding of the problems that might be encountered by newspapers in South Africa. More study in this area could result in fewer "mistakes" being made.

References:

Albert, P. & Feyel, G. 1998 "Photography and the media" in M.Frizot, (ed) A New History of Photography Cologne, Koneman

Andrews, P. 2000 Electronic Image Submissions, British Journal of Photography 26 January, p14-15

Ang, T. 1996 Picture Editing: *An Introduction.* Butterworth-Heineman, Oxford

Bloom, S. 1994 The Art of the Possible. The British Journal of Photography 6 July pg 18-19

Bossen, H. 1985. Zone V: Photojournalism, Ethics, and the Electronic Age. Studies in Visual Communication 11(3): 22-31

Bryman, A. 1984. The debate about quantitative and qualitative research: a question of method or epistemology? The British Journal of Sociology Volume xxxv(1):75-91

Carter, M. Cullen, B. 1983 The Computerization of Newspaper Organisations University Press of America, USA

Cass, T. 1998. A Comparison of the Views of South African and American Photojournalists to the Digital Manipulation of News Photographs Unpublished MA thesis, Rhodes University

Coe, B. (1981) "Introduction", in K. Rooney (ed) Techniques of the worlds Greatest Photographers Phaidon, Oxford

Cooper, M. 1995. The Camera Doesn't Lie (and Pigs Can Fly). Rhodes Journalism Review, 10:12

Cooper, M. 1994. Revolutionary Photography. Rhodes Journalism Review 9:5

Cooper, M. 2001. Ethics and the Digital Revolution in South Africa. Handbook on Journalism Ethics, MISA, Namibia

Demarest, F in Clarke, C. 1958 Journalism Tomorrow Syracuse University Press, New York

Denzin, N. & Lincoln, Y. 1994 Handbook of Qualitative Research Sage, London

Evans, H. 1997 Pictures on a Page Random House, London

Fontana, A. & Frey, J. 1994 "Interviewing, The art of Science", in Denzin, N. & Lincoln, Y. Handbook of Qualitative Research Sage

Ford, N. L. 1998 The Role of the PhotoEditor Page 1, http//www.borg.com/~nlf/career/editor.htm, 16/02/2002
(Ford is photographic editor of the Observer Dispatch in the USA)

Ford, N. L. 1998 Responsibilities and Duties of the Photojournalist Page 1, http://www.borg.com/~nlf/career/duties.htm, 04/ 03/2002

Foss, K. 1988 Digital Imagery: Brave New World or Angels in the Skies? 442/Mass Media Seminar, University of Missouri-Columbia School of Journalism

Gleason, T.R. 1998 The Development of Standard and Alternative Forms of Photojournalism http://list.msu.edu/cgi-bin/wa?A2=ind9810d&L=ajmc&F=&S=&P=786#TOP, 04/03/2002

Gilbert, N (ed) 1993 Researching Social Life Sage

Hansen, A. et al 1998 Mass Communication Research Methods London, MacMillan

Halestead, D. 2000. Looking Ahead to Photojournalism 2001

http://www.thedigitaljournalist.com, 01/10/2001

Halestead, D. 1998. Are Picture Editors an Endangered Species?

http://dirckhalestead.org/issue9804/editorial.htm, 26/09/2001

Halestead, D. 1998b. Are Picture Editors an Endangered Species? Part II,

http://dirckhalestead.org/issue9805/editorial.htm, 26/09/2001

Hodgeson, F.W. 1996 Modern Newspaper Practice *A Primer on the Press*. Butterworth-Heinemann, Oxford

Hetman, F. 1973 "Technology on trial", in G. Boyle, D. Elliot & R. Roy (eds) The Politics of Technology. Longman, New York

Hicks, W. 1972. "What is Photojournalism" in R. Smith Schuneman, (ed) Photographic Communication Focal Press, London

Kobre, K. 1985 Photojournalism: The Professionals Approach. Focal Press, Boston Mass.

Kuntz, K. 2001 10 Tips for Managing New Technology

http://pointer.org/centerpiece/021601tips.htm, 20/08/2001

Lazaro, A. 1997. An informed community's perception of the new technological impact on the credibility of news photography. Masters thesis, Rhodes University Journalism Department

Lester, P. 1991. Photojournalism: An Ethical Approach. New Jersey, Lawrence Erlbaum Associates, Inc.

Linford, S. 1994. Who Needs Film? The British Journal of Photography 14 September 1994 18-19 Henry Greenwood &Co., London

Lister, M. 1997 Photography in the Age of Electronic Imaging in Wells, L. 2000 *Photography: A Critical Introduction* Routeledge, London

Neri, G. 2001 Ethics and Photography http://dirkhalstead.org/issue0101/neri.htm, 11/06/2001

O'Dowd C. 1996 An Examination of the Factors Underlying Decision-Making about Selection and Presentation of Photographs of Political Conflict in South African Newspapers Unpublished MA Thesis, Rhodes University

Pavlik, J. 2000. The Impact of Technology on Journalism. Journalism Studies 1(2): 229-237

Pierce, B. 2000. Darkroom on a Desktop. Nuts & Bolts http://thedigitaljournalist.com, 1/10/2001

Rucker W. & Williams, H.1969 Newspaper Organization and Management Iowa State University Press, Iowa

Russial, J. 1998. Digital Imaging and the Photojournalist: Work and Workload issues Paper submitted to the AEJMC Communication Technology and Policy Division, Eugene, University of Oregon.

Russial, J. & Wanta, W. Digital Imaging Skills and the Hiring and Training of Photojournalists http://list.msu.edu/cgi-bin/wa?A2=ind9710a&L=aejmc&D=0&P=5726 27/02/2000

Shoemaker, P. 1991. Communications Concepts 3: Gatekeeping. Newbury Park, CA, Sage

Tirohl, B. 2000. The Photojournalist and the Changing News Image. New Media & Society 2(3):335-352 http://www.nova.edu/sss/QR/QR3-3/tellis2.html, 20/09/2001

Victorin, F. & Shadd, D. 2001, The Challenges of Leaving Film Behind, Poynter.org www.poynter.org.centerpiece2.htm, 27/02/2002

Williams, R. 1990 Technology and Cultural Form E. Williams (ed), London, Routledge

Williams, R. 1978. Television: Technology and Cultural Form. Glasgow, William Collins Sons & Co Ltd

Wimmer, R. & Dominick, J. 1991. Qualitative Research Methods, Mass Media Research. Belmont, Udsworth.

Wood, N. 2002, Charged Couple Devices, Camera& Image December/January 2002

Wright, T. 1999 The Photography Handbook, London, Routledge

New Technology Changes Photojournalists Role 2001, 10/15/2002 from the World Wide Web, http://poynter.org/centerpiece/021601APME.htm