Visual literacy and digital image manipulation in a photographic setting

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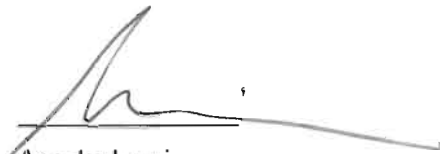Dissertation submitted in fulfilment of the requirements for the degree of Magister Technologiae: Photography in the Department of Visual Arts and Design, Faculty of Human Sciences, Vaal University of Technology

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Declaration

I declare that the work presented in this dissertation is my own independent work, except where otherwise stated, and that no part of this document has been previously submitted towards any other qualification.

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I hereby wish to express my gratitude to the following:

Abstract

The digital manipulation of images that are presented as photographs in the media raises issues of interpretation and the possible deception of viewers. The central research question of this study was whether training in the visual arts improves awareness of digital image manipulation of photographs. Secondary aims of the research were to investigate correlations between visual production literacy training and awareness of digital image manipulation of photographs as opposed to general visual literacy training. Secondary aims also include the investigation of attitudes to the manipulation of photographs in relation to different viewing contexts and various levels of manipulation.

The literature review provides background information and theoretical frameworks on the nature of the photographic message and how it is read primarily from a semiotic perspective. A further investigation was done into literature regarding the use of attitudes towards and ethical issues surrounding digital manipulation of photographs. In addition, a review of literature on visual literacy supports the argument that awareness of digital manipulation of photographs should and can be improved.

For the empirical component of the study, a total of 145 students at the Vaal University of Technology with low, medium and high visual literacy training participated on a voluntary basis. Both qualitative and quantitative data was gathered through a digitally administered questionnaire on six visual images, each manipulated to a different degree.

The results show that production literacy, especially specific training in digital image manipulation software, emerged as the main variable to be significantly (beta coefficient = 0.051; Pearson's r value = 0.436) associated with awareness of manipulation techniques as opposed to general visual literacy (standardised regression coefficient = 0.436; Pearson's r = 0.051). Findings regarding attitudes to manipulation and the impact of viewing context show no difference between groups. Emanating from these results possibilities for further research were formulated.

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List of Abbreviations

DAA	Digital Alteration Awareness
n	number of participants
SPSS	Statistical Programs for the Social Sciences
VL	Visual Literacy
VLT	Visual Literacy Training
VPL	Visual Production Literacy
VPLT	Visual Production Literacy Training
VUT	Vaal University of Technology

CHAPTER 1
INTRODUCTION

1.1   Introduction to the field of study

'... the digitizing debate affords us an opportunity to dislodge the myth of objectivity by remembering our unavoidable subjectivity' (Hodges 1991, cited in Schwartz 2002:47).

The introduction of digital imaging technology has radically changed the photographic medium on many technical and practical levels, from the way people photograph to the way photographs are used and distributed. It has, however, been argued that digital imaging technology also changes the nature of the medium (Mitchell 1992). It therefore follows that the way photographic images are read should also change (Schwartz 2002:47). Because of the ease with which photographs can be altered and manipulated digitally, the possibilities of deception have increased exponentially as the technology has improved.

Three strategies to counter or avoid such deception have been written about comprehensively and are widely practised. The first is to restrict the use of the technology drastically (Wheeler 2002); the second is to instil a sound code of ethics in professionals involved with photographic media (Newton 2001); the third is to promote greater awareness in the viewers of images of manipulation techniques (Media Awareness Network 2008, Meyer 2000). This third strategy seems to counter the first strategy and is often neglected or feared because it aids in the dislodging of the myth of objectivity on which much of the photographic industry is built.

This study is primarily concerned with the third strategy in the sense that it investigates the nature of visual training most effective in improving awareness of manipulation. A secondary aim of this study, which also relates to how photographic images are read, is the attitude of viewers towards the use of alteration techniques.

1.2   Research questions and hypotheses

The purpose of this study was to investigate manipulation awareness and attitudes towards image manipulation in digital photographs among undergraduate students with different levels of visual literacy training (VLT).

The main hypothesis is that visual literacy training impacts positively on awareness (due to the fact that the specific signifiers of digital alteration become more familiar) and attitudes towards the digital alteration of photographs because visual literacy training increases understanding of the nature of the photographic

medium. Viewing context, however, also plays a role in the perception of and tolerance towards alteration techniques as well as the perceived credibility of photographic images.

This hypothesis is complex and multi-faceted. The various research questions with relating hypotheses and null hypotheses that were formulated in order to facilitate the investigation are subsequently discussed.

Main research question

Is there a correlation between the perception of digital manipulation in photographs and visual literacy training? This over-arching question was divided into five sub-questions:

Sub-question (SQ) 1

Is there a correlation between the perception of digital manipulation in photographs and general visual literacy training (VLT)?

Hypothesis 1

A positive correlation exists between the number of weeks of VLT received and awareness of digital alteration of photographs[1].

Null hypothesis 1

There is no correlation between the number of weeks of VLT received and awareness of digital alteration of photographs.

SQ 2

Is there a correlation between the perception of digital manipulation in photographs and visual production literacy training (VPLT)?

Hypothesis 2

A positive correlation exists between the number of weeks of VPLT received and awareness of digital alteration of photographs[2].

Null hypothesis 2

There is no correlation between the number of weeks of VPLT received and awareness of digital alteration of photographs.

SQ 3

Are there specific signifiers that signify digital manipulation, and if so, what are they?

(This question will be answered through textual analysis of qualitative data and will therefore not be formulated in terms of hypothesis and null hypothesis.)

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[1] The more VLT received, the greater the awareness of digital alterations will be.
[2] The more VPLT received, the greater the awareness of digital alterations will be.

SQ 4

Does the viewing context of the photograph influence the perception of digital alterations in photographs?

Hypothesis 4

Viewing context of the photograph influences the perception of digital alterations in photographs[3]

Null hypothesis 4

Viewing context of the photograph does not influence the perception of digital alterations in photographs[4].

SQ 5

What are the participants' attitudes towards digital manipulation of photographs?

(This over-arching question will be answered through textual analysis of qualitative data and will therefore not be formulated in terms of hypothesis and null hypothesis. The question is subdivided in terms of the measurements employed, namely credibility ratings, acceptability ratings and perceived level of manipulation as well as viewing context.)

SQ 5.1

Are participant attitudes (in terms of acceptability ratings) towards digital manipulation of photographs influenced by viewing context?

Hypothesis 5.1

Participant attitudes (in terms of acceptability and credibility ratings) are influenced by viewing context[5].

Null hypothesis 5.1

Participant attitudes (in terms of acceptability and credibility ratings) are not influenced by viewing context[6].

SQ 5.2

Are participant attitudes (in terms of credibility and acceptability ratings respectively) towards digital manipulation of photographs influenced by the perceived level of manipulation?

Hypothesis 5.2

Participant attitudes (in terms of acceptability ratings) are significantly influenced by perceived level of manipulation[7].

Null hypothesis 5.2

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[3] I.e. answers to whether the images were manipulated or not are changed after viewing the images within context.
[4] I.e. answers to whether the images were manipulated or not are not changed after viewing the images within context.
[5] I.e. alterations are seen as more acceptable in advertising images than in news/family photographs.
[6] I.e. there is no significant distinction between the acceptability ratings for news/family photographs and advertising images.
[7] I.e. minor alterations are seen as the most acceptable and major alterations are seen as the least acceptable.

Participant attitudes (in terms of acceptability) are not significantly influenced by perceived level of manipulation[8].

Hypothesis 5.3

Participant attitudes (in terms of credibility ratings) are significantly influenced by perceived level of manipulation[9].

Null hypothesis 5.3

Participant attitudes (in terms of credibility ratings) are not significantly influenced by perceived level of manipulation[10].

1.3   Background to the field of study

Apart from unavoidable manipulation of photographic images because of the nature of photography, manipulation of the photographic image, after the capture stage (post-production) has a history as long as the history of photography. Conventional (as opposed to digital) manipulation of photographs is common in all fields of photography, from documentary to fine art photography, and has been well documented (Burgioni 1999; Gaveard 1999).

Motivations for manipulating photographs have varied and changed throughout the history of this medium. In the first half of the 20th century, the main motivation for the manipulation of images was to compensate for the imperfections of early photographic processes. In the second half of the 20th century, motivations shifted to include manipulating images for pictorial effect and self-expression. These are still strong motivations.

More devious motives, such as propaganda based on the power of photography as a seemingly truthful medium, have also existed since the invention of photography. The use of photographic manipulation for propaganda purposes became increasingly ubiquitous in the early 1900s. Many of these images were deliberately created in order to deceive and misrepresent. Others were created as political protests, acknowledging the method of creation (Gaveard 1999: 7).

All of the abovementioned motives are still valid today, but with the powerful image editing programs that have been available for the past 25 years, considerable darkroom skill and equipment are no longer needed to perform major image manipulations. This long history of manipulation of photographic images casts doubt on the widely accepted notion that photographs (including news and documentary photographs) do indeed convey facts. According to Lester (1988), however, image manipulation by conventional means is better documented and better known than image manipulation by digital means.

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[8] I.e. there is no correlation between level of alteration and acceptability ratings.
[9] Minor alterations are seen as the most credible and major alterations are seen as the least credible.
[10] I.e. there is no correlation between level of alteration and credibility ratings.

Lester (1988:41) states that "we are less familiar with the potential of new technologies for falsifying images, particularly those that appear in newspapers and magazines". Since Lester wrote this statement in 1988, society might have changed considerably. It could be that society today is more familiar with the potential of new technologies for falsifying images than that of traditional photography.

Yet, four years later, Mitchell (1992:7) writes: "When we look at photographs we presume, unless we have some clear indications to the contrary, that they have not been reworked." Mitchell (1992:7) goes on to say that photography and digital imaging are, in this sense, opposites: "[T]he essential characteristic of digital information is that it can be manipulated easily and very rapidly by computer." The dilemma is that the photographs society deals with from day to day are all digitised at some stage, but are still presented as photographic material.

There are numerous examples of manipulated photographs that have been published as news or in magazines and are then 'unmasked' with great publicity, causing the photographer to be suspended, or even dismissed. The strong reaction of newspapers and magazines to photographers who digitally manipulate their images focuses the public attention on the perpetrator, masking the more disturbing issue of society's unwavering belief in the ability of photographs to portray facts, or even 'the truth' (Schwartz, 1997:1). This issue is relevant in photojournalism, but also reaches into other areas such as family photography, and all other areas where still photography is used (both digital and print media). This issue is also relevant (perhaps more so) in television and film, but moving images fall outside the scope of this study.

In an article published in 2002, Hantz and Diefenbach argue that "[a]s a result of increased media literacy and scepticism of the post modern attitude, audiences are also both sensitive to and suspicious of all incoming visual data, leading to a general decline in public trust at several levels: in government, in society, in media institutions and in interpersonal relations" (2002:1). From an informal survey of media publications, however, I have come to the conclusion that, time and time again, society still seems to accept photographs as evidence and depictions of truth, and is then shocked to learn that it has been deceived. People still seem to be deceived despite the efforts of societies such as the *media awareness network* and numerous websites and forums that document and discuss the publication of falsified photographic images. Some examples of images that are treated as truth are the recent images allegedly depicting the abuse of Iraqi prisoners in the Abu Ghraib prison by American soldiers (ANTIWAR 2004). According to Morris, these images had dramatic consequences for those who took them as well as for those who appeared in them, in some cases seemingly providing evidence of guilt. An in-depth analysis of these images shows that the assumed 'truths' conveyed by these images are highly problematic and complex (Morris 2008).

Three possible reasons for this clinging to the notion of the photograph as fact can be argued and will be fully investigated in the literature review chapters: the nature of the photographic process itself (Doman 1998:13) and pictorial mimesis (Blinder 1986); the seemingly codeless-ness of the photographic message; and the social construction of the myth of objectivity (Chapter 2).

Visual literacy and visual literacy training are examined as a way forward in dealing with the photographic medium in its current guise of uncertain accuracy and powerful medium of public communication and information (Chapter 5).

Writers have repeatedly warned that digital image manipulation technology will be the last straw that will cause the collapse of society's acceptance of photographic images as representations of truth (Ritchin 1991:37). Yet every writer that deals with the topic of digital manipulation in the media still feels the need to warn society, especially photojournalists, again. One can thus assume that the camel's back has not yet been broken.

Because this statement that digital image manipulation will cause the demise of photojournalism is contested, manipulation awareness was investigated. The enquiry was done in two phases: Firstly, literature related to manipulation awareness was investigated in the form of an informal survey of reactions to manipulated images in the media as well as to efforts to increase manipulation awareness (Chapter 4). Secondly, empirical data was gathered through a digital questionnaire in order to investigate correlations between VLT and awareness of digital alterations in photographs as well as participant attitudes towards digital alterations and the possible impact of viewing context on awareness of- and attitudes towards digital alterations.

1.4 Overview of chapters

The literature review chapters interrogate issues relevant to the research questions, namely:

a) What is the nature of the photographic message (especially the digital photographic message), and how does it communicate? (Chapters 2 and 3)

b) What constitutes digital manipulation? (Chapter 4)

c) How is visual literacy conceptualised in terms of the digital photographic message? (Chapter 5)

Chapters 6 and 7 deal with research methods, data analysis and results, while Chapter 8 provides the conclusion.

Through a survey of relevant literature mainly in the field of pictorial semiotics, Chapter 2 aims to explain the tendency of viewers to cling to the truth-value of photographs due to the accurate mimesis of the photographic message. A discussion of Roland Barthes' notion of the message without code aims to further explain this phenomenon. Because the code is invisible, photographs seem unmediated.

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A further aim of this chapter is to investigate the impact that digital alteration has on the photographic message from a semiotic perspective. The semiotics of digital alteration also provides an indication of what signs could be possible signifiers of alteration, which will aid in answering the second research question, as set out in section 1.2.

Chapter 3 provides a historical perspective of visual representations as facts as a construct of Western artistic conventions (Galassi 1981) as well as of the journalistic illustration industry that has been carefully cultivated since the first illustrated publications emerged in the 1830s, even before photographs were used (Schwartz 1997).

The notion of the visual as document is investigated, looking at anatomical sketches, and history painting as laying the basis for the reception of photographs as facts. The tensions between the expressive and objective nature of photographs is discussed in relation to documentary as well as portrait and advertising photography, showing that even in explicitly embellished photographs, the belief in the factual nature of the images is an essential aspect of the role photography plays in society.

Furthermore, the adoption of a documentary style as persuasive device in advertising imagery is discussed in order to illustrate the pliability of photographic truth. This chapter (Chapter 3) does not attempt to show that photographs are incapable of portraying facts; rather, it gives an overview of how the expressive aspects of photography have been underplayed in order to emphasise the objective aspects, giving photographs immense persuasive power.

The possibility that the reception of photography has changed in a postmodern society is briefly discussed, speculating whether society still has a need for stable, fixed truths, as supposedly portrayed in photographs, or whether the notion of multiple truths could make the manipulation of photographs more acceptable.

Chapter 4 examines the issue of the social reception of photography in more specific terms relating to manipulated imagery. This chapter focuses on literature relating to public and professional attitudes towards the use of image alterations in both documentary and non-documentary photographs for publication purposes.

Visual ethics is discussed briefly as an important factor influencing attitudes towards digital alterations of photographs, drawing mainly from the seminal works of Newton (2005), Lester (1995) and Wheeler (2002). The ethical issues surrounding photographic imagery derive from the power of photographic images to influence opinion, emotions and behaviour.

Before attitudes towards digital manipulation are discussed, the terms 'manipulation' and 'alteration' are interrogated. It is suggested that the term 'alteration' be used instead of 'manipulation', in some contexts, seeing that 'manipulation' has other meanings that are not necessarily relevant to the techniques performed (Messaris 1995).

A classification, rather than a definition, of alteration techniques is provided. Classification criteria include technology (Mitchell 1992, Lester 2003), the level and nature of the manipulations (Greer & Gosen; Mitchell 1992), the stage in the image-making process where the alteration takes place (Hanz & Diefenbach 2002), whether the procedure is permissible/impermissible (DigitalCustom® list of permissible and impermissible procedures, the Webster University Journal Policy for the Ethical Use of Photographs; the NPPA code of ethics and the DOD memorandum on manipulation); and the level of deceptiveness (Messaris 1994; 1995).

Empirical studies (Reaves 1989, 1992/1993; Greer & Gosen 2002; Fahmy, Fosdick & Johnson 2005) regarding public and professional attitudes towards digital alteration of images are reviewed. These texts are augmented by an informal survey of less formal texts such as Internet sites (Cobb 2003; Lang 2006, ZoneZero), together with formal texts on photojournalism (Chapnick 1994; Newton 2001).

Literature on visual literacy (VL) is discussed in Chapter 5, where the relation between manipulation awareness and visual literacy is investigated. The first step towards greater awareness of digital manipulation is greater visual literacy, if one takes Paul Messaris's notion that the kind of visual literacy that has to be taught and learnt, or "the explicit awareness of how visual meaning is created", involves several components, of which an understanding of production techniques is one (1994a:138), to be correct. Messaris gives depth of field as a variable controlled by the filmmaker as an example of this. The production techniques that would be used as examples of variables controlled by the producer of digital images are also explored. Chapter 5 provides an overview of various definitions of VL, the skills and benefits associated with VL, as well as issues surrounding the measurement of VL.

Chapter 6 expounds on the five phases of the study: the literature investigation; the production and piloting of the test visuals; the construction, piloting and administration of the questionnaire; analysis and compilation of data and the discussion of findings.

Four groups of undergraduate students from the Vaal University of Technology participated in this study. The four groups were chosen on the basis of the nature and level of their training. The first group had extensive visual and digital imaging training, the second group had training in the visual arts but not in digital imaging, the third group had only computer programming training, and the fourth group had no

formal training in either visual communication or computer programming. Each group consisted of between 20 and 40 students, providing 145 completed questionnaires to be analysed.

An interactive questionnaire on visual images was developed in order to gather both quantitative and qualitative information. The main focus of the questionnaire was on the collection of information regarding manipulation awareness, although some questions pertaining to the attitudes of the participants towards manipulation were also included. The test visuals consisted of six images of various levels of digital manipulation, including no manipulation, but only enhancements and excessive image composites. The images were displayed in four different contexts, with two images in each context.

In the analysis phase, the participants were classified into various groupings according to their level and nature of training. The numerical and textual data was captured by means of specially developed software built into the interactive questionnaire. The captured data was analysed as follows: The numerical data was mainly used to answer sub-problem (i), namely whether there was a relationship between the level of VLT and level of manipulation awareness of the participants, by means of descriptive statistics. The textual data was mainly used to answer sub-problems (ii) and (iii), namely what the signs in the photographs were that signified manipulation, and whether the study participants perceived digital manipulation of photographs as positive or negative.

In Chapter 7 the data is analysed and results are presented. Chapter 7 focuses on the evaluation of the various hypotheses and null hypotheses, following the steps described in Chapter 6. Chapter 7 starts with a summary of the variables under scrutiny before engaging with the hypotheses.

Due to the richness of the data some issues outside of the specific hypotheses are discussed in section 7.3, including the over-all percentage of correct/incorrect answers as well as other possible factors that could influence the perception of digital alterations. In section 7.3, the questionnaire as a whole is also analysed and evaluated.

Chapter 8 concludes the study by summarising results in relation to the literature review. The contributions and recommendations made by the study are discussed, and some suggestions are made for further research.

1.4   Definition of terms

For the purpose of this study, the key terms were interpreted as follows:

- *Digital image manipulation*. *Digital image alteration* will be used for the purposes of this study due to the multiple meanings and negative connotations of 'manipulation'. Digital image alterations will be taken to refer to any of the techniques (permissible and impermissible) Listed in the *Digital Custom Model Ethics Guidelines* (2003, see Annexure B.). For the purpose of this study digital manipulation will be classified in three categories:
    - Minimal manipulation, referring to true to life and utility enhancing procedures;
    - Moderate manipulation, referring to permissible procedures regarding news and editorial images;
    - Extensive manipulation, referring to impermissible procedures regarding news and editorial images as well as promotional images and permissible procedures regarding promotional images.
- '*Visual Literacy* is the ability to access, analyse, evaluate, and communicate information in any variety of form[s] that engages the cognitive processing of a visual image' (Chauvin 2003: 125).
- *Production literacy* refers to an understanding of production techniques which, together with "knowledge of relevant precedents" and "familiarity with relevant critical commentary" is an aspect of the kind of visual literacy described by Messaris as: "the explicit awareness of how meaning is created" (1994:138).
- For the purposes of this study, *Semiotics* is taken as the study of everything that can be used for communication after Fiske & Hartley who describe it as the theory of signs (1978, 37 cited in Chandler 1999).
- *Pictorial semiotics* is, 'concerned with the study of pictures as particular vehicles of signification' (Sonneson 2004:1).
- *Sign*: Graeme Turner notes that for something to qualify as a sign, "it must have a physical form, it must refer to something other than itself, and it must be recognised as doing this by other users of the sign system" (Turner 1992:17 cited in Chandler, 1999).

Chapter 2
Semiotics

2.1   Introduction

Semiotics, often briefly described as the "theory of signs" (Chandler 1999:1), is the study of everything that can be used for communication. According to Sonneson (1993:2), semiotics, as a science, can be seen as a point of view "which may be applied to any phenomenon produced by the human race". Piercian terms, this can be translated to the study of mediation, the study of "the different procedures for trans-forming Nature into Culture" (Sonneson 1993:1). Drawing ideas from many different disciplines, it uses a specialised terminology to examine and compare the production of meaning in diverse media. This makes it especially suitable for the study of digitally manipulated images, without forcing visual communication into a linguistic model. Literature on the production of meaning in photography often refers to semiotic principles even though the authors are not necessarily semioticians (see Batchen 1991; Messaris 1994a; Mitchell 1992).

Because semiotics is such a wide field of study with many applications, the basic principles of semiotics as applicable to this study are discussed in this section, with the main focus on those concepts that relate to pictorial semiotics. Two models of the sign described by Pierce (1931) and Saussure (1915) respectively are examined. Chandler (1999) provides an introduction to semiotics which places the work of many semioticians in context and explains several basic concepts that are relevant to this study.

A more specific discussion of the relevant literature related to pictorial semiotics, most notably the work of Sonneson, forms the bulk of this section. Sonneson (1999b, 1989) discusses the basic mechanics of the photographic message at length. Specific attention will be given to the discussion of the iconic, indexical and to a lesser extent, the symbolic aspects of the photographic sign. Saint-Martin's work (1990) is mentioned in order to explain that the linguistic model, which is widely applied to visual systems, is not the most appropriate model. Barthes' (1967,1972) model of denotation and connotation is investigated in relation to Sonneson's notions of the functioning of iconicity and indexicality in the photographic message.

The subsequent section discusses the semiotics of photography as a distinct pictorial type and the impact that digital alteration has on the photographic message. Digital alteration as a signified and its various possible signifiers is also discussed, mainly with reference to the work of Sonneson in relation to Barthes' notion of denotation and connotation.

2.2.   Basic principles of semiotics

According to Saint-Martin (1990), due to the significant differences between visual and verbal communication (most notably, that of sequenciality as opposed to simultaneality and also the inability of verbal language to sufficiently translate the visual), many writers on the topic abandoned the idea of visual semiotics as a scientific practice. Saint-Martin developed a semiotic model of visual language on the basis of a more elaborate definition of language, claiming that verbal language should not be the basic measure for communication. Saint-Martin's model for semiotic analysis (1990) therefore embodies the conception of semiotics as the science of signs. This study will, however, not constitute the scientific application of semiotics to such an extent, but will rather use its basic concepts to explain certain phenomena relevant to photography in general and more specifically to digitally altered photographs.

Semiotics or semiology (in its original form) has always been closely related to linguistics, since its purported founder, Ferdinand de Saussure, was a linguist. Saussure, however, envisaged linguistics as a branch of semiology (Chandler 1998:1). In recent years there has been much opposition to approaching visual communication as a language (Messaris 1994; Saint-Martin 1990) although many linguistic terms are still used in relation to non-verbal communication, the main concerns being the fact that visual signs are not entirely arbitrary, and that dividing visuals into minimal units of signification is close to impossible and not necessarily useful. Saint-Martin (1990) claims to have discovered a minimal unit, which she terms the "coloreme" but Sonneson points out that this is a segment of perception, not of the object or picture itself.)   Cohn refers to meaningful a units in visual grammar as a 'lexical item', defined as "a meaningful unit or combination of units of form-meaning pairing" (2007: 54). Cohn states that his "approach to visual language has strived to avoid stating that graphic structures are likened to surface features of verbal language, instead attempting to note the functional similarities in base structure within each respective system" (2007: 54).

Approaching visual communication as language-like has been adopted by many interested in visual literacy, where the importance of learning to read visuals is emphasised, and visual communication is broken down into basic visual elements. One of the main aims of pictorial semiotics is to make the differences between pictorial signification and other forms of signification explicit.

Within semiotics, there are two basic models of the sign, initially described by Ferdinand de Saussure and Charles Saunders Pierce, who worked independently. These models have been adopted and adjusted by many, but the original, basic structures are still widely used.

The Saussurian model of the sign, which is primarily linguistic, consists of two parts, the signifier and the signified. The two combined result in 'signification'. The signifier or signal is the sound-image (not a physical sound, the mental forming of the word *tree,* for instance) that forms in the mind of the viewer as a result of the sign in the sensory reality (see Saussure 1915). The signified is the mental concept

associated with the sign (the reader's idea of a tree). According to Daniel Chandler (1999), what is called the Saussurian model today is much more material than the model constructed by Saussure himself in that the term *signifier* indicates the physical part of the sign that can be sensed by human senses (the word *tree*, as written or typed or spoken) instead of merely the *sound-image that occurs in the mind of the viewer* (Saussure 1915:12, 66, 67).

Saussure states that there are two basic principles concerning the linguistic sign, firstly that all signs, including onomatopoeic signs, are absolutely conventional; secondly that they are temporal and linear. He distinguishes between the linguistic and visual signal in that the linguistic signal is one-dimensional and linear, while visual signs function in more than one dimension at the same time (Saussure 1915:70). For the purposes of this study, the conventionality of the sign will be discussed in far more detail than the temporal and linear nature of the sign.

Saussure referred mainly to linguistic signs when stating that all signs are absolutely conventional. He did, however, argue that a visual system such as miming does possess sufficient conventionality to make it an issue for semiotics (1915:67-69). Saussure therefore saw conventionality as a prerequisite for a visual system to be seen as language-like. According to Blinder (1986:22), many prominent semioticians, including Eco, Bierman, Goodman and Lindekens (Sonneson 1999), have since "rejected the mimetic claim of resemblance between pictorial and retinal images" (1999a:1), and have gone to great pains to prove the conventional nature of any form of visual communication, including photography (Sonneson 1999a:1). The basic idea is that systems such as photography and film should be treated similarly to verbal language, and that these systems could be broken down into significant units (similar to letters and words) then making the development of a kind of grammar possible for such systems. Many semioticians (Eco, Barthes, Williamson) subsequently included systems such as fashion, restaurant menus, advertisements and film in structuralist semiotic studies.

Blinder (1989) argues against Goodman's conception of the conventional nature of pictorial signs, questioning the very notion that pictures could be seen as signs at all: pictures are unlike linguistic signs in that they do resemble what they depict, although not point by point. Pictures are also like seeing the real world in that they "can produce an optical array similar to what the real scene would produce" (Blinder 1989:27). Blinder thus seems to be of the opinion that a pictorial sign is similar to the real world and does not have to be interpreted; it is not a sign. Derrida, however, pointed out that Pierce himself wrote that "the thing itself is a sign ... From the moment there is meaning there is nothing but signs" (Batchen 1997:215).

It is an integral aspect of human nature to tend to want to find and create meaning all the time. Nothing has any significance except that human beings invest meaning therein. Semiotics is primarily concerned with the study of signs, "meaningful units which take the form of words, images, sounds, gestures or

objects" (Chandler 1999). In nature, countless elements, which possess no inherent meaning, have been invested with significance. Birds as a group, for example, represent to certain (human) social groups the concept of unattainable freedom, not even to speak of specific species of bird: the eagle represents royalty, courage; the dove represents peace and love; sparrows represent humility. It is because (amongst other reasons) they have been assigned these meanings in literature, that every time we see one of these species we have these meanings at the back of our minds. It is because we cannot fly and because we revere freedom that we see birds as representing unattainable freedom, not because they are themselves really free.

As soon as a human mind thus beholds any object, a process of attaching meaning to that object starts which is mediated by culture. Sonneson (1999a) calls this field of enquiry that deals with signs in the real world 'ecological semiotics' which becomes necessary if one accepts that "the 'natural world', as we experience it, is not identical to the one known to physics but is culturally constructed".

It can also be argued that an object only becomes a sign when it functions within a sign system. A visual must be understood by the viewer to be intentional communication from an external source (Sonneson 2000:10). It must also be given context by this system in order to facilitate interpretation (Blinder 1989:24). Blinder (1989:24) argues that "ordinary visual experience (either of the world or of pictures)" is not influenced by context to the same extent that symbols and linguistic signs are, and therefore the analogy between signs and pictures is problematic. Be this as it may, the information conveyed by pictures is unquestionably influenced, to some extent, by context. It remains true that, as soon as any object (or person, or place) is represented by a human being one tends to start searching for meaning, be it consciously or subconsciously, and this meaning is influenced by the social context, visual context and communication system within which the viewing takes place.

With the debate mentioned above in mind, it seems natural that post-structuralist semiotics has come to question the language-like nature of visual systems, moving more towards social semiotics (Pompe van Meerdervoort 2003:16). It has also been conceded that visual signs are neither all absolutely conventional, nor do they function purely naturally. Piercian semiotics has come to be favoured by post-structuralists. In contrast with the Saussurian model, the Piercian model of the sign comprises three notions, the *representamen,* the *interpretant* and the *object.* According to Chandler (1999), more modern and familiar equivalent terms used today are: the sign vehicle (the form the sign takes; the physical word written on the page), the sense (the sense made of the sign; the idea); and the referent (that which the sign refers to; the physical tree out there, or the reader's notion of what trees are). The Piercian model of the sign also allows for an *interpretant* (the *sense* in the mind of the reader) as opposed to the Saussurian *signified.* Here the term *interpretant* is perhaps more descriptive than *signified* because it indicates the presence and the role of the interpreter in making sense of the sign vehicle. It thus involves interpretation, which is to a large extent subject to the culture, ideologies, associations and intuitions of

the reader.

Semiotics in general places more emphasis on the role played by the reader/viewer than on authorial intent. It is fully acknowledged that the intentions of the author do not always coincide with the meaning extracted by the reader/viewer. However, through understanding how meaning is extracted, the author can learn how to direct or anchor the reader/viewer's interpretations. This aspect of semiotics falls under experimental and social semiotics, which will be discussed in more detail in relation to the methodological aspects of this study.

Another integral part of Piercian semiotics is the distinctions that Pierce made between types of signs based on the relationship between sign vehicles and their referents. These relationships are said to indicate varying degrees of arbitrariness or conventionality (Nöth 1990:246, cited in Chandler 1999: unpaginated hypertext). However, Messaris (1997) argues that empirical studies have shown that iconic signs are much less arbitrary than thought at first, needing, in most cases, no prior learning for the purpose of identification and recognition of objects, as long as the objects form part of the viewer's cultural framework (1997:150-151). The three types of signs are explained by Chandler (1999: unpaginated hypertext) as follows:

> **Symbolic**: a sign which does not resemble the signified but which is 'arbitrary' or purely conventional (e.g. the word 'stop', a red traffic light, a national flag, a number);
>
> **Iconic**: a sign which resembles the signified (e.g. a portrait, a cinematic image, a diagram, a scale-model, onomatopoeia, 'realistic' sounds in music, sound effects in radio drama, a dubbed film soundtrack, imitative gestures);
>
> **Indexical**: a sign which is directly connected in some way (existentially or causally) to the signified (e.g. smoke, weathercock, thermometer, clock, spirit-level, footprint, fingerprint, knock on door, pulse rate, rashes, pain).

Chandler's explanation confirms Sonneson's (1999a:2) statement that "when reference is made to icons in semiotics what is actually meant is what Pierce termed *hypo-icons*, that is, signs which involve iconicity but also, to a great extent, indexical and/or 'symbolic'...properties". Pierce identifies three types of hypo-icons based on degree of resemblance: images, diagrams and metaphors (Kazmierczak 2001:91). Images therefore possess a degree of iconicity, but also some degree of conventionality, which should not be disregarded. Pierce's schema is thus more suitable to visual communication because it is more flexible and allows for both motivated and unmotivated signification (Moriarty 2005:231). Classifying signs in terms of motivation can become problematic, and does not follow the three sign types of Pierce. Kress and Van Leeuwen (1996:11), for instance, argue that all visual signs are motivated from the perspective of the producer.

2.3   The nature of the photographic message

The main counter-argument against treating photography as a purely conventional system is based on the indexical nature of photography as described by Dubois (1983:20, as cited in Sonneson 1989:35). Sonneson (1999a) discusses various writers' contributions to the understanding of the specific nature of the photographic sign. Sonneson mentions that the first semiotic theories treated the photographic sign as a pure icon in the Piercian sense, seeing it as a "mirror of reality" (1989:35). According to Sonneson (1989), the next phase was to see the photographic sign as symbolic and to treat photography as a coded system. A third phase is characterised by the tendency to see the photographic sign as indexical. In this study, the photographic sign will be treated as possessing qualities of all three. Many authors describe photographs as being indexes of the objects that were in front of the camera at the time of exposure. Vanlier (1983:23, 25 as cited in Sonneson 1999b:3) was, however, correct in stating that the photograph is only indexical of the photons, i.e. the light reflecting off the objects or shining onto the light-sensitive surface. Beyond being indexical of the photons, the photograph is also indexical of how the capturing system projects these photons onto the capturing surface as well as of the properties of the capturing surface itself (Sonneson 1999b:17). It could therefore be said that the photograph is indexical of the choices made by the photographer, such as camera equipment/format, lenses, filtration, camera settings, film/capturing device, capture software settings and lighting.

Schaeffer (1987, as cited in Sonneson 1997:3) subsequently argued that photography is an indexical icon or an iconical index. In Sonneson's view, however, goes on to argue that even Schaeffer was mistaken and that, although the indexical nature of photography cannot be denied, photographs function first and foremost as icons. Sonneson supports his argument with a comparison between a horse's hoof print and a photograph of a horse. Both these signs are indexes, but the main difference is that the hoof print is bound in space and time, with its basic meaning being 'horse was here', while the photograph of the horse is omni-temporal and omni-spatial, and the most basic meaning derived from the photograph is just 'horse' (1989: un-paginated hypertext).

The main question that photographic images thus answer before any other is 'What?' The 'Where?' and 'When?' and 'How?' only come later, if at all. It is therefore the resemblance to the referent that takes prominence. For Sonneson, iconicity is the "*dominant* (in the sense of the Prague school) of the photographic sign: that feature of the photographic structure which does not only gain the upper hand in the structure of the sign, but also organises all other features for its purpose. This is not to deny that, at different levels of organisation, the photograph contains indexical, iconic and symbolic sub-signs" (Sonneson 1999b: unpaginated hypertext).

Krauss (1981) also illustrates this idea in the article "A Note on Photography and the Simulacral". Krauss refers to a French television programme called *Une minute pour une image*. In this programme, one

photograph was shown for one minute, with a voice-over commenting on the image. The people who were asked to comment ranged from photographers, writers, the so-called man in the street, to art critics, and so forth. Krauss uses transcriptions of these commentaries to illustrate that the most likely first reaction to any photograph is to try to identify what was photographed, a reaction to the iconicity of photographs. Most of the commentaries Krauss refers to begin with or are primarily concerned with "It's a ..." Krauss (1981:18) also refers to a thesis of Pierre Bourdieu, who, in relation to photographic aesthetics, suggested that "...the most common photographic judgement is not about value but about identity, being a judgement that reads things generically, that figures reality in terms of what sort of thing an *x* or a *y* is".

Both Sonneson and Krauss point out that because questions relating to identity (what is depicted), as opposed to value (how is it depicted), preoccupy the viewer tend to cause questions regarding value to be suppressed. Issues relating to how the image was created would include the indexical nature of the photographic image as well as the formal aspects such as angle of view, composition and lighting.

It is, however, also important to note that, when the commentators referred to by Krauss said, "It's a ...", they did not refer to the fact that the image was a depiction/photograph/representation of whatever was photographed; they referred to the subject matter as if it were there. Due to the indexical nature of the photograph, the resemblance of the sign to the referent is so strong that the fact that it is a mere depiction of the subject matter is negated.

It could therefore be argued that the strong reaction towards the iconicity of photographs is directly due to the indexicality of photographs. The sentence "It's a ..." firstly takes into account that the image is a photograph and not a painting, before continuing to describe the subject matter of the photograph. Because of this phenomenon, Barthes (1982:196) described photography as a "message without a code", referring to the fact that the photograph seems or is reacted to as unmediated.

Because of the indexical nature of photography, the fact that the image is a result of the action of light reflected from a scene onto a light-sensitive medium, the resemblance between the image and what was photographed seems complete. The image does not have to be analysed and divided up into units as signs in order to reproduce the scene. In Barthes' words, "there is no necessity to set up a relay, that is to say a code, between the object and its image" (1982:169).

A distinction can thus be made between chirographic production and photographic production of images, where chirographic production involves making markings on a surface by hand, and photographic production involves creating markings on a surface through the use of a mechanical device where choices affect the image globally instead of locally as with chirographic production (Sonneson 1989: part

III 37). It is, however important to note that what is referred to here by Barthes and Sonneson concern rules for the mapping of information and not rules for interpretation. Barthes, however seems to assume that, because there are rules and conventions (codes) governing local decisions of reproduction in chirographic production, there should be a similar process of decoding in order to understand the images, while the global effects of photographic production negate the necessity of decoding. The above-mentioned argument of Messaris (1997:150-151) questions this assumption and necessitates a clarification of terms relating to the interpretation of visual messages. It becomes important to distinguish between mere identification and recognition of objects and the understanding of the intentions of the producer of the message. Interpretation is, however seldom limited to the intentions of the producer, and often also involves an understanding of the message in the broader socio-cultural context of its production.

Barthes (1978) further points out that any imitative art form has two messages: the denoted (that which the image literally depicts, e.g. in a photograph of a red rose with a ribbon tied around it, the denoted message is the red rose and the ribbon, together with the background and so on) and the connoted (that which is associated with what is depicted through convention or personal/cultural experience, e.g. the rose and ribbon together can be seen as a kitsch, commercialised token of love associated with Valentine's Day). The point Barthes (1982:196) makes is that the "common-sense" perception of photography professing to be a mechanical analogue of reality is that it only consists of a denoted message, that the denotation consumes the entire message. This "common-sense" perception is once again a preoccupation with the iconical. However, it becomes clear that this preoccupation is a direct result of the indexicality of photographs. This section of Barthes' writing seems to contradict Sonneson's claims that Barthes laboured (as did Eco and Goodman) to establish the arbitrary nature of the pictorial sign. Barthes clearly acknowledges the fact that photographic images resemble what was photographed comparatively accurately (1961:196-197). He thus refutes (as does Sonneson) the notion that semiotics stand directly opposed to mimetic theory as claimed by Blinder (1986:1).

Barthes (1961: 198-199) goes on to explain that it is, however, possible for photography to have a connotative message as well, making it paradoxical in that it becomes an objective and invested message at the same time. The connotation, according to Barthes (1978:198), derives from the context within which the image is created, processed and presented. Any visual is ultimately created to some extent for communicative purposes, be it private or public. This act of representation, presenting a visual as communication, invests the photograph with connotation.

Because the photographic image seems to consist only of a denoted message, any connotations are likely to be taken to be as natural as denotations; therefore, the photograph is believed to represent reality objectively.

There is thus a constant tension between the iconic, indexical and symbolic functions of the photographic sign. Schwartz (1992:1-2) states:

> Tension between the natural and the symbolic is an inherent aspect of photography. To viewers possessing little familiarity with the processes of photographic image-making and the choices shaping the appearance of the final printed photograph, the image seems unquestionably truthful, generated by the subject matter itself, rather than the agency and the intent of the photographer.

Schwartz uses the term *natural* here as the opposite of *symbolic*, in other words, encompassing both iconicity and indexicality. This use of the term is, however, problematic in that it tends to imply that no prior learning is needed to understand natural signs. The term *natural* is however, also used to refer to signs that are indexical of natural phenomena, such as heavy clouds signifying a rainstorm and smoke signifying fire. The meaning of these types of signs is still something that must be learned. Although the relation between signifier and signified is strongly motivated through indexicality, indexes are not always iconical (Sonneson 1999b). One must be wary of equating all signs of which the meaning must be learned to symbols, just as much as one should be wary of treating all signs as symbolic. According to Messaris (1997), little or no prior learning is needed to recognise and identify iconic signs, especially if these signs are presented within their natural context. Messaris (1997:150-151) argues that it is only when visual elements that do not have a strong internal structure are displayed out of context, or in unfamiliar contexts, that recognition and identification of these elements can be problematic.

From the discussion above one can summarise the nature of the photographic message from the basis of denotation and connotation. Denotation could be seen as the result of the iconic and indexical nature of the photographic sign, while connotation could be seen as the result of the symbolic nature of the photographic sign. In Barthesian semiotics, connotation is, however, a second level of meaning resulting from the denotative message of the image. The indexical nature of the photograph causes the strong resemblance to the subject depicted, i.e. the iconic nature, and together the indexical and iconic are assigned symbolic meaning by the viewer or producer (society). It is, however important to distinguish between two types of indexical signs: those of which the meaning is intuitively understood and those of which the meaning must be learned.

2.4   The digital photographic message

When discussing the semiotics of photography it is important to distinguish between the discussion of the nature of the photographic sign and the nature of the photographic message. The nature of the sign concerns aspects of sign production and characteristics while the nature of the message concerns the

impact the nature of the sign has on the interpretation of the message as well as the interpretation of the message, irrespective of the nature of the means of production, which is not always known or thoroughly understood by the viewer.

Digital image alterations impact on the nature of the photographic sign in that a) any alteration, global or local, interferes with the indexicality of the originally captured image and b) digital technology allows for local choices to be made as opposed to only global choices in traditional photography.

a) Digital alterations interfere with the indexical nature of the photograph.
Digital alterations do, however, not necessarily interfere with the iconical (mimetic) nature of the photograph, which as shown, preoccupies the viewer because it is so accurate. Image alterations do not necessarily diminish the resemblance to 'reality', nor do they necessarily diminish the internal coherence of the image (Mitchell 1992:30). The *nature of the photographic* sign, but not necessarily the *nature of the photographic message*, is altered, although the specific message of any specific image might change.

In the well known example of the National Geographic cover of 1982, for instance, there is no visible trace of the manipulation that took place (the two triangles of the pyramids were moved closer together in the image, to suit a vertical format). In this case the message has remained the same – there is no noticeable deviation from resemblance to reality (unless one compares it to a direct view of the pyramids from the precise spot that the image was taken) – but the photograph is no longer indexical, which only affects the reading of the image if it is known by the viewer. For a viewer who is trying to establish, from the photograph, how far the pyramids are apart and what their orientation is towards each other, the meaning has changed, even though the image still resembles reality.

The resemblance, however, only relates to identity and denotation, which, although it preoccupies the viewer and negates the connotative meaning, does not mean that the denotative meaning or the identity is the most important or larger part of the total meaning of the image. It just camouflages the fact that there is invested meaning, be it by the creators of the image, the viewers of the image, or both.

Barthes (1976:196) states that, although photographed scenes are reduced from three dimensions to two, reduced in scale, proportion and colour, "... at no time is this reduction a transformation".. The modality value of photographs is therefore high. Photographs are continuous; the scene does not have to be divided up into signs to be reproduced. This reduction is, however, not insignificant, especially with regard to such aspects as proportion, tonal value and colour, which can have any number of connotations (as well as denotative meaning). Traditional analogous photographs have equal potential to be just as invested with intentional and interpreted meaning as any digitally altered image. As Batchen (1997:212) puts it, "Photographs are no more or less 'true' to the facts of the appearance of things in the world than

are digital images."

Paintings and drawings also have strong iconic functions. One does not need a great deal of information to recognise an image as resembling something (Blinder 1986:26). The excess information found in photographs is one of the modality cues that work together with other image elements to connote 'reality'. The very idea of representing reality could, however, be argued to be a cultural phenomenon and a connotation that has been invested in visuals. This will be further discussed in section 2.1.3.

It is important to discuss the notion of objectivity here. An objective photographic representation presupposes an unmediated message. It might be true that the mimetic or iconic nature of photographs are part of what makes them so powerful, but no image has 100% resemblance to reality (Cook 1992:70, as cited in Chandler 1998), especially not still photographs. The fact that a moment is frozen, selected, isolated, and then placed in a new context, together with the fact that many reductions (as discussed previously) occur, changes the representation profoundly. Furthermore, many other choices (listed in section 2.1.2) made by the photographer, bring changes to the image in various degrees of subtlety. The photographic image is thus mediated through many choices made by the photographer as well as the laws of optics, electronics and mechanics inherent to the functioning of the camera.

Further mediation results from the context within which the image is presented as well as the treatment it receives after capture. For a viewer to recognise the signifiers in an image that signify the choices made by the photographer or designer, experience is needed, even though many of these signs are indexical. Although these signs are not conventional, they are also not naturally understood, just like being able to forecast the weather is not inborn (see Sonneson 1989, Messaris 1994a, Messaris 1994b).

This treatment could include any number of image alterations without affecting the resemblance to the real world to the viewers who did not witness the original scene – or even to any viewer. To the viewer, the image would still seem as indexical as ever; the modality markers are still the same. Only the *knowledge* that the image was altered – or alterations of such a nature that the alterations themselves signify that the image was altered – will undermine the indexicality of the originally captured image. The viewer's response will then be not to believe that the image is an objective representation of reality. For this to happen, some signifiers must denote or connote the signified 'altered'. Some possible signifiers can be grouped according to whether these signifiers work on the connotative, or the denotative level:

Denotative:

- Blotchy areas, patterning and repetition of elements;
- Uneven grain or digital noise/pixilation, too sharp or too soft edges: this will indicate that certain elements were combined into one 'photograph' (Brugioni 1999:88-89);
- Formal qualities of image elements not conforming to laws of optics and/or mechanics inherent to the medium of photography (e.g. excessive depth of field, selective motion blur, incorrect perspective and scale, inconsistent shadow quality and direction, inconsistent halation) (Brugioni 1999:69-96).

Connotative:

- Implausibility/impossibility: not conforming with laws of nature/preconceived world view;
- Perfection: The lack of flaws, dirt, rubbish in objects, faces and locations connote alteration because this lack does not conform to our real world experience, even though it is not impossible or implausible;
- Over-all pixilation or graininess: This connotes alteration, or could raise suspicion because, in the first place, pixilation makes it obvious that the image was digitised, and in the second place, it makes the images easier to alter without considerable skill, due to the lack of detail.

Many of these signs will not be noticed at a glance, but must be searched for. If there is thus no suspicion that the image was altered, these signs would probably go unnoticed. It is of course often the case that none of these signs are present in images with significant alterations. Most of these signs, although they are not necessarily conventional, must be learned before they will be understood. The degree to which they are natural will probably be difficult to establish, and will depend on their noticeability. These signs work iconically in that they deviate from resemblance to the referent, but resemble other altered images/image elements intertextually.

The signified *altered* might, however, be seen as the denoted meaning functioning iconically and indexically, while on the connoted level a whole new range of meanings that are more or less symbolic start to emerge. Meanings such as *untruthful, false, implausible, impossible, creative* and *skilful* are only a few examples.

Implausible is an interesting phenomenon because it is dependent on the viewer's world view and religious beliefs. It is also a possible signified of various combinations of visual elements. The linking of the signified *altered* to the signifier *implausible* or *impossible* therefore already happens on the second level. This clearly illustrates the Piercian notion of unlimited semiosis, where each signified in turn becomes the signifier for another signified, and so a chain is formed.

One can imagine that the precise signified resulting from the signifier 'altered', as with any other sign, would depend on many variables including the context, presentation and actual content of the image as well as the knowledge, beliefs and culture of the viewer/interpreter.

b) Digital technology allows for choices to be made locally and globally

Digital alterations applied to a photograph thus shift the image from being classified in terms of its production method from being *photographic* towards being *chirographic* (Sonneson 1989:38). Gubern (1987b:46 as cited by Sonneson 1989:38) has proposed distinguishing between *chrirographics* and *technographics* which would include *photographics, cinematographics, typographics* and *computergraphics.* Only *photographics* and *computergraphics* will be further discussed. The term *computergraphics* as used by Gubern seems too narrow for the purposes of this study. As it is used in contemporary media, four types of computergraphics can be identified:

- digitally recorded and altered drawings/paintings
- algorithmically generated and altered imagery/type
- combinations and alterations of photographic and other imagery and or type
- combinations of all or some of the above.

It is important to keep in mind that most computer imagery is altered after capture/generation, either globally or locally. In Gubern's system, *technographics* is positioned as directly opposing *chirographics.* This classification still seems problematic because *photographics* are so different from *computergraphics.* Sonneson proposes a further distinction according to whether the images are indexically derived or based on similarity (1989: 38). Sonneson illustrates his classification system in tabular form as can be seen in Table 2.1.

Table 2.1   Classification of production methods

Productive tools	hands	machines
Productive link	chirographics	technographics
contiguity		photographics cinematographics videographics typographics
similarity	chirographics	computergraphics

In general, digitally altered photographic imagery is not considered in these systems of classification.

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One would think that it would fall under computer graphics, but then the system would be pulled apart because digitally altered photographs are both indexically derived and based on similarity. It can even be argued that it is chirographic to some extent. Sonneson (2000:5-8) does mention in a more recent article that, even though a machine is used to capture or to a certain extent to generate computer images, the hand is also used because it manipulates a mouse or stylus. The only ways in which digital images are different from traditional drawing and painting are that the surface is indirect and any markings can be altered indefinitely without a trace of what went before.

According to Sonneson (2000:7), "[t]raditionally all hand-produced pictures relied on similarity, since they depended on what Gibson calls the hand-eye-system, whereas all machine-made pictures were indexically derived – until this simple organisation was destroyed by computergraphics". Here the term *computergraphics* could easily include digitally altered photographs, seeing that intricate local alterations as well as global alterations can be done by means of a mouse which is operated by hand.

2.5   Conclusion

From this discussion it can be concluded that the photographic sign is complex and that it functions as all three sign types at the same time. The indexicality and iconicity of the photographic sign are inextricably linked, which often causes the symbolic aspects of the sign to seem natural and un-contrived. This phenomenon makes it inappropriate to impose language structures on the photographic media, but at the same time, also makes it a rich medium for semiotic analysis.

Photographs are indexical of not only what was in front of the camera, but also of the process of production, which can also signify the use of digital manipulation. These indexes of process can, however, be made to resemble, therefore iconically signify, analogue-derived processes of production. Some signifiers of process, such as *objectivity* are strongly connoted and have an effect on the specific message of the image, the nature of the message in general and the nature of the sign. The nature of the photographic sign also strongly impacts on the photographic message, if it is known and understood by the viewer. Digital manipulation therefore interferes with the indexicality of the photographic sign, but not necessarily with the strong iconicity which is derived from the indexicality.

According to existing classification systems for media, digital manipulation makes it necessary for photography to be classified differently, but, because of the varying ways in which digital manipulation is applied, such a classification becomes impossible. Because one cannot distinguish between a digitally manipulated image and an analogue-derived image, this might lead to the reclassification of photography as a medium, manipulated or not.

Reclassification will, however, not diminish the strong iconicity of the photographic image, and indexicality will always play a role in the understanding of a medium that takes as a starting point the capturing of light rays reflected or projected from objects.

CHAPTER 3

THE SOCIAL RECEPTION OF THE PHOTOGRAPHIC MESSAGE

3.1   Introduction

Since its invention, photography has come to play a varying and integral role in modern society as the various genres of photography developed. In this section, a brief historical overview will be given of how photography came to be received as it is in modern society – as factual documentation – and of the possible disintegration of this perception. This section will examine the issue from a historical point of view, looking at literature describing how images have been received socially in various contexts; from before photography until after digital technology came to be widely used in connection with photography.

This chapter provides the historical precedents and context within which digitally altered photographs are received in contemporary society. This illuminates our understanding of contemporary attitudes towards digitally altered photographic images published in the mass media.

Because there are so many photographic genres, not all will be discussed in equal detail. Only two applications of photography that are fairly representative will be thoroughly discussed, namely:
- the photograph as document (news, documentary and scientific photography) and
- the photograph as embellished record (portraiture and advertising).

These applications were chosen because they represent the areas where photography has had the greatest social impact. It is interesting to note that both categories mentioned in the previous paragraph depend greatly on the notion that photographs have some factual basis for their impact on society and the relevant industries, although there are other factors as well, such as ease of use and speed. These are to some extent technical concerns, but the notion that photographs have some factual basis is also very much a social concern and will initiate further discussion.

The seminal works that inform this chapter roughly fall in four categories. The first category, which, specifically interrogates the motivations for the invention of photography, deals with the early history and reception of photography. The publication that initiated this topic is *Before Photography,* by Peter Gallassi (1981), which in turn informed Batchen's *Burning with Desire* (1997), which was written, to some extent in reaction to Gallassi's work. Green-Lewis's *Framing the Victorians* (1996) also falls into this category, seeing that it interrogates Victorian notions regarding the invention and reception of photography.

The second category entails texts that provide a general overview of the history of photography, such as

Rosenblum's *A World History of Photography*, Marien's *Photography: A Cultural History* (2002) and Frizot's *New History of Photography* (1998). The third category provides more specific discussions on the history and theory of the social reception of photographs as factual documents. The central text in this category is Schwartz's *Photographs as facts*, supported by several of Schwartz's other articles on related topics. Saayman Hattingh's doctoral thesis, *The Practice of South African Social Documentary Photography: 1980-2000* (2005) provides a valuable historical overview of both international and South-African concerned documentary photography, while Newton's *The Burden of Visual Truth* (2001) provides a slightly more theoretical approach, although she also touches on the history of visual truth. Sontag's *Regarding the Pain of Others* (2003) provides a contemporary perspective on the social reception of photography, although she also refers to historical examples such as the image *Death of a Republican Soldier* by Robert Capa. Another discussion of an important historical example referred to in this chapter is by Howard Bossen.

The fourth category of texts discussed in this chapter deals with the theory of image reception and the role that images play in society. W. J. T. Mitchell's *Picture Theory* (1995) is the central text, together with Wells' *Photography, a Critical Introduction* (2004).

Many of the texts mentioned above are informed by Panofsky's essay, *Perspective as Symbolic Form* (1991), which postulated that linear perspective is largely symbolic form of representation rather than merely resembling or copying reality, as well as Debord's *The Society of the Spectacle* (1976), which discusses the impact visuals have on society's perception of reality. From all the texts mentioned above, as well as others referred to in this chapter, it becomes clear that photography's relation to reality is essential to the role that it plays in society, but at the same time it becomes clear that this relation is complex and largely socially constructed.

3.2 The seeming objectivity of photographs, as a social phenomenon

How did the notion that truth can be represented visually come into existence? Was it always assumed to be the case, or did it develop as its use and techniques such as the use of linear perspective developed? Green-Lewis (1996:31) refers to Mitchell's *Picture Theory* (1995) when she states that, in the 19th century, "[p]hotography was *endowed* with the narrative burden of realism, which is to say that it had the assertive function of carrying what Mitchell calls a 'belief system'" (*my italics*). The notion that photography was endowed with this burden suggests that the burden of the 'belief system' is a social construct, but also that photography had a profound influence on the nature of this 'belief system', on what was believed and how the beliefs were accessed.

At some stage mimetic representation came to be associated with the representation of truth. Although

this did not necessarily coincide with the 'invention' of linear perspective in the 15th century, it certainly strengthened the claims for the visual representation of truth through the translation of "psychophysiological space into mathematical space; in other words, an objectification of the subjective" (Panofsky 1991:66). This goes directly against what Plato said about the mimetic arts in that truth is expected to be found in a copy of reality, which Plato described as being already a copy of the ideal, ultimate reality (Plato c. 380 BC, translated by Lee 1955:275, 370-386).

Plato thus found the mimetic arts to be unproductive. The essence of the problem is that too much is lost through the act of copying for it to be seen as accurate – whether it is a first- or second-generation copy is irrelevant. According to Panofsky (1991:71), "Plato condemned it [the perspectival construction of space] already in its modest beginnings, because it distorted the 'true proportions' of things, and replaced reality and the nomos (law) with subjective appearance and arbitrariness". Plato thus saw the use of perspective as representing space as a fundamentally subjective action, showing essentially human viewpoints, even though perspective also "subjects the artistic phenomenon to stable and even mathematically exact rules" (Panofsky 1991:67).

It is widely accepted that the invention of linear perspective was the first step towards the invention of photography, and that photography is a mechanical method of creating pictures in "perfect perspective" (Galassi 1981:12). Photography thus also possesses the abstractions from reality as described by Panofsky (1991:30), making it "quite unlike the structure of psychophysiological space". As with linear perspective, there is also an inherent paradox in photography in that it is both objective and subjective at the same time. This paradox is thoroughly explored in Batchen's *Burning with Desire* (1997). Batchen argues that the paradox is even imbedded in the name *photography* in that *photo* (light) is equated with nature and *graphie* (drawing) is equated with culture (1997:101). On the one hand, nature draws itself, while it is also made to draw itself (Batchen 1997:102). Susan Sontag ascribes the paradoxical nature partially to the fact that it is viewed by subjective eyes. It is able to 'argue' because it can play on human memories, associations, and emotions. Sontag (2003:23) makes the point that it is photography's subjectivity that lends it its eye-witness status.

Plato, however, did not know photography or digital copying technology, the ultimate in mimetic arts. In his time, linear perspective was not yet used to translate three-dimensional scenes to two dimensions. Somehow, photography (especially black-and-white photography) came to be the flagship for the visual representation of objective fact, in spite of its inherently subjective nature and its dissimilarity with psychophysiological perception. How this came about will be discussed through a brief historical overview of the use of visuals to convey information/truth/facts or to make statements, and so forth. A distinction should perhaps be made between truth as accurate facts and universal truths of a mystic or general kind. The post-modern age is said to be lacking in the first kind and to possess many versions of

the second kind of truth (Mitchell 1995:11). This is one of the reasons for the widespread questioning of photographic truths in literature and conceptual art since the 1970s. Visuals as information would normally fall into the first category: truth as accurate fact.

3.2.1 The photograph as document

Bossen (1985:22) states that, when photography was invented, the general public as well as the photographers believed that photographs showed the world as it was. He explains that not much has changed since then, even though public knowledge of chemical photography was much greater in the mid-1980s than in the 1800s. Nine years later, Kelly and Nace (1994:5) observed that rudimentary knowledge of what could be done to a photograph with digital imaging did not influence how participants in their study rated the believability of the photographs used.

The question of why this is so in photojournalism is addressed by Schwartz (1999). She asks, "How has journalism framed the news photograph to appear to have excised the photographer's viewpoint, yielding an objective, machine-made reflection of the world; and toward what end has this view been constructed and perpetuated?" (1999:1).

According to Schwartz, this question necessitates an examination of public attitudes toward images as well as the development of the role of images as vehicles of information. In this study the focus will be somewhat wider than just photojournalism, and will approach the question in terms of public attitude towards photographs in general, although photojournalism and documentary photography will form a large part of the discussion.

In order to understand how photographs came to be viewed as factual information, one must look at the treatment of images before the invention of photography. According to Rosenblum (1997), Batchen (1999) and Galassi (1981), photography was only invented once society developed a strong enough need for it. There needed to be enough of an appetite for images that depicted reality more accurately. This appetite was initially addressed and cultivated by painters who worked in the naturalistic style. This style was also encouraged by an atmosphere of scientific enquiry in general but also in painting circles (especially landscape painting), prevalent since the late 18th century (Rosenblum 1997:15-17).

However, linear perspective had been in use since the 1600s, which enabled painters to create 'real-looking' works. According to Galassi (1981), the impetus for the invention of photography came from the difference in approach and choice of subject matter between late 18th century painting and what went before. This approach involved a more appreciative attitude toward the more mundane scenery. What would normally remain pre-sketches and studies for more elaborate landscapes, started to be exhibited

as the final works.

This indicates, as Rosenblum also points out, that artists started to look at reality as a worthy subject of artistic representation. John Constable (as cited by Rosenblum 1997:16) confirmed this in the following statement: "Painting is a science and should be pursued as an enquiry into the laws of nature."

This statement by Constable suggests that previously, painting might not have been seen in this light, and when one looks at the fanciful imagery in earlier paintings, this seems to be the case. There are, however, notable exceptions. Leonardo da Vinci, for instance often used his skills as painter and draughtsman for explicitly scientific purposes (here 'scientific' refers to an attempt at objective observation).

According to Wallace (1971:104), Da Vinci was an artist "engrossed in the observation of the physical world, and he put limitless trust in vision". Leonardo also regarded art, particularly painting, as a science, naming it 'the queen of all sciences', which provided the means of obtaining knowledge and communicating it to the public and generations to come..

Da Vinci was, however an exceptional thinker of his time. It is therefore not necessarily the case that the public of his time viewed painting in the same light. Much of the knowledge that Da Vinci collected and generated did not become public knowledge until centuries later.

Some of Da Vinci's ideas did however reach his more immediate public. For instance, he is widely hailed as the father of anatomical drawing.. Before his system, which entailed thoroughly annotated illustrations of the subjects from various viewpoints and different sections, became known, anatomical drawings in books were frowned upon. Only with the appearance of the *De Humanis Corporis Fabrica of Versalius* in 1543, which made use of woodcut illustrations based on the system developed by Da Vinci, did anatomical drawing become accepted in medical literature. Physicians therefore already realised the value of visual images as statements of fact and source of information as early as the 16th century.

Most avenues of science have subsequently made use of visuals as illustrations to texts, but also as sources of information regarding relative sizes, colour, shapes, textures and so forth, all of which derived from scientific observation. Scientific observation is, however not necessarily objective, as the outcome often depends on the question asked, as well as the preconceived ideas held by the observer. One example of where this was the case can be found in the work of Da Vinci himself. Da Vinci believed in the Platonic concept of macrocosms and microcosms and therefore believed that the human body was to a great extent a micro-version of the earth. He was therefore never able to describe the blood circulation system correctly, even though he was in possession of all the necessary information needed to do so.

He kept on looking for an 'ebb and flow' effect as is found in the ocean (Wallace 1971:105).

Many such 'scientific' drawings were later shown to contain mistakes and inaccuracies, seemingly because human observation is not perfect. Nevertheless, visual images have a long history as factual information in the sciences, but that affected only a small percentage of the population. Experience with any visual images at all remained a privilege of the elite until the early 19th century (Schwartz 1999:9).

Visuals as representations of historical facts also seem to have a long history in the arts, but here the source of information was seldom first-hand, and the scenes chosen to be depicted are normally grandiose, spectacular, sensational or involving important people. Examples of such paintings are the Neo-classicist works of Jacques-Louis David, specifically his *Marat Assassinated*, *Napoleon in His Study* and *Napoleon at St. Bernard* (see Figure 3.1). This tradition of history painting was continued in illustrated periodicals that appeared in the 1930s. Visual images as representations of social facts before photography seem to be extremely scarce. Even in photography it is only in the 1880s that such images started to appear.

The fact that society realised the imperfect nature of human vision and observation made it inevitable that a more accurate method was to be sought, and once found, embraced. In *A World History of Photography*, Rosenblum starts the first chapter with the statement that 1839 was the year in which two processes were invented that would "revolutionise our perceptions of reality" (1997:15). Ever since the invention of photography, photographs were seen as the ultimate method of accurate recording even though the first images (Daguerreotypes and Talbotypes) were a far cry from 'real looking', with its silver sheen, immobile, styled subject matter, and often hazy eyes of sitters in portraits (Figure 3.2). Photography was immediately applied in science and record keeping for historical purposes, insofar as the technology of the time allowed. It is interesting to note that the aforementioned revolutionising of our perception was a constant process, changing with every new chemical process, optical technology, and camera format that was invented.

Photography was invented during the hey-day of positivism, recognising only that which can be observed or deduced from what can be observed, as legitimate (Batchen 1997:138). This materialistic outlook seems essential to the assumption that photography can expand knowledge of the visible world albeit beyond the reaches of the naked eye. Great store is placed on the surface appearance of the world. This can be seen even in the attitudes of many of the painters of the time, as mentioned before.

The two inventors of the processes that came to be used since 1839 were both multi-talented individuals interested in the sciences as well as the arts; romantic and positivistic at the same time (Batchen 1997:57-58). Talbot, however, like many of the scientists and intellectuals of the time, regarded
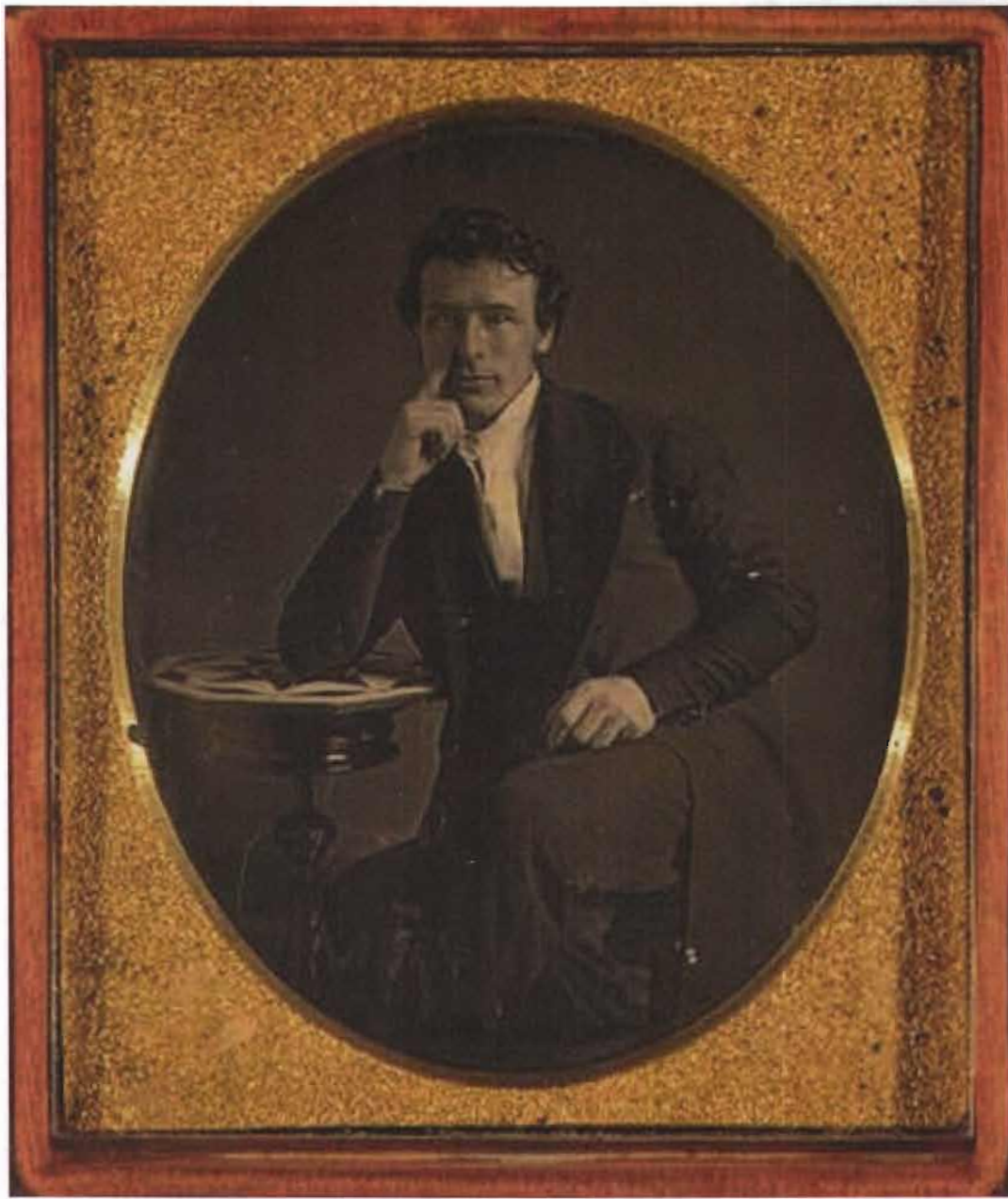
Figure 3.2 J. J. E. Mayall, 1842. Daguerreotype self portrait made in Philadelphia.

Figure 3.3 Roger Fenton. 1855 Camp of the 4th Dragoons, convivial party, French & English

During the 1840s, illustrated periodicals started publishing news articles (which were often sensational) with illustrations. The *Illustrated London News* (first published in 1842), however, claimed to be quality reading and is commonly regarded as the first true illustrated newspaper. Anderson cites a number of quotes from the *Illustrated London News* stating that the illustrations found in its pages represent factual information, truth and reality. It is important to note that claims such as these only started to appear in the 1840s, after the invention of photography, even though the illustrations were not copied from photographs yet. The profession of photojournalist had not come into existence yet (Schwartz 1999:6-9).

It was only in the 1850s that woodblock illustrations for news articles started to be copied from photographs (Rosenblum 1997:155). One can therefore speculate that the concept of illustrating every-day news with images only took shape once society became familiar with photography (10 years after the invention of photography), even though the images that claimed to represent these facts were not related to photographs at all. The tradition of history painting, however, casts some doubt on this theory. The main difference between 1840s news illustrations and history painting is exposure. Painting remained accessible to the elite only, while the newspapers reached a mass audience. It could therefore be argued that only with the advent of illustrated, mass-published newspapers did the concept of images as facts become widely accepted by Western society.

A statement from the *Pictorial Times* quoted by Fox in her book *Graphic Journalism in England during the 1830's and 1840's*, once again casts some doubt on such an argument in that it marvels at the amount of information, "intelligence and good feeling which may be acquired through the medium of the eye alone", referring not only to news illustration, but also to "pictures of nature and art" (*Pictorial Times, ii*, 1844; quoted in Fox 1988:285-286, quoted in Schwartz 1999:165). Art was therefore also seen to be instructive. The word *art* was however used by many publications to refer to all woodcut illustrations found in their pages (Schwartz 1999:6).

This quote in the previous paragraph seems to accept that the 'medium of the eye' refers to visuals alone and is something different from using the eye to read words. It is as if the medium of the eye therefore bypasses the function of the brain with which reading has to be processed, thus bypassing interpretation, and providing more 'direct' knowledge and pleasure. This aspect of visuals will be discussed further in the section on visual literacy.

Schwartz (1999:6,7) goes on to argue that the constant claim by illustrated newspapers that their illustrations represented facts was a method used by these publications to access educated readership, the elite as well as the workers' class, believing that the educated would see illustrations as frivolous, unless they were seen to represent facts. As a marketing ploy, images were thus proclaimed to be objective. Public confidence in the newspapers' claims that their woodblock representations were factual

and true to life soon waned. Schwartz suggests that this is because critics started to question the sketch artists' ability to record complex detail, but the cause was probably a growing familiarity with photography in society. Naturally, sketches were being compared with photographs and found to be lacking in detail and complexity.

The advantage that sketches had over photographs, namely that they could represent action, i.e. movement, became less and less pronounced as photographic technology improved. With the invention of the dry plate process in the 1860s, this was finally eradicated. Another factor that prevented the use of photographs as illustrations in publications was the absence of a process that allowed the mass reproduction of photographs alongside type, until the 1870s (Schwartz 1999: 9). It was, however, only in the 1890s that the halftone process became widely used in mass publication. Before the 1890s, photographic documentation reached a limited public through various avenues such as publications of original prints, lantern slides accompanied by lectures and transformed into graphic illustrations (lithographs or woodcuts), and through stereographs through distribution companies (Rosenblum 1997:155). Photographic documentation built up a reputation as being useful records of facts in various fields independent of the illustrated press.

In 1861 the medical profession, for instance, publicly acknowledged the importance of photographs in medicine, as records and illustration of diseases, as well as 'before and after' photographs, and illustrations of human anatomy for textbooks (as woodcut or lithographic reproductions) (Rosenblum 1997:178).

Corporate documentation of constructions was created as historical records of human achievements since the invention of photography and is said to have influenced public taste towards the machine aesthetic and the straight photography.

From an overview of the history of the illustrated press, two notable progressions emerge. The first concerns how illustrations were applied and described by the publications themselves, and the second, which is related to this, concerns the interaction between the use of illustrations and public perception of these publications: At first illustrations were reproductions of artworks, and therefore the illustrations themselves were called 'art'. This term, however, soon came to be used by some publications to refer to all illustrations in the publications, including illustrations of fashion, current events and so forth. This often gave the illustrations status beyond their worth, but also served to imply the serious, uplifting nature of the illustrations.

Around the turn of the century, photography came to be used increasingly for the documentation of human feats deemed to be worthy of recording for posterity, from historical buildings to industrial

constructions in progress and completed. A general fascination with human industrial achievements coincided with a move in art photography away from pictorialism towards straight photography. The idea that the "true measure of camera art was in the sensitive treatment of actuality" became more and more accepted and implemented by photographers (Rosenblum 1997:158). The publication of Paul Strand's straight, sharply focused photographs in *Camera Work*, which was dedicated to the reproduction of pictorialist art photography, heralded the beginning of straight photography as art (Katzman 2007).

Photojournalism professionals used the widespread streamlining and modernisation of society to maintain a link between photojournalism and the arts, describing how images should be composed and created for the greatest immediacy. Although the approach to photography in both the arts and in photojournalism was that of recording 'objectively', the one thing that separated the two industries at that stage, was the emphasis placed on form (as vehicle for, or method of constructing the concept) in art and on content in reporting. In art photography form became more and more important, especially towards the 1920s, with the emergence of the 'New Vision', 'Subjective photography' and the use of photography by surrealist artists such as Man Ray (see Rosenblum 1997: 393-419). The photographer's role in interpreting reality was stressed more and more. However, this attitude did not suit the newspapers, which constantly and regularly asserted the fidelity of their photographic illustrations to reality, but never mentioned the possibility that photographs could be interpretations of reality or that they could possess any expressive qualities.

According to Bossen (1985), in the 1860s the belief in the veracity of a photography was so strong, and knowledge of the process of the production of photographs so lacking, that photographs were seldom questioned. The methods of O'Sullivan, Gardner and Gibson were therefore not questioned until 100 years later when some of the images presented as factual to the public were shown to be staged, for example Timothy O'Sullivan's *Dead Confederate Soldier at Sharpshooter's Position in Devil's Den* (Bossen 1985:22).

This claim to fidelity was made in spite of a number of factors that testified against photography's inevitable fidelity to reality. The first factor was the technical inadequacy of early photography, of which the fact that action could not be captured without showing motion blur is the most notable besides the lack of colour or inaccurate tonal reproduction. Scenes would therefore often be staged or re-enacted for the camera, or the subject would be photographed after the action in a stationary position. An example of such an image is Jacob Riis' *Members of the gang showing how they 'did the trick'* (Figure 3.4), which was published in the 1901 edition of *How the Other Half Lives*, one of the first true social documentary publications. Artistic conventions and precedents often had a great influence on such 'factual' documents (Marien 2002:42). Blurred images were deemed to resemble the pictorialist style too closely and were thus unacceptable as documents of reality (Rosenblum 1997:167-170).

Figure 3.4 Riis, J. 1901. Members of the gang showing how they "did the trick"

Another factor was the fact that photographs that were faked had been shown to have been used as evidence of the guilt of those photographed. The Paris commune of 1871 is said by Rosenblum to mark the end of the era of society's unwavering belief in photographic truth, seeing that photographs were used to accuse those photographed of communard atrocities, but later publicly shown to be fakes issued by the Theirs government. The Paris commune of 1871 was, however before illustrated newspapers could start using photographs as illustrations through the halftone process, and thus before the start of photojournalism.

According to Schwartz, by the 1930s, journalism professionals avoided the term *artist* for photographers, even though their predecessors were called 'sketch artists'. Because photographs were hailed to be objective because they were created by mechanical instruments rather than by the human hand, photographers naturally came to be viewed as technicians rather than as authors of their images. According to Rosenblum (1997:158,163), the names of makers of documentation images were sometimes lost, and at first photographers did not receive by lines for their images published in the papers (Schwartz 1999:17).

In documentary photography there seems to be a greater acknowledgement for the photographers, especially in cases where the photographers were the initiators of the projects, as with John Thomson and Jacob Riis. Riis, who is said to be the first social documentary photographer, also claimed truth value for his images. Riis did not regard himself as a photographer, but rather as a reporter that merely used photography as a tool, therefore denying any artistry in his work (Rosenblum 1997: 361).

The need for and use of accurate visual documentation in support of programmes for social change can be seen as a product of the reigning positivist ideology during the late 1800s. By this time photography's status as purveyor of truth was well established, although the half-tone printing process was not widely in use yet. Visual illustrations from photographs (not the photographs themselves), together with first-hand interviews, were said to form the bedrock of sociological documentation (Swartz 1999:164).

Scenes were at the same time often manipulated by rearrangement of the subject matter, as well as by staging, cropping and selection in order to convey a desired message (Koenig 2003: 347). This manipulation was tolerated in varying degrees, depending on the nature of the manipulation and the nature of the scene recorded. Dr Thomas John Barnardo, an organiser of charitable institutions, used photography as a public relations tool as well as a method of raising funds. 'Before' and 'after' photographs of street urchins were printed on *cartes de visite* (small visiting card portraits). Barnardo was accused of 'falsifying truth for the camera' because the so-called transformations of the street urchins into industrious, clean little boys, were often merely cosmetic (Koenig 2003:347). Barnardo's response that he was seeking 'generic rather than individual truths about poverty' indicates that he did

present the images as portrayals of truth. Generic as opposed to specific truth has remained an issue of debate among photographers and those involved in the industry. The attitude of the general public to this kind of tampering is not documented.

On looking at the history of social documentary photography as well as war photography, one often finds references to the motives of the photographers and how the images fulfil these motives visually Saayman Hattingh 2005: 9, 60). The resulting visuals are thus influenced by the motives of the photographers, or commissioning organisations, making them subjective. One finds, for example, a strong contrast between ethnographic photography and Robert Flaherty's photographs of the Inuit people (Rosenblum 1997:349).

Flaherty's motive was to make his subjects palatable to white Americans with strong ethnographic biases (Rosenblum 1997:349). Flaherty's images show his subjects close up and smiling, engaging, while ethnographic photography seems to focus on tools of trade, dress and body structure, often for the purpose of studying physical attributes of those photographed in order to gain insight into the person's character or into the cultural group's collective character. Flaherty's images were just as posed as ethnographic photography normally is, but he shows the people as heroic and energetic rather than as objects of study, through his manipulation of purely photographic techniques.

The use of photography in social documentary, ethnography and the recording of social types such as criminals, the insane and the poor indicate that photography is treated as having great "authority as a means of visualising the human body" (Green-Lewis 1996:159). Since the 1850s, photography was widely used to illustrate 'scientific' works that relied on theories from physiognomy and phrenology, as is exemplified by Darwin's book *Expression of Emotion in Man and Animals* (Green-Lewis 1996:159). Green-Lewis's in-depth discussion of the use of photography to illustrate such works shows that the photographic illustrations not only served to corroborate the theories of physiognomy and phrenology, but also entrenched and perpetuated a specific ideological approach to the body as text, established before the invention of photography, rather than showing up the fallacy of such theories and ideologies. The fact that the images were no longer drawn by hand, but by machine, therefore did not change how they were read and used. Works such as Johannes Lavater's *Essays on Physiognomy for the Promotion of the Knowledge and the Love of Mankind* used line drawings and lithographs to illustrate their scientific publications. Photographs were later applied to fulfil the same function, but only better (Green-Lewis 1996: 135-168).

Wells (2004) states that the sciences of physiognomy and phrenology, combined with the use of photographic techniques, including composite portraits, promoted a racist and classist view of society. These sciences led to the development of eugenics, which was embraced by Nazism. A good example

of the power that photographic social documentation was seen to have is the reaction of the Nazi government to August Sander's self-initiated project, published in book form as *Antlitz der Zeit (Face of Our Time)* in 1929 (Rosenblum 1993:364). This book, containing a selection of portraits of individuals from all professions and classes in Germany, was banned in 1934 in part, because it showed the 'truth' about the German nation in that it was far more diverse than the Nazi ideology allowed for. The portraits are simple, well lit, direct images, showing people at their trade, or in typical situations (Rosenblum 1993:364). The title of the book does not mention Germany at all, and nationality cannot be deduced from visuals alone. The people photographed appear as individuals in their own right, and only the text of the book and the captions tie them down. Yet, this was seen to portray an uncomfortable truth, and was thus banned, and all the plates destroyed.

Struggle photography in South Africa is another example of a government's reverence for photographic messages. Press freedom in South Africa has had a difficult history (Saayman Hattingh 2005: 72-75). There is an interesting parallel between the banning of *Antlitz der Zeit* by the Nazi government and the banning of Eli Wenberg's book, *Portrait of a People* (1981) by the Apartheid government (Saayman Hattingh 2005: 72-75).

Based on this power, photojournalism became a well-respected profession. Organisations such as the National Press Photographers Association (NPPA) and various photo agencies were formed since the 1940s to protect and promote the profession of photojournalism. The NPPA was founded in 1946 (NPPA 2007). Training programmes were established and competitions were launched, honouring the skills of the photographers and establishing aesthetic and professional standards (Best of Photojournalism 2007). These competitions would reward good composition and use of light as well as the content and actions, emotions, and atmosphere captured. The artistic input of the photographer thus came to be rewarded and revered.

One of the most notable of such organisations is *Magnum Photos*. Since its inception in 1947 (Magnum Photos 2007), Magnum has been known for its independence, and due to the marked difference in approach of the two main founding members, Robert Capa and Henri Cartier-Bresson, has always taken pride in the individuality of the various members. The 1989 retrospective and celebration of the work of Magnum photographers, *In Our Time: The World as Seen by Magnum,* the skill, personal vision and artistic merit of the photographers are emphasised. According to Schwartz (1990), the line between reportage and art had become more and more blurred by 1990. As Schwartz mentions, it seems logical to attribute the motivation for the move towards self-expression in photojournalism to the diminishing number of publications, especially magazines. Because of the decreased demand for their images, photojournalists had to reinvent their profession. This is exemplified by the numerous gallery exhibitions of photojournalist images as well as book publications authored by the photographers themselves

(Schwartz 1990:9-10). Schwartz mentions specifically the exhibitions and exhibition catalogue, *On the Line: The New Colour Photojournalism,* put together by Adam Weinberg.

Schwartz (1990: 5) states that Weinberg comments on the medium by acknowledging that art does not preclude reportage and vice versa. Weinberg illustrates that the new photojournalism acknowledges and encourages the subjective viewpoint of the photographer by celebrating individual style. Select photojournalists have become recognised as artists by the art world in that their work has been widely shown in gallery exhibitions and publications. The work is thus presented to the public, removed from the original context, to be appreciated as subjective expressions by the photographer, while still acknowledging the photojournalistic ties. According to Schwartz (1990:28), there is "a heightened concern with formal manipulation and an increased level of self-consciousness". This is interesting in the light of a statement made by Stott in 1973 that "[t]he heart of documentary is not form or style or medium, but always content" (quoted in Wells 2004:83). The 'heart of documentary' seems to have become divided between concerns with content and self-expression. Sekula (as cited by Wells 2004:73) claims that for documentary photography to be seen as art, it must transcend "its reference to the world". The use of colour photography in photojournalism has also been widely criticised since the 1970s, partly because many artists started using colour film and soon colour images came to be associated with personal expression far removed from reality. Colour is also associated with the fanciful images of advertising (Marien 2002:405).

In the company of God (2003), by Joao Silva, a photographer contracted by *The New York Times* magazine, could be described as such a book with an increased level of self-consciousness and heightened concern with formal manipulation. The book consists of a collection of images accompanied by descriptive captions as well as four short essays providing background information to the motivation for the ongoing conflict from the Iraqi side. This combination of a collection of images supported by thorough informative text follows a trend that has revived the old documentary practice of before World War II, except that the photographers now compose their own text. Other examples are Susan Meseilas's books, *Nicaragua* and *Kurdistan,* as well as the work of Gilles Peres (Marien 2002:403).

In the foreword to *In the company of God* (2003), Burns (2003:8) describes Silva as a very brave, passionate, creative craftsman. He is thus described as a photographer who goes beyond mere recording. Burns states that "[i]In years to come, those looking for an understanding of the disasters that befell the American enterprise in Iraq will find some of the answers in these pages" (Da Silva 2003:. The images cannot be considered without the text, as they are presented as a unity, but it is presumed that Burns meant that the answers could be found in the images and text combined, rather than in the images or text alone. The text offers historical and current facts regarding the situation, while the images do not merely convey facts – they supply the opinions, emotional weight, and subtle interpretations of the facts

by testifying that conflict did occur, and that various things did indeed exist.

Silva (2003:9) states in the introduction that the book is, "in part, a personal attempt to comprehend". Silva uses the act of creating to clarify his own understanding of the situation. Subjectivity is therefore acknowledged.

The impact of such proclamations of subjectivity on the reception of photographs in the news media is difficult to determine. Although publicised in book form and through exhibitions, the main space of public interaction with photojournalism still remains the mass media. The term *artist-photographer* is still reserved for a small elite. The majority of photojournalists are still portrayed by Schwartz (1990), Weinberg (1986), Ritchin (1990) and others as adhering to the conventions of objectivity.

Schwartz (1990) refers to events occurring in the late 1980s, before the use of digital technology to alter photojournalistic images became ubiquitous. The manipulation of form and self-consciousness continues and is probably enhanced by the use of digital technology, both during the taking of the photograph and afterwards. Digital technology lends the photographer greater control over elements of form such as tonal value, contrast and colour. Many photographers who think of themselves as artist-photographers therefore use the technology to assume a greater degree of authorship and self-expression, often venturing beyond mere enhancement of the captured image, into alteration of the image elements themselves. Ritchin made a prediction to this effect in 1990: "They (photographers) may, for example, be able to evolve more quickly from the role of semi-mechanistic transcriber to one in which they serve in a more openly interpretive, multi-faceted role as witness" (1990:113).

The issue of authorship in photojournalism is problematic because the photographer often has little say in the specific image chosen to be published and how it is used (Ritchin 1990:110-111). The photographer is given credit for the taking of the image in a by-line printed in extremely small print next to the photograph, if at all. The by-line is mostly invisible, unless consciously searched for by the viewer. Photojournalistic images published in most news media (there are exceptions), therefore remain practically author-less. Ritchin sees digital technology as one way in which the authorship of the photographer can become more apparent, as well as more publicly acknowledged and publicised. Ritchin also suggests that if this is the case, by-lines that are more prominent will be essential. Ritchin acknowledges the fact that all photographs are authored, suggesting that the use of digital technology necessitates more prominent acknowledgement of the authorship of the photographer, which implies that Ritchin is of the opinion that digitally worked photographs are (potentially) more subjective than conventionally produced and reproduced photographs. The point that Ritchin makes is, that, together with receiving greater acknowledgement for their work, photographers will also become more responsible for the message conveyed through their photographs. Newton (2001:182), on the other hand, suggests

"structuring caption information to cite the subjective role of photojournalism in reporting news".

According to many writers, photojournalists and commentators on photography, the credibility of photography is declining quickly and in danger of disappearing altogether. According to a 2004 opinion poll, print and broadcast media credibility in the United States has declined drastically since 1996 (PEW 2004). Viewed in this context, it is natural to assume that the credibility of photographs will also have declined.

A study by Kelly and Nace (1994), however, showed that photograph believability is not influenced as much by context as is text. (The contexts tested were two factual media. Factual media were not compared with non-factual media.) It was also found that rudimentary knowledge of what can be done to photographs digitally did not affect how the participants rated the credibility of the photographs (Kelly & Nace 1994:5). This seems to indicate that knowledge does not necessarily influence one's immediate reaction to photographs. As Newton (2002:184) also mentions, we are so conditioned to believe photographs that it is only when we decide to stop and think about what we see that we might start to question what we see.

Nevertheless, no participants rated any photographs in the Kelly and Nace (1994) study totally believable and it is very probable that, as many writers have predicted, public belief in photographs is declining. There is, however, no empirical evidence of this as far as I am aware. Whether this decline is due to the proliferation of digital technology alone is debatable. Other contributing factors are probably the association of photography with art (and therefore subjectivity and personal expression), and the decline of media credibility in general (due, e.g. to mistakes and fabricated stories). Another possible factor is what theorists have called the post-modern condition, or post-modernity.

Post modernity, as described by Klages (2007:1), is essentially a critique of modernistic "grand narratives". One such a narrative is the role of 'purveyor of truth' assigned to photography through the process described in this section. The narrative masks the contradictions and inconsistencies within the system itself. One such an inconsistency is that in the profession of photojournalism, manipulating the message of the photograph through cropping, selection or choice of angle of view is acceptable, but moving a pyramid an inch in an image to fit a format, as *National Geographic* did in 1982 (Ritchin 1990:15) and leaving the essential message of the image largely intact, is not acceptable. The inherent paradox of the simultaneously objective and subjective qualities of photography also goes against the grain of this narrative.

In this narrative, the nature of visual truth is such that it is only safe in photographs untouched by digital manipulation. The very nature of visual truth is under question in post-modern thought. Newton (2001:9)

suggests a possible definition of visual truth: "Visual truth is authentic knowledge derived from seeing." In her discussion of the definition of visual truth, Newton (2002:7) mentions the word *verisimilitude,* which is defined in the as "the appearance or semblance of truth; likelihood, possibility ... something having merely the appearance of truth".   This concept of the appearance of truth becomes significant in the context of Mitchell's (1995) notion of the "pictorial turn" of present culture. Information, knowledge and communication rely more and more on images. Vision has become the dominant sense and appearance has become all-important   As Debord (1976: 3) also states, "the spectacle is affirmation of appearance and affirmation of all human life, namely social life, as mere appearance." The words "mere appearance" suggest degradation from some other state, possibly more concrete, since images in the media are transitory.   Debord also goes on to say that "[t]he concrete life of everyone has degraded into a speculative universe" (1976: 5).

This seems to involve opposing views: on the one hand, post-modern thought criticises and questions the grand narrative of photography (its status as purveyor of truth) and with that, questions the very nature of truth as something that can be recorded, communicated and defined. On the other hand, post-modern society is a "society of spectacle", where most of our experiences are mediated, and we rely on the image for our contact with the world (Debord 1976: 4). It is perhaps because of society's belief in the uncertainty of truth that it is content to accept "mere appearance" as conveyor of knowledge, entertainment, communication, and information (Mitchell 1995:11).

Through this discussion of the social reception of photography it is apparent the belief in the saying, "The camera never lies" is socially constructed through emphasising certain aspects of photography over others, making sharp distinctions between art and photography.

Gradually, as photography became more ubiquitous and served more and more purposes, the interpretative nature became more important, and the distinctions between art photography and 'factual' photography started to disappear.   The philosophy that the world can be known absolutely through observation has gradually been replaced by uncertainty about the appearance of things and what they mean.   Incontrovertible truth has become out-dated and is replaced by an understanding that images supply mere appearances, together with an acceptance that more than appearances is not forthcoming.

Has public belief in the veracity of photographs thus disintegrated? In the light of Bossen's (1985) opinion, and Kelly and Nace's (1994) observation, as mentioned in the first paragraph of this section, this seems not to be the case. Kelly and Nace, however, also made the point that the believability of photographs probably has a lot to do with whether they make sense in the viewer's current understanding of the world or not (1994:5).

To the statement by Ivins (1953) (as quoted by Newton 2001: 84) that "[t]he nineteenth century began by believing that what was reasonable was true, and wound up believing that what it saw a photograph of was true" might be added that the 20th century started off believing that what it saw a photograph of was true, and wound up believing that what was reasonable was true. Is it therefore possible for a photograph to change a person's mind? This seems to be the crucial question. Sontag (2003:29,30) also voiced fears that photographs have lost their power of persuasion. The advertising industry on the other hand still manages to persuade as ever before.

3.2.2 The photograph as embellished record (portraiture, family photography, and advertising)

Photography almost immediately replaced paintings wherever accurate recording was an issue and where the process allowed, especially in Portraiture (Hirsch 2000:25). As mentioned before, it is the paradoxical nature of photography that lends it its power of persuasion and social impact (see Chapter 2). The factual basis (amongst other things), or in semiotic terms, its indexical and iconic resemblance to the subject as well as its ability to make fantasies visual and embellish the subject, made photographic portraiture, and later advertising photography, a very lucrative business within the first five years of its existence (Marien 2002:266)..

With portraiture there seems to have been early criticism of the claim for photography's status as being able to replicate the likeness of reality faultlessly. The Daguerreotype process, for instance, was associated with death and illness because of the metallic sheen of the silver plates, the lack of colour and the stark expressions that were necessary in order to be able to keep absolutely still for several minutes. The Daguerreotype was at the same time marvelled at for the ability to capture fine detail as well as the "truthfulness" to the sitter's features captured (Marien 2002:63). Many daguerreotype portraits were hand-coloured in order to make the sitters look more lifelike. This practice was, however, also criticised by Lacan as devaluating the photographic medium. According to Marien, retouching and staging of portraiture did not diminish the public belief in the truthfulness of the photograph, but some, especially in America, did feel it necessary to reinforce this notion with techniques such as using plain backgrounds and photographing the sitters directly from the front, with direct stares (Marien 2002:74).

As the photographic process became more advanced, more relaxed poses and expressions were possible. Enacting an emotion for the camera was not seen to detract from photography's status as portrayer of true likenesses (Marien 2002:63).

As portraiture became a major industry, portrait studios became increasingly popular. It became common practice for these studios to stock elaborate props, backdrops and even exotic garments for the sitters to wear. These additions to the simple portrait would portray social status (actual or aspired to) and exotic

fantasies. It became possible for members of the new industrial society, often displaced and becoming more and more homogeneous, to experiment with various identities, and to build a visual image of themselves that had not really been achieved. Because photographs were seen to convey truth, these images made wishes seem to come true. People would, for example, pose in front of expensive-looking furniture and draperies with a book in their hands, in order to look learned (Sagne 1998:110-111). In this sense, photography has close ties with theatre and artifice (Sagne 1998:103). The literature of the day did not accuse these images of being false and deceitful, but rather complained that the image that society put on display through photographs was shallow and demeaning (Sagne 1998:110-111).

The important point here is that photographers, clients, and critics alike believed that it was possible for photographs to convey the character and personality of the sitter, and that character was read into photographic portraits. This notion is based on the age-old idea that the physiognomy of a person is telling of his or her character. Photographers, however, know how to use several devices to portray character, such as lighting, pose, gesture, props, backgrounds, and viewpoint. Portraiture is thus a good example of how the resulting 'truth' that the photograph communicates is a result of the photographer's interpretation of the subject.

The portraitist's job was to provide the sitter with a pleasing likeness. A certain amount of embellishment was thus necessary. For many the portrayal of the ideal character (the best the person can be) was the aim. The use of photography still allowed such portraits to be truthful, although the notion of truth here refers to a romantic interpretation.

It is interesting to note that the practice of always capturing smiles in commercial portraiture took several decades to develop. Smiles and jovial expressions have, since the late 1800s, become standard practice in commercial portraiture, and especially in armature photography and family snapshots, although it has always been avoided in serious, 'artistic' portraiture.

The invention of the small-format, hand-held camera, together with the dry plate process and later roll film, enabled an ever-growing public to engage with photography directly. Numerous images were created by unskilled amateurs as personal record and mementos during the last two decades of the 19th century. The general public thus had first-hand experience of making exposures and then receiving, from the photographic companies, pictures that resembled what they saw in real life, without their having to have picked up a pencil or a brush. Photographs very quickly became important personal documents and records of memories (Rosenblum 1997:259-261).

These family photographs are infamous for showing only joyful expressions and happy memories. Although these memories are not false in themselves, they do portray an unrealistically rosy view of life.

Photography has come to play such a central role in our lives that our memories are often dependent on photographs; we remember that which was photographed much more clearly than events that were not recorded, because we have the images to remind us. Our memories are thus shaped by the nature of the images we have of the past, and therefore we remember mostly the good times. We take the photographs to represent our past truthfully, firstly because they are photographs and secondly because we were there to witness the events as well. Photographs can, however, only present a selective view of the past and thus our memories are shaped by the photographs. As Newton (2002:88) notes, it often becomes unclear whether a certain vivid memory was experienced first-hand or whether the vividness of the memory is only due to a photograph that was taken at the time, often by a parent.

Family photographs seem to be the genre of photography that has retained the most credibility because society itself is in control of what happens to the images, and, as mentioned before, were often witnesses to the events themselves, or know those who were. However, family photography is not exempt from manipulation and retouching. The manipulation of family portraits and snapshots has increased considerably since digital technology has become so ubiquitous. One finds many services advertised on the internet that offer to remove an unwanted person from a photograph, or to create a new background, basically creating montages similar to what has been done with conventional techniques since photographs have been printed on paper (e.g. www.*digitalrestoratio.com*).

It has become so easy to create fantasy scenes by using family portraits that it has become quite commonplace. The alteration of background and other elements of a photograph does not seem to make the image less valuable as a record. No matter what has been done to such photographs, they always testify that somebody was there, that this is what they looked like, and that somebody else was there to witness the occasion. As Frizot (1998: 753) puts it, "Each school, wedding or military photograph tells – within a fairly rigid framework – the story of a personal adventure lived as if unique, and, what is more as exemplary, confirmed as it is in everyone's sight through true images." Frizot (1998:753) describes how these images have always been subject to alterations and manipulations such as montage, retouching, and colouring: "The individual willingly escapes from the prosaic definition of their social setting to which photography bears public witness by modifying this setting." Reality thus becomes artificial in its representation without necessarily deceiving, but not telling just the truth either. In other photographic applications, such as journalism, documentary (as discussed above) and advertising, these embellishments, whether they are slight adjustments or major alterations to the representation of reality, become less innocent.

The importance of the use of photographs in advertisements was only fully realised in the 1920s, once the effectiveness of photographs in political and ideological propaganda was proven (Rosenblum1997:491). For instance, the advertising company Maiakovskii-Rodchenko Advertising-

Constructor undertook to use advertising to further their ideology, just like the 'enemy' (capitalist advertising) (Marien 1998:266).

Advertising photography is a prime example of the power of photography, because it can be both factual and persuasive. Ever since the introduction of the use of photographs in advertisements, the opinion was widely held that photographs made the advertisements look more authentic than artists' renditions of the objects (Rosenblum 1997:491), despite the fact that these photographs were mostly black and white.

Advertising (together with amateur photography, commercial portraiture and family photography) was the first industry to use colour photography (Rosenblum 1997:492). Colour photography thus became associated with the typical advertising imagery, and was at first shunned by artists, documentarians and photojournalists, even though colour images are more true to reality than black-and-white images.

According to Rosenblum (1997: 497), photographs make imagined scenes seem realistic, allowing viewers to momentarily believe in this 'reality' while knowing that the scene has been constructed. Rosenblum ascribes the casualness with which the public approaches photographs to the 'codelessness' of the photographic message as described by Barthes (see Barthes 1993:509). These constructed realities seldom depart from the plausible, and are mostly very realistic, although highly styled. The first advertising photographs were greatly influenced by the New Objectivity, emphasising 'the thing itself' by rendering sharp focus and clear shapes realistically.

Paul Outerbridge's *Idle Collar* (Fig. 3.5) shows, for instance, the product that is being advertised very clearly, with the maker's name very visible, although discreet. The collar is placed on a black-and-white checker board set at an angle. The collar is placed so as to create a diagonal line in contrast with the lines of the checker board. The collar creates a curve that starts on the lower right-hand intersection of horizontal and vertical thirds and ends on the upper right-hand intersection, covering most of the frame in doing so. This simple arrangement merely seems to show the product advertised, but an analysis of the image elements shows that the image communicates much more than a description of the product. The strong contrasts of the black and white squares as well as the square shapes have a manly association. These squares are, however, set at an angle, creating a series of diagonals, which connotes a bit of excitement. The contrasting curve and diagonal creates some tension within the image and focuses the attention on the collar. The collar also creates an elegant curve. These various lines created by the board and collar, although contrasting, are still very much ordered. This collar could thus be associated with manly elegance and well-mannered excitement, while remaining a very good description of the collar itself. This image thus uses the realistic, direct style (at that stage associated with the New Objectivity movement (Hirsch 2000: 281) to suggest that the collar will give the wearer all the above-mentioned qualities.

Sontag (2003: 29) describes the first publication of Robert Capa's famous war photograph *Death of a Republican Soldier* in *Life* Magazine together with an advertisement for hair cream that was published on the opposite page to Capa's image. This advertisement showed a man "exerting himself at tennis" and a full-scale portrait of the same man with slicked down hair and a white dinner jacket.

The contrast between the two pages is striking, the advertisement being crisp, clean, and slick while the war photograph is grainy, gritty, and unclear. The advertisement is clearly staged, while there is little doubt that the war photograph was not staged. The advertisement is, however, not less persuasive than the war photograph. In the advertisement we can see the lustrous hair and stylish personality, and assume that it is so because the model uses the hair cream advertised. In the war photograph, we are asked to believe that the image was taken at the very moment that the soldier was fatally shot.

The veracity of both images is equally uncertain, although at that time photojournalists had a stronger claim to credibility than advertising companies. The style of the photograph also persuades the viewer that it is more truthful than the advertisement.

The casual poses and natural settings of the photojournalistic style were also used in advertising and fashion photography. Although they were only used in annual reports at first, they soon became one of the many styles photographers could choose from to portray the product in the desired light. The documentary mode as used in fashion photography became popular after WWII as exemplified by the work of Diane Arbus and William Klein. The photojournalistic style and documentary mode were applied by advertising photographers in a field known for its artifice in order to connote objectivity, authenticity and reality. This 'documentary', or 'objective' style has gone through various changes and fashion trends and still changes from time to time (Wells 2004: 69).
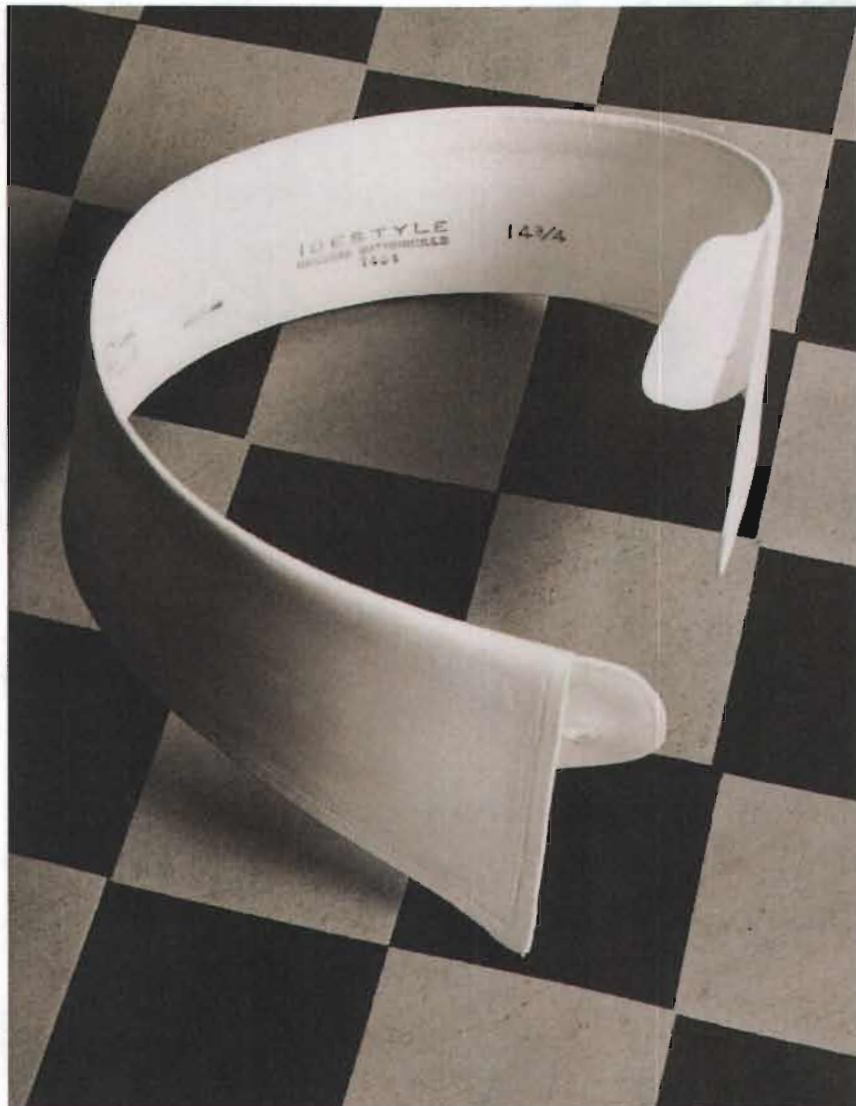
Figure 3.5   Outerbridge, P. 1922. Idle Collar

3.3   Conclusion

Without denying that it is possible for photographs, and any visual imagery, for that matter, to communicate facts (pictures have served that purpose for hundreds of years before the invention of photography), literature on the social reception of photographs indicates that pure objectivity is impossible (Schwartz 1992; Batchen 1997). It is acknowledged that objectivity in photographs occurs in degrees, but the power of the medium and the culture that has been constructed around it cause photographs to be received as being far more objective than they really are (Schwartz 1992; Schwartz 1990; Schwartz 1999).

The motivation for the initial use of photographs in newspapers has as much to do with sensationalism and marketing as with the reporting of events (Schwartz 1999). Newspapers at first felt that the public had to be reassured that the images published in the papers were in fact the 'truth', especially in order to target the educated readership.

From this discussion it is clear that photographs present varying relationships with reality, but it is precisely this relationship with reality, irrespective of its precise nature, that keeps the public and theorists enthralled.

Various factors have worked together to establish photography (even photojournalism) as a medium that can be as expressive and subjective as any other medium. Although this has not totally eradicated public belief in scientific photographs, news photographs, family photographs and other forms of portraiture, photographs are also not taken to be the first and last word on any issue (Kelly & Nace 1994).

Theorists would have us believe that post-modern society is comfortable with the notion of multiple truths and unstable meanings. It seems logical that a society that is content with the "mere appearance" of reality rather than with reality itself (which is intangible at best) (Mitchell 1995:11) would be comfortable with digital manipulation of photographic images. Society is, however, also neither stable nor one-dimensional. The reception of digital manipulation therefore varies with context of use as well as with the nature of the audience, as will be discussed in Chapter 4.

CHAPTER 4

DIGITAL IMAGE MANIPULATION IN THE MEDIA

4.1   Introduction

The study of photographic image manipulation often forms part of the study of image ethics. Moriarty and Kenny (2005) place the study of image manipulation and ethics separately under the heading of critical studies. The seminal works on image manipulation, however, all have an image ethics slant. The two fields are very closely linked in the sense that all aspects of image production and usage have ethical implications.

This chapter is concerned with the use of digitally altered images in mass media and the attitudes of those involved the use of such images. Personal attitudes are often based on what is seen to be right or wrong within specific contexts. It is therefore essential that a discussion of literature on visual ethics as such also forms part of this chapter.

A central question to this discussion is what ethical standards for the alteration of photographs entail. An understanding of visual ethics theory as outlined by Newton (2005) provides a departure point in addressing this question. Parrish (2002) discusses visual ethics theory specifically in relation to photojournalism, discussing the implications of deontological and teleological ethical theories for photojournalism, while Lester (2005) outlines six ethical principles that should be considered when analysing images: "categorical imperative", "Utilitarianism", "hedonism", "golden mean", "golden rule" and "Veil of ignorance". More specific investigations into ethical standards for photographs can be found in empirical studies conducted by Fahmy, Fosdick and Johnson (2005) and Reaves (2005). Both articles examine attitudes to the use of digital manipulation

Whether a digital procedure performed on a photograph is ethical or not also greatly depends on the definition and classification of digital alterations. What precisely constitutes alteration is discussed with reference to various institutions' permissible and impermissible procedures lists. Various procedures are classified in terms of the technology used, the stage in the process of creation of the image, the level of alteration, whether the alteration is global or local, technical or content-altering, and how deceptive or manipulative the alterations are.

In our own Image by Fred Ritchin (1990) states the problem that manipulation poses to photojournalism through an insightful discussion of numerous visual examples. Ritchin also gives some possible solutions to the problem. Ritchin discusses, amongst many examples, the work of Pedro Meyer, a documentary photographer who has embraced digital technology to the fullest. Meyer's own publication, *Truths and*

Fictions: A journey of documentary photography to digital (1995), as well as his website www.ZoneZero.com has been very influential in the understanding of the possible positive impact of Digital image alteration on documentary photography.

William Mitchell's *The Reconfigured Eye* is another seminal work, published in 1992, which discusses how the photographic message is affected by digital imaging. Mitchell also describes the process of manipulation and provides some principles for the classification for types of manipulation.

Reaves has published several articles, reporting on empirical studies of professional and public views regarding the use of digital image manipulation in news as well as popular and specialist magazines/newspapers. A similar, more recent study was done by Fahmy, Fosdick and Johnson (2005). Following suit, this chapter discusses attitudes towards image alteration of image professionals involved with both factual media such as news magazines and entertainment media such as fashion magazines. This chapter, however, also looks at attitudes of the general public and critics. Hantz and Diefenbach (2002) are concerned with public trust, postulating that manipulation of images has made public trust in images decline, causing the public to be less susceptible to manipulation.

Howard Chapnick's book, *Truth needs no ally* (1994), gives an overview of the history and practice of photojournalism and argues for unflinching ethics in the use of image manipulation. Chapnick even criticises the practices of revered photojournalist W. Eugene Smith. Greer and Gosen have also added to research into the ethics of image manipulation as well as into viewers' attitudes towards image alterations, distinguishing between attitudes towards major, minor, and moderate alterations.

From the above-mentioned sources, as well as some others, rather than a simplistic definition of digital alterations, a more complex classification of types of alteration in terms of technology, the stage in the process of creation of the image, the level of alteration, the nature of alteration and level of deceptiveness is discussed. The classification of alterations has implications for the ethics of the visuals concerned, although ethics also plays a role in the classification itself.

4.2 Visual ethics

Newton (2005) highlights the importance of the visual in human thought processes. According to Newton (2005:431), humans initially react intuitively and emotionally rather than rationally to visual stimuli.

Newton (2005) argues that visuals have the power to influence behaviour before the issue is considered rationally. Visual communication is therefore at least as important as verbal communication in how it affects human behaviour.

The study of visual ethics is defined by Newton (2005:433) as "the study of how images and imaging affect the ways we think, feel, behave and create, use and interpret meaning, for good or for bad". The ethical use of images then means the "appropriate use of imaging power in regard to self and others" (Newton 2005:434).

Newton (2005: 434) proposes that visual ethics be approached from within a system of human living, taking all issues of context into account. The consequences of the use of visuals should be considered on various social levels (Newton 2005: 435).

This approach mentioned above leads to a distinction between the ethics of process and the ethics of meaning (Newton 2005:437). Ethics of process would include all aspects of the production process such as the photographer's dealings with the photographed, the technical issues of making the exposure and the post-exposure treatment of the image. Ethics of meaning refers to issues of interpretation of the viewed image within a certain context.

Any given visual can be more or less ethical in one or both aspects and/or unethical in one or both aspects. Visuals are not easily classified as ethical or unethical; rather, a continuum exists between the extremes (Newton 2005:437). The meaning attached to photographs, more so than other media, is highly fluid and dependent on context (Bright 2005:7). An image that is ethically neutral can therefore become unethical through context of use and the nature of the audience (Newton 2005:438, 439).

After giving a very cursory overview of ethics theory, Wheeler (2002) expounds on the ethics of photojournalism process. Digital manipulation is essentially concerned with the ethics of process, whether the meaning of the image is affected by the process or not. From a viewer's point of view, the process is mostly invisible and therefore not considered. The ethics of process (concerning digital alteration) is therefore concerned with broader possible consequences to the photojournalistic industry's credibility.

The Code of Ethics of the Society of Professional Journalists, which has four sub-headings: "Seek Truth and Report It, Minimize Harm, Act Independently, Be Accountable" (cited in Wheeler 2002:74), does not inherently rule out digital alterations of editorial content. The nature of photographic truth is too complex an issue. The nature of the visual truth can never satisfy all aspects of truth. For example, a visual can be true to the moment, but portray the subject untruthfully (Lester 2005:104), or true to the captured image, but untrue to aesthetic standards and the meaning associated therewith.

4.3   Defining manipulation

The purpose and result of image manipulation is often the manipulation of the viewer's understanding, thoughts, and ideas, in varying degrees. Manipulating the image, manipulates the message understood by the viewer, and therefore has the potential of indirectly manipulating the viewer. How this manipulation of the viewer takes place is discussed in the sections on visual literacy, and semiotics. Because of the two aspects of the word *manipulation*, the term *photographic image alterations*, or just *alterations*, will be used to refer to the manipulation of photographic images, while *manipulation* (of the viewer) will be reserved to refer to the manipulation that results from images, altered or not. In this section, definitions and classification of various types of alteration in various forms and stages will be given.

Digital image alteration in its simplest definition is any change made to an image from the captured state using any form of image manipulation software. The many types and magnitude of changes make it impractical to give a single definition. A more complex classification of types and levels of alterations would be more practical.

4.3.1   Manipulation of the viewer or visual persuasion?

Before proceeding to define and classify image alterations, a distinction must be made between image alterations and manipulation of the viewer. Manipulation of the viewer and public opinion are mostly brought about by the skilful use of manipulations inherent to the medium of photography. Petterson (2002:6) states that people's perception of reality can be manipulated through careful selection, cropping and captioning of images as well as by changing picture elements. Image alterations done with the intent to manipulate or persuade the viewer are far less common and often less effective (Messaris 1994b:197).

A striking example of this is the much written about photograph of Stalin addressing a crowd on May 5, 1920. According to W.J. Mitchell (1992), the photograph exists in two versions, one including two figures (one of them Trotsky) on the makeshift stage, and the other without the two figures, the figures having reportedly been removed. If one studies the two images carefully, however, none of the faces in the photograph are faced in precisely the same direction as in the other image (neither that of Lenin, nor any faces in the crowd). The focus on the background buildings is also different, suggesting that a different aperture was used. This suggests that the two photographs were in fact two separate exposures from the start, capturing two separate moments, with a strong possibility that Trotsky simply moved away, and did not need to be manually covered up by the background elements (effaced).

The fact that the image without Trotsky was used in the propaganda campaigns is not coincidental, but the manipulation of the viewer's perception of history was achieved through the selection of the moment

to be portrayed, rather than through image alterations. (There are other examples where Trotsky was indeed removed) (Brugioni 1999).

4.3.2 Digital image alterations

It is possible to distinguish between various types of alterations that differ according to what criteria is used to classify the types. The criteria used to classify types of photographic image alterations that will be discussed are technology, the stage in the process of creation of the image, the level of alteration, the nature of alteration, and the level of deceptiveness.

Using technology as a classification criterion, one can distinguish two types of alterations:

1. Conventional alterations and digital alterations, where 'conventional' implies that no digital technology is used. As stated in the introduction, however, the greatest impact that digital technology had on the photographic medium was that it made alteration techniques that had been used since the invention of photography less time-consuming, less specialised, more precise (each pixel can be manipulated separately) and less detectable. The things that the various technologies are used for are still similar, although there are a few things that have become much more common with digital technology, such as perspective alterations.

2. Another classification proposed by Hantz and Diefenbach (2002:4) is based on the stages in the process of the creation of an image: the production stage and the preparation stage. Alterations that occur during the production stage are called "inherent manipulations", while manipulations that occur during the preparation stage are called "deliberate manipulations".

Inherent manipulations include all alterations that occur because of factors that are inherent to the creation of a photographic image. These factors include: choice of lens, choice of lens filters, choice of type of film or capturing device, choice of camera body, choice of processing, choice of lens aperture, choice of shutter speed, choice of subject selection, choice of angle of view, choice of framing, choice of display medium, choice of the context the image is displayed in (Hantz & Diefenbach 2002:5; Laurie 2002:5), as well as reactivity (Prosser 1998:104).

According to Hantz and Diefenbach (2002:7), deliberate manipulations include enhancements of the image (even if it is to heighten the fidelity of the image) and "deliberate modification of the image elements that is beyond those suggested by the phenomenon".

According to Hantz and Diefenbach (2002:7), deliberate manipulations will include digital alterations, while inherent manipulation will exclude them. It is, however, possible to simulate certain inherent

manipulations during the so-called preparation stage (within limits), e.g. depth of field (choice of aperture), motion blur (choice of shutter speed), cropping (framing), perspective (choice of lens), and point of view, to name but a few. These simulations are all choices that could have been made during the actual taking of the photograph. Doman (1998: 49) states that "the photograph is no longer the result of a momentary and privileged meeting of subject and photographer, but revisionist ability allows seamless intervention with the already completed relationship of the photographer to the reality depicted".

Messaris (1994b:197) pointed out that photographic alterations can often be more manipulative of the viewer than digital alterations. Because of the indexical nature of the photographic medium, photography functions as a seemingly codeless system (Barthes, 1961), which gives photography its persuasive power. See section 2.4.1 for a more elaborate discussion of the semiotics of photography and image alterations.

DigitalCustom™ classifies alteration techniques according to the level of alteration from the original photographic image, as captured. A clear distinction is made between "true-to-life and utility-enhancing procedures" and other alterations, which are again divided into permissible procedures and impermissible procedures. What is permissible or not depends on how and in what context the image is used. In general, far fewer manipulations are permissible for news photographs. See Annexure B for a full list of the various classifications and procedures outlined by DigitalCustom™ (2003:1, 2).

The use of the words *true-to-life ... enhancing*, as it is called in the DigitalCustom™ guidelines (2003:1) as opposed to the term *fidelity enhancing* used by Hantz and Diefenbach (2002:7) is noteworthy. The term *fidelity enhancing* does not indicate whether it refers to fidelity to how combinations such as the camera, lens and film mediate the scene from 'life', or fidelity to life itself. In this sense the DigitalCustom™ approach is misleading, because mediation of reality through the camera is negated. A more accurate way of putting it would be "truer to life".

Greer and Gosen (2002:9) use level of alteration as well as the nature of the alterations as classification. However, they use the terms *technical manipulation* to refer to any manipulation that will affect the form of the image and *content manipulation* to refer to any alterations of the content of the image, be it digital or conventional. A further distinction between minor and major manipulations is also made although they do not clarify on what grounds it is determined what procedures are major or minor manipulations. The examples Greer and Gosen (2002:9) use are:

No manipulation = digitised image, but digitally unaltered. (They do not state what level of contrast and exposure control was used.)
Minor technical manipulation = dodging and burning to control tonal values and contrast adjustments

Major technical manipulation = background digitally blurred

Minor content manipulation = trash (a bottle and a can) digitally removed from corner of image

Major content manipulation = a person digitally removed from behind the main subjects

In general, most sources use level of deceptiveness to determine whether a certain technique is a major manipulation or a minor manipulation, be it technical or content-related. There is, however, no widespread agreement on what constitutes deception. Here it is necessary to make a distinction between deception and manipulation of the viewer. Deception refers to the act of lying. Manipulation, however, refers to managing a person or his/her emotions craftily or tactfully.

The example of minor content manipulation used by Greer and Gosen (2002) could therefore be seen as deceptive in that it indicates to the viewer that there was no trash lying in the street, while there actually was. Similarly, the example of major content manipulation could be seen as deceptive because it shows one less person in the background than there actually was at that moment when the shutter was released. In these examples it was felt by Greer and Gosen (2002), as confirmed by the research participants in their study, that the removal of the person was generally seen as a far more drastic alteration, and therefore more deceptive.

Technical manipulations are generally seen as being manipulative rather than deceptive, and are therefore more likely to be included in the permissible procedures lists of publication policies (see Appendixes B-D for the DigitalCustom® list of permissible and impermissible procedures, the Webster University Journal Policy for the Ethical Use of Photographs; the NPPA code of ethics and the DOD memorandum on manipulation). The DOD memorandum on manipulation also includes most technical alterations in the permissible list, while the following procedures are given as impermissible (in news photographs): "repositioning an element in an image; changing the size, shape or physical appearance of an element; merging two or more visual elements into one; adding an element to an image; changing spatial relationships or colours in an image; or removing a visual element from the image" (Holderness 1997:1). The list of permissible procedures does not indicate that simulations of inherent manipulations are necessarily impermissible; therefore, the *element* in the quote above is taken to refer to the referent of the relevant element unmediated by the image, and not the representation of the element.

Mitchell (1992:87-115; 162-189) also uses the nature of alteration as classification tool. His classification is more technical in that he distinguishes between filtering, applied to the whole image or to only selected sections of the image, and computer collage.

According to Mitchell (1992:87), filtering can be further classified in terms of level of alteration, and can be used for correction, enhancement or transformation. Filtering is described as using numerical functions to'

convert pixel input values to pixel output values (Mitchell 1992:112), while computer collage is described as the transformation and combination of image fragments to yield new images.

For the purpose of further discussion of digital image alterations, simulation of inherent manipulations and therefore technical alterations will be included in the term *digital alterations*. The only procedures to be excluded in these discussions are fidelity (to reality-, or life-enhancing) procedures, e.g. colour corrections, exposure corrections, contrast control and retouching of minor dust specks and scratches.

From this discussion it is clear that digital technology is used in a variety of ways to correct, enhance or transform photographic images. It is also clear that there are a variety of opinions about how it should or should not be used. In the following sections literature on public and professional attitudes towards digital alterations of photographs published in the mass media is discussed.

4.4   Attitudes towards digital image alterations

Attitudes towards digital image manipulation will be discussed from two perspectives. Firstly, attitudes of creators and collectors of images will be singled out and discussed. Secondly, attitudes of the society in general, which will include the creators and collectors, will be considered. In general, attitudes towards photography depend on the context of use, be the photographic images presented as factual, or not. Therefore factual presentation and non-factual presentation of photographic images will be discussed. This discussion will be approached as an informal survey of available formal literature as well as of some informal sources.

The main purpose of this discussion will be to investigate and elaborate on findings by various researchers that level of familiarity and skill with photography and image manipulation software, as well as context of use, influence attitudes towards digital manipulation (Reaves 1989; Greer & Gosen 2002; Fahmy, Fosdick & Johnson 2005).

4.4.1 Attitudes of image creators and collectors towards digital image alterations

According to a 1989 study done by Reaves, editors of travel, life-style and fashion magazines that were in the editors' opinion non-factual, felt that they had a licence to fashion photographs to fit standards of style and perfection on the covers of the magazines.

In general, images that were displayed inside the magazines were treated more conservatively, but many of the editors felt that the context or the 'editorial formula' of their magazines allowed for far less strict rules. It was felt that 'cleaning up' a photograph included the removal of indistinguishable blobs, and extending backgrounds to fit the layout. Editors of specialised magazines tended to see the removal of telephone poles and wires as part of 'clean up' (Reaves 1989:6).

Feature illustrations are a debated issue. Some news publications have in the past substantially altered feature illustrations, arguing that the shoot was set up and they were not making any factual statements with the photograph (Reaves 1989:7).

According to Fahmy *et al. (2005)*, magazine professionals have not grown more tolerant of digital manipulation since 1989. In 2005, fewer than four in ten magazine professionals indicated that they would alter an image for improved legibility (Fahmy *et al.* 2005: 11). Colour alteration is perceived as standard practice but equivalents of darkroom techniques such as dodging and burning and removal of blemishes are moderately supported (Fahmy *et al.* 2005: 12).

The attitude of magazine editors can be summed up in the following statement by Leanne Delap, a fashion magazine editor: "I don't think you can be an editor with an interest in selling magazines if you take a giant stand on all of this. But you do have to have limits" (as cited in Cobb 2003). The covers of magazines are often heavily manipulated, with major alterations to models' bodies. Editors justify this approach by saying that the cover of the magazine sells the magazine, and in order to be competitive, the covers must be perfect, necessitating digital manipulation. Digital manipulation has increased standards of perfection (Gavard 1999)

If one looks at the publication policies and guidelines for the ethical use of photographs mentioned in section 2.1.1, it can be concluded that restrictions on image manipulation in the photojournalism industry (conventional as well as digital) have become much more severe than before digital technology was available.

In 1959 *Life* magazine published a photo essay on Haitian health care, by W. Eugene Smith. One of the images (Fig. 4.1) is of a lunatic in an institution. In this image Smith darkened the background to such an extent that only the subject's face could be discerned, removing the context totally from that image.

This incident illustrates how seriously the photojournalism industry reacts to manipulation of images. The issue here, however, seems to be the deviation from fidelity to the originally captured image, and not fidelity to 'real life'. If the photographer had chosen to underexpose the background and ad artificial light to the foreground from the start, to create the dark background, the effect could have been similar, but the award would probably not have been retracted. According to the organisers of the competition, the reasoning behind the retracting of the awards was that the competition was for photographic skill and not digital alteration skills. According to Schneider, "What we used to be able to do in our business, hand of God or toning, is no longer acceptable and there needs to be a rule on that," (cited by PDN staff 2003)

It seems to be a general trend with photojournalists to value fidelity to the originally captured image more highly than being 'true-to-life'. This is not a new idea, seeing that the nature of classic reportage photography implies a conscious mediation of reality by means of the camera, and the personal viewpoint and understanding of the photographer.

Along with the concern over the negative impact that digital alteration of photographs might have, there are also some who, chiefly under the influence of Pedro Meyer, supported by Peter Galassi, believe that this impact could also be positive. Meyer (2000) believes that it could be used to heighten the understanding of the medium through encouraging critical viewing. Meyer, a documentary photographer, uses digital technology to alter his documentary imagery, creating moments that portray his interpretation of the truth and reality. Meyer also hosts a web site, www.ZoneZero.com, which includes a discussion forum, documentary portfolios, and articles regarding digital manipulation and documentary photography in general. Meyer (2000:3) urges photographers not to let possibilities of misuse deter them from exploring the possibilities of digital manipulation to create a new form of documentary photography that could be as powerful as traditional documentary photography.

Figure 4.2   Schneider, P. 2003. POY competition entry

Figure 4.3   Schneider P. *Charlotte Observer*, 10 March 2002

Not all photojournalists and picture editors have the same attitudes towards digital image manipulation. Chapnick (1994) mentions an example of an image where Eugene Smith inserted a silhouette of a hand and a saw in a legendary image of Albert Schweitzer. This image was published by *LIFE* in 1954. Chapnick (1994:169) quotes a former picture editor of *LIFE* magazine as saying, "I understand and approve of what he did. The hand and saw do not change the content of the picture, although they improve its composition. This picture shows how human Smith was – that even a photographer of his legendary sincerity and talent felt driven to cheat a bit when he found his subject wasn't up to snuff."

From studies done by Reaves it seems as if tolerance towards such manipulations have decreased since the advent of digital technology. According to Reaves (1989), there is a definite difference in attitude towards news photographs and other photographs. All 13 photojournalists interviewed by Reaves said that they would never digitally manipulate a news photograph, yet actions such as removing small insignificant objects or extending the sky was still seen as acceptable for news photographs. In a later survey (1992/1993), Reaves found that 86% of visual editors found actions similar to traditional darkroom techniques (such as burning and dodging) were acceptable, while actions that simulated inherent photographic alterations (such as blurring a background) were acceptable to only 23%. Major manipulations (such as removing a person from an image) were found unacceptable by 90% of the editors. The source does not state whether the images presented to the participants in the survey (677 visual editors) were presented as news photographs or not, or whether the questions put to the participants made any reference to the context of images (Greer & Gosen 2002:5).

An interesting correlation illustrated by Reaves's 1992/1993 survey is that editors with a higher level of education, more photographic experience and familiarity with computer technology were less tolerant towards image alterations than those without the relevant knowledge education and experience (Table 4.1). Reaves also found that the nature of the photographic experience correlated with the level of tolerance towards digital image alterations. In general, editors with magazine backgrounds were far more tolerant than those with photojournalistic backgrounds.

From this discussion it can be concluded that photojournalists and news professionals set great store by the believability and credibility of photographs and go to great lengths to preserve this credibility, be it justified or not. Some of these strategies include well publicised outrage towards any 'broken rule' as illustrated in the *Charlotte Observer* example.

Table 4.1   Co-variance between education and tolerance towards digital manipulation

	Education		Nature of experience		Computer technology	
	College and higher	No tertiary education	Photojournalism	Magazine	High familiarity/experience	Low familiarity/experience
High or low percentage of participants tolerant towards digital alterations	Low	High	Low	High	Low	High

Instead of educating the public towards increased critical viewing, such efforts aim to preserve photography's current status as undisputed purveyor of truth by suggesting that there are two very distinct types of photographs: altered and unaltered. How manipulative these images are does not form part of the equation. The photojournalism industry is thus worried that the credibility of photographs is diminishing. Whether this is the case or not remains to be determined.

4.4.2   Attitudes of the general public towards altered photographic images

Photography can be thought of as a medium through which society interacts with reality. There are many theories that relate to society's interaction with reality, e.g. the sense of reality being something exterior that can be represented; that reality is something that can be objectively known and understood. The role that photography has played in society for the greatest part of its almost 170 years of existence is largely based on such positivistic theories. According to Mitchell (1992:20), chemical photography is essentially positivistic. Many theories that could be classified as post-modernistic have, however, come to supersede the positivistic outlook in intellectual circles, for example Lacan's assertion that our view of ourselves as separate entities from the rest of reality is based on reflections, false representations of ourselves in the mirror of society and that any attempt to signify reality invariably falls short (Barthes on Lacan's term *Tuche,* cited in Burgin (1986:82), Foucault's questioning of the linearity of history, Derrida's attack on logocentricism and Kristeva's challenging of the notion of fixed gender and identity.

The notion that photographs are direct representations of reality does not sit comfortably in the company of these theories. Many writers have expanded on this notion and questioned this quality attributed to

photography, applying the structuralist idea that the connection between the signifier and the signified in photographs is arbitrary, as in verbal language. It is, however, impossible to escape from the indexical nature of photography (in terms of Peircian semiotics). Barthes (1978) has combined the idea of the arbitrary sign with the indexical nature of the photograph, working with layers of meaning: the denotative layer (taking care of the indexical nature of the photographic sign) and the connotative layer of meaning that allows for the arbitrariness and conventionality of the photographic sign.

In spite of above statements, Newton (2001:184) states that photographs elicit a subconscious reaction of belief, before the viewer can rationally interrogate the image. In today's image-saturated media, most images are viewed for a couple of seconds only. This hardly allows time for critical interrogation of images beyond the subconscious reaction. Reaves explains this phenomenon through attribution theory: if an image looks natural, an image is interpreted as being 'real'.

When discussing public attitude towards manipulation of images presented as factual, credibility is the central issue. In a study of perceptions of the public regarding the manipulation of photographs, Reaves uses attribution theory to argue that using natural-looking digitally altered images as news illustrations can confuse viewers and cause them to believe that it is real when it is not and misinterpret the intent of the image, reading the images to be more credible than they are (1995, cited in Greer & Gosen 2002).

Greer and Gosen (2002) found that level of alteration did affect subjects' perception of the credibility of the published photograph. As the level of alteration increased, subjects saw the photograph itself as being less credible. Greer and Gosen (2002) mention three other studies that examined public opinion on image manipulation, namely those by Kelly and Nace (1994), Vernon (1997) and Terry and McBride (1992).

Kelly and Nace (1994), who examined whether knowledge of manipulation techniques would influence participants' perception of credibility of images, found that it did not have a significant effect, but that people believed images if they made sense, not because they seemed to be naturalistic representations of reality. Greer and Gosen (2002) confirmed the finding that knowledge of manipulation techniques does not influence perceived credibility of news photographs.

Vernon (1997, cited in Greer and Gosen 2002:10) found that exposing participants to a videotaped demonstration and/or published examples of manipulated photographs had little effect on their perception of credibility. The participants, however, agreed that digital manipulation threatened the credibility of news photography.

According to Greer and Gosen (2002:10), Terry and McBride (1992) found that the content of images had a greater influence on perceived credibility than the context in which the images appeared. This suggests that the public does not make such a clear distinction between factual and non-factual media. Life style magazines, for instance, might have an editorial policy to present ideal and dream homes, while their readers might perceive the images in such magazines as representing real, achievable living spaces. Reaves (1989:11) mentions an example of a manipulated photograph, published on the cover of a life style magazine, which elicited strong reaction from their readers, because the readers took the magazine to represent reality.

There are quite a few examples of the subjects of photographs complaining when images of themselves are manipulated extensively, such as Kate Winslett on the cover of GQ, where she was made to look much slimmer than she is, and her legs were made to look longer than they are (Cobb 2003:1). There are not many documented examples of public complaints about celebrity images being overly manipulated.

Public attitudes toward images presented as factual are far better documented and studied than those towards non-factual images. In general, it seems as if attitudes of image professionals and theoreticians do not correlate with those of the viewers.

4.5   Conclusion

From this discussion, it is clear that image alterations are diverse and that they have a varied impact on the message conveyed by the image, and how it is received. It is essential to note that alterations in themselves are not manipulative or deceptive. How an image is used determines how manipulative and/or deceptive it is, irrespective of whether the image was altered or not, or whether its use is ethical or not.

There is some confusion about the logic behind the classification of permissible/impermissible procedures, where fidelity to the captured image is valued more highly than fidelity to life, or 'reality'. There is no consensus throughout the photographic industry on what is permissible or not. Permissible/impermissible is therefore not a useful classification criterion. The complex classification of image alterations discussed in this chapter can be summarised by the Table 4.2 below.

Table 4.2   Classification of alteration techniques

Technology	Stage of production	nature of alteration
Digital	Pre-exposure or inherent alterations	Technical: • global • local
Traditional	Post-exposure or deliberate alterations	Content altering

Further classification criteria are level of manipulation and level of deceptiveness. These criteria are not easily tabularised, seeing that there are no definite, distinct categories, but rather a sliding scale. The three categories mentioned in Table 4.2 influence both the level of alteration and the level of deceptiveness, although these two categories depend greatly on the actual content and context of the images.

Attitudes towards the use of digital alterations in the media are varied. Within both photojournalism and the magazine industry, attitudes range from conservative to embracing. In general, photojournalists are much more concerned about the impact that digitally altered images published in the media have on the credibility of photography as a medium than magazine editors are, but there are exceptions on both sides.

CHAPTER 5

VISUAL LITERACY

5.1   Introduction

The literature on visual literacy (VL) is more often than not concerned with precisely what VL is (Avgerinou 2005).   Because VL scholars are based in such a variety of fields, each author seems to develop his or her own definition of VL.   Rather than being seen as a separate field of study, VL is regarded as a useful concept in a variety of more established fields of study, namely visual communication, education and media studies, as well as in various art disciplines (applied as well as fine art), especially film/television, photography and other two-dimensional art forms.   It has also been mentioned in relation to sculpture and dance.   Depending on the field of study from which VL is approached, different aspects of VL are emphasised.   Much of the important literature that has influenced VL studies relates to visual perception and visual cognition.   Rudolf Arnheim's *Art and Visual Perception: A Psychology of the Creative Eye* (1954, revised edition 1974) and *Visual Thinking* (2004) are major influences in that it describes how the human psyche responds to and processes visual elements found in art and other forms of visual communication.

The term *visual literacy* was first coined by John Debes in 1968 in *Visuals are a Language,* a newsletter published by Eastman Kodak.   Debes's definition (1969: 27, as cited in Avgerinou 2005) reads as follows:

> Visual Literacy refers to a group of vision-competencies a human being can
> develop by seeing and at the same time having and integrating other sensory
> experiences.   The development of these competencies is fundamental to normal
> human learning.   When developed, they enable a visually literate person to
> discriminate and interpret the visible actions, objects, symbols, natural or man-
> made, that he encounters in his environment.   Through the creative use of these
> competencies, he is able to communicate with others.   Through the appreciative
> use of these competencies, he is able to comprehend and enjoy the masterworks
> of visual communication.

In 1973, Dondis wrote the *Visual Literacy Primer*, discussing the need and value of VL as well as the various visual elements used in art.   This book provides a good description of how these elements work in visual art and how they are used in various styles and applications of art.   The book has a strong arts education focus and contains exercises that students can do in order to improve visual literacy.   The bulk of literature that relates to VL comes from education fields, most prominently arts education, for example

Introduction to Visual Literacy by Curtiss (1987) and *Visual Literacy: Image Mind Reality* by Messaris (1994).

Rather than provide a definitive definition of the term *visual literacy*, this discussion will aim to illustrate how VL relates to photography in a digital setting, and what the importance is of visual literacy in this setting. This discussion will therefore not necessarily be relevant to abstract art forms. As Sims *et al* (2002: 1) point out, "each [medium] has its own characteristic form and specific skills to learn ... each medium has its own structure and methodology but these cumulatively enhance and enrich visual literacy". Only the aspects directly relevant to this study will be discussed in depth. As a starting point for this discussion, the following definitions of VL are given:

> [G]reater experience in the workings of visual media coupled with a heightened conscious awareness of those workings (Messaris 1994a:2).

> Visual literacy is a competence when the interpreter of signs reconstructs and/or discovers and/or/creates a new and unique meaning of the sign and its properties on his own (Ogasawara 1997:308).

> Visual literacy is the ability to access, analyse, evaluate, and communicate information in any variety of form that engages the cognitive processing of a visual image (Chauvin 2003:125).

What is implied by the definitions listed above is that VL is about much more than understanding the intended meaning of an image. The focus of this study is awareness of manipulation rather than object recognition and understanding of intended messages. I will work towards an understanding of VL and digital manipulation in a photographic setting by discussing a few issues of debate regarding VL. These issues include:

- The difference between 'visual' and 'verbal' (Ogasawara 1997) and how far the analogy between reading visuals and verbal texts can be drawn, i.e. how language-like visual communication is (Messaris 1994b; Raney 1999). The meaning, use, and implications of the term *visual literacy* are issues that have not yet been settled in this field of study (Barry 1997).
- The distinction between *visual literacy* and *media literacy*, because the terms are often used interchangeably and the term media literacy might include characteristics that apply to how VL is approached in this study (Chauvin 2003).

- The question regarding what skills/knowledge/abilities form part of being visually literate, and to what extent these are learnt through experience with visual media or to what extent they are inherent to everyday experience of reality (Messaris 1994, Lester 1995).

- The possibility of measuring VL and difficulties associated with the testing of VL in a multicultural society.

- What the various benefits are of being visually literate (Messaris 1994). A few authors (Ritchin 1990, Newton 2001, Lester 1995) are referred to who mention VL as a solution to the digital manipulation of photographs in the media dilemma. Some of my own thoughts regarding this are added, together with a discussion of some pessimistic views on whether visual literacy could be effective in a society that is oversaturated with visuals (Sontag 2003).

5.2   What is visual literacy?

When discussing precisely what visual literacy is, it is appropriate to start with a discussion of what constitutes 'visual'. For Ogasawara (1997:304), visual signs and verbal signs are opposite points on a scale of redundancy: "The more redundant the meaning of the sign, the more we perceive the sign as visual, the more clear the sign, the more we perceive the sign as verbal." This scale forms a tan curve (Figure 5.1), with neither of the absolutes being possible, due to the social and at the same time individual characteristics of humans and human communication.
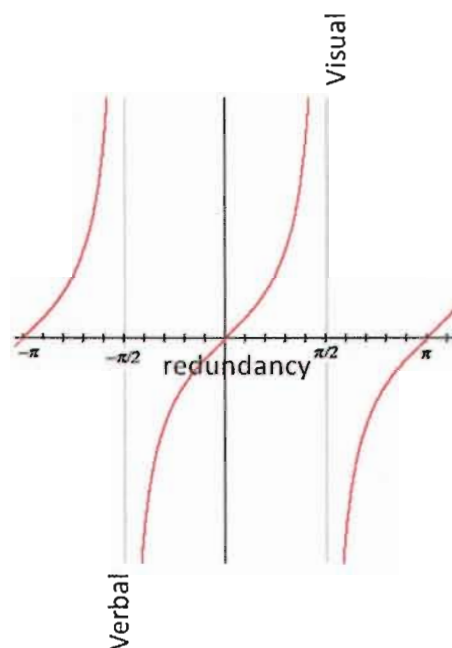
Figure 5.1   Relationship of visual and verbal signs in terms of redundancy

Ogasawara therefore does not see such a clear division between verbal literacy and the skills needed to interpret visual media, seeing that almost all signs contain both visual and verbal aspects. Moreover, whether a sign is interpreted visually or verbally is entirely dependent on whether the viewer gains a learned or remembered meaning, or whether a new meaning for the viewer is generated. Ogasawara (1997) therefore denies that visual signs can have conventional meanings, because as soon as the meaning becomes conventional, the sign no longer functions as a visual sign. From this conception of what constitutes a visual sign, Ogasawara (1997:308) constructed a very narrow definition of visual literacy, which is radically different from most others: "Visual literacy is a competence when the interpreter of signs reconstructs and/or discovers and/or creates a new and unique meaning of the sign and its properties on his own."

For Newton (2005:433), the term *visual* refers to "observable stimuli, either the process of seeing or the external something that can be seen by the eyes, … images of all kinds – dreams, imagination, art, self, handwriting, cyberspace, even the letterforms you are reading at this moment – and to all forms of image making … visual media therefore range from print through virtual (which includes imaginary) forms". This quotation seems to corroborate Ogasawara's viewpoint that verbal signs such as letters have visual aspects. Verbal signs are even included in this notion of the 'visual'. The two approaches differ in that Osagawara suggests that the majority of signs are mostly verbal, and are wrongly seen as visual, while Newton (2005:501) tends to regard signs that resemble hieroglyphics as visual rather than verbal.

Ogasawara's (1997:307) statements are relevant in that they remind us that the meaning of a sign does not reside wholly or even largely in the sign itself, but in the mind of the viewer and that all texts are made up of both conventional and non-conventional signs.

As Ogasawara (1997) points out, writers may use the term *visual* without qualification. Most writers on VL use the term to refer to images of any kind, both two-dimensional and three-dimensional, although most literature is concerned with two-dimensional images. Messaris and Moriarty (2005), for instance, take issue with the term *literacy* rather than with *visual*. They use the term for want of a better word, and acknowledge that the concept of *visual literacy* uses the term *literacy* merely as an analogy.

Messaris and Moriarty (2005) make it clear that there is a significant difference in the functioning of verbal and visual messages. For them, the specific definitions of the words *visual* and *literacy* are of less importance than what the concept of *visual literacy* entails. For them VL is essential to the engagement with visual media, e.g. photojournalism, advertising photography, visual arts and film, even though these media might include a great deal of verbal communication (2005: 481-487).

The term *visual literacy* (*VL*) suggests that visual communication has many similarities to verbal communication – that it is language-like. This notion derives from the structuralist notion that all forms of cultural production contain meaning which is constructed within systems of communication. Raney (1999:41) states that "if such sign systems are like languages – 'written', 'spoken', and 'read' – then visual literacy seems a natural way to describe the skills involved in using and understanding them". This is misleading because it suggests that visual literacy must be learnt before any meaning can be derived from visual media, while it has been empirically shown that very little or no previous experience with visual media is needed in order to understand the basic content of visuals (Messaris 1994a:2, 41; 1994b:197).

Mclean (2007) draws a parallel between print literacy and other literacies with a simple diagram (Figure 5.2) illustrating that, in print literacy as with other literacies, functional literacy matures into an understanding of the codes, conventions and contexts of a message.
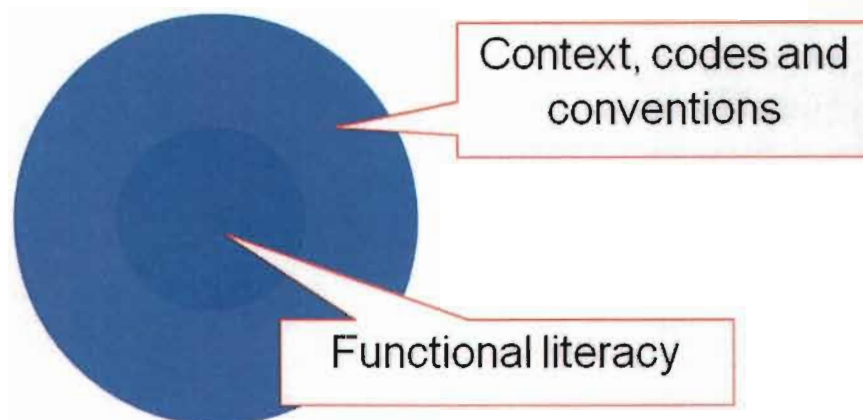
Figure 5.2   Visual representation of the relationship between functional literacy and mature literacy.

There are two opposing arguments regarding the approach to visual signs. The one argument emphasises the similarities between words and images and is in favour of using the term *VL*. Raney (1999:42) points out that emphasising the word-like qualities of visuals demystifies art; suggests that it is "continuous with everyday concerns and capabilities, rather than something that requires an authorised body of knowledge to approach". At the same time, through this term, visuals are also dignified in a society that values verbal communication over visual communication. Equating visuals with words suggests that they are as constructed and complex as verbal language (Raney 1999:42). As will be argued later, this concept is essential to the understanding of the photographic message, whether it is digitally manipulated or not.

The emphasis on the linguistic characteristics also requires from the viewer an active participation, as opposed to passivity, which seems to be the norm. Barry (1997:1) writes the following:

> Webster's Dictionary defines intelligence as the ability to learn, understand, or deal with new or trying situations; the skilled use of reason; and the ability to apply knowledge to manipulate the environment or to think abstractly. Most of us recognize in this definition of intelligence a basic tool of our survival – an innate mental characteristic to be developed by education, enhanced by experience, and applied within almost every conceivable context – except the visual. Here we tend not to scrutinize but to accept, following the clichéd adage that 'To see is to believe.'

The fact that visual media are approached passively is also illustrated by a study conducted by Solomon (1984), entitled *Television is 'Easy' and Print is 'Tough'*. Solomon (1984:654) found that because children see television as 'easy', they invest less effort than when engaging with verbal texts. If visuals are seen as being equally 'tough', more effort will be invested in engaging with the visual media.

The second argument regarding VL referred to above emphasises the unique aspects of visual representation. It is widely accepted that visual signs can function both verbally and visually at the same time, containing conventional (unmotivated) meaning, as well as natural (motivated) meaning. The fact that visual representation is to a great extent interpreted through knowledge of the real world, but still functions symbolically, and through learnt associations, is what gives it its impact, intricacy, power and appeal (Messaris 1997a).

In the light of these arguments and Ogasawara's definition of VL, which is much narrower than most, it seems as if another term is needed either to replace the term *visual literacy* as it is being used by most scholars at the moment, or to refer to Ogasawara's notion of the ability to generate new meaning from visual signs differently. Barry's (1997:6) definition of visual intelligence seems synonymous with the current understanding of VL:

> Visual intelligence ... may be described as a quality of mind developed to the point of critical perceptual awareness in visual communication. It implies not only the skilled use of visual reasoning to read and to communicate, but also a holistic integration of skilled verbal and visual reasoning, from an understanding of how the elements that compose meaning in images can be manipulated to distort reality, to the utilization of the visual in abstract thought..

The above mentioned definition points to the integration of visual and verbal reasoning which leans more to multi-modal literacy a term explained by (Kress *et al* 2005: 2) as all the different ways in which meaning can be created and communicated (cited by McLean 2007: 9). Multimodality implies the presence of multiple modes in any given text (Kress *et al* 2005: 2). The term *visual intelligence* might be more appropriate to what is generally regarded as being visually literate, but seeing that VL has become an established field, the term is still used.

Here the distinction between VL and ML becomes an issue. If VL is concerned with the interpretation of visual media, as it seems in the work of Messaris and Moriarty (2005), then should it not be called media literacy (ML)? The two terms, *media literacy* and *visual literacy*, are often used interchangeably, or the one is seen to encompass the other. According to Chauvin (2003:126), there are shared elements in each field. Chauvin illustrates the relationship between VL and ML in Figure 5.2. This illustrates that she understands ML to fall under VL for the most part.
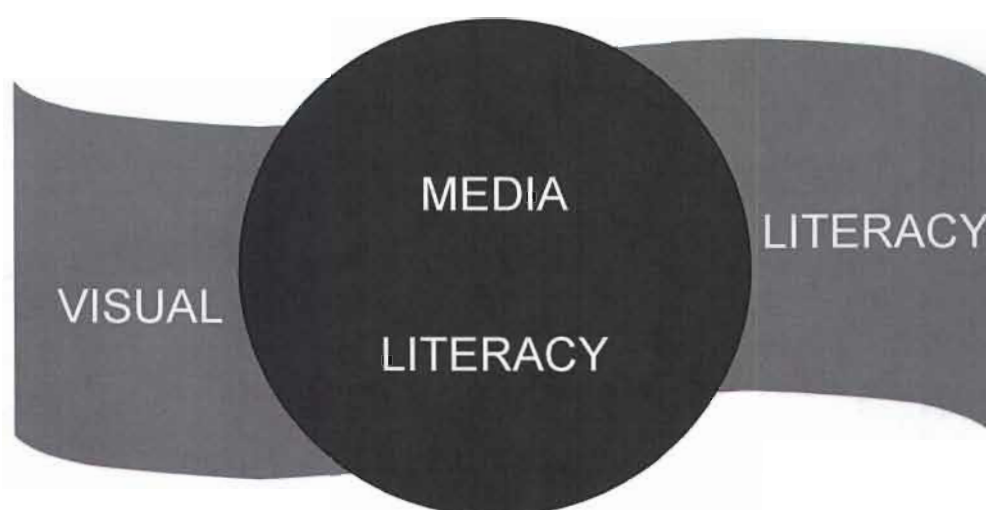
Figure 5.3   Visual representation of the relationship of visual literacy and media literacy (Chauvin 2003:126)

The most important difference between VL and ML, besides that ML includes purely audio media, is that ML focuses on mass media, whereas VL includes non-mass media such as sculpture, as well as 'real life visual signs' on which much of visual media texts are based. According to Chauvin (2003), the focus is placed on the symbolic nature of messages. This view, which contrasts directly with Osagawara's (1997) notion of what VL is, will be discussed in more detail later.

Another important difference is that most definitions of VL (excluding that of Ogasawara) include production/creation of visuals while ML does not place such a strong emphasis on production of visuals by the visually literate. There are exceptions such as the definition established by a group of activists and educators in 1992, which lists the ability to produce media as one of the abilities that a media-literate person should have (Aufderheide 1997:79). Chauvin summarises the various definitions of ML as dealing with three issues: "They are centred on mass media, and on how and for what purpose messages are constructed and consumed by the masses (Chauvin 2003: 124)."

Definitions of VL are concerned with similar issues, although VL is focused more on an individual level than on society as a whole. The central issues of VL include processes of visual perception, the creation of visual image and "the development of intellectual strategies that are used to interpret what is seen" (Pennings 2002:1, as cited in Chauvin 2003:123). VL texts are normally concerned with skills and abilities necessary for the engagement with a specialised medium, and are therefore more relevant in visual arts education. It is for this reason that the term *VL* is used in this study.

McLean (2007:8) goes on to illustrate multimodal literacy in an expansion of the diagram reproduced in figure 5.2 on page 75 which incorporates media literacy and other literacies (Figure 5.4).
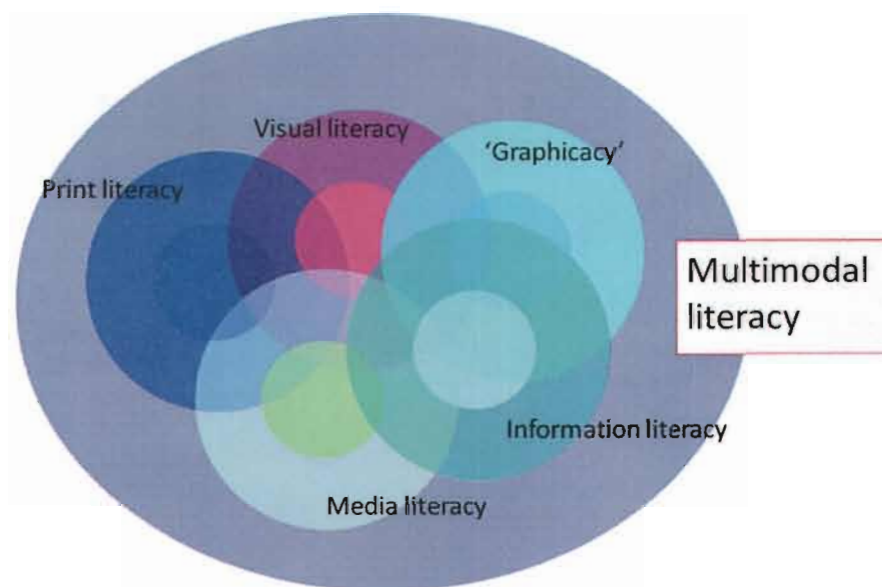
Figure 5.4   Visual representation of multimodal literacy

It can thus be concluded that, even though there are many similarities between VL and ML, two separate terms are justified. Because of the many similarities much of the literature on ML is however relevant to

VL and vice versa. The skills or abilities mentioned in texts on both literacies are similar. For the purposes of this study, only the specific skills or abilities relevant to photography will be discussed.

5.3   Skills associated with visual literacy

Seeing VL as merely a set of skills is problematic. Raney (1999:42) explains that the approach to literacy proper has shifted from thinking of only one kind of literacy to thinking of many kinds. The various literacies are seen as "kinds of social practices", which can be seen as ideological models of literacy. Raney (1999:43) goes on to explain how this affects VL: "In a similar way, when enquiring into the nature of *visual* literacy, one can focus on mechanics and elements, or one can focus on how these are embedded in cultures and institutions."

In assessing the growth of multiliteracies, Tyner (1998) distinguished between those that emphasize tool use (technology literacy, computer literacy, network literacy) and those that are essentially literacies of representation (information literacy, visual literacy, and media literacy).

In this study, the focus will to a large extent be on mechanics and elements, although the functioning of the various genres of photography within society is also seen as of great importance. Note is taken of the fact that there is no single code that can be learnt in order to analyse images in a scientific mindset. Raney's (1999) alternative to this approach, to focus on "hypotheses which guide the perception of the elements themselves" is taken note of. Meaning is therefore not seen as fixed, but as fluid; as constantly changing. Empirical evidence of how viewers tend to respond to certain elements is however also taken into account.

For Messaris (1994a), the important issue is that the visually literate must be experienced in how meaning is constructed by the producer as well as the viewer of visual texts. For him it is essential that the visually literate are consciously aware of how messages are constructed, including "some understanding of production techniques...; some knowledge of relevant precedents... and some familiarity with relevant critical commentary (1994a:138).

A list of the knowledge needed by the visually literate in a digital environment has been drawn up by Lester (1994). It is basically an expansion of the three components mentioned by Messaris (1994a). For Lester, VL comprises knowledge and understanding of the following:
- Light, its history, properties, and sociological characteristics
- How light affects he eye, retina and brain
- The four visual cues (colour, form, depth, movement) and how these are noticed and processed by the brain
- Gestalt theory and how this affects what we notice, and how we group image elements

- Semiotics: how meaning is derived from learned cues, the relationships between signifiers and signifieds and the codes that govern the interpretation of complex constructions of signs
- How images are used by their creators and institutions to educate, entertain and persuade
- The effects of images on society, e.g. the embedding of stereotypes
- Ethical philosophies within which images function
- The medium of presentation in terms of personal reaction, history, technical, ethical, cultural and critical perspectives.

Neither Lester nor Messaris mention the ability to create visuals in this context, although knowledge of the techniques of specific media is mentioned by both. Tyner's (1998) description of VL as a literacy focused on representation, as opposed to one focused on tool use such as computer literacy (Hobbs & Frost 2003: 334), also de-emphasises the ability to create in relation to the ability to understand, process and evaluate.

All the components of VL mentioned above imply an awareness of "deliberate expression of an intended meaning" (Messaris 1994a:138) in all images. In photography, this is of particular importance, because the medium is traditionally/historically viewed as objective to a large extent and the intentionality of the message has been historically down-played, especially in photojournalism, documentary, wild-life photography and even family photography.

Messaris (1997b:138) discusses the ability to determine the level of intentionality as an essential component of VL. How this ability is obtained through experience with various forms of visual media, and linked to labels such as news or advertising as well as everyday experience of reality (where news has a low level of intentionality and advertising has a high level), forms part of this discussion.. What Messaris does not mention is that all media, irrespective of labels, have some, mostly significant, level of intentionality. The key word is *conscious* awareness of intentionality, therefore even though one has not learnt to distinguish 'fake' spontaneity from the real thing through media experience, the viewer must still ask: "What is being said, why, and how?" It is this realisation that becomes essential in this age of the "pictorial turn" of public culture (Mitchell 1995:1-3); digital photography and, can be argued, since the invention of photography (as discussed in Chapter 3).

5.4   Measuring visual literacy

Referring to the various components of VL as "knowledge and understanding" (Lester 1994) implies that it is something that can be learnt, and that not all people have the same knowledge and understanding of

visuals. Messaris (1997b) warns that it must be remembered that the basic understanding of the content (denotation) of most kinds of figurative visuals does not have to be learnt, but is a skill that is developed through real-world experience. Meaning is derived through analogy. This understanding is, however, only one small aspect of the meaning of most visuals. VL is also not only concerned with the understanding of intended meaning, but rather with an analysis of how this intended meaning is conveyed to viewers.

If VL is something that can be learnt, not all people will have the same knowledge. Much of this knowledge is gained through general education and not necessarily through VL-specific education. Education, irrespective of the type of education, quite possibly results in a more critical approach by viewers toward the media, as suggested by the findings of a study done by Greer and Gosen (2002:11). It could be argued that a person without the specific knowledge mentioned above can be able to judge an image as misleading, fake, and to detect artifice or appreciate artistry. It does not necessarily follow that there is a correlation between this knowledge and the ability/inability to arrive at similar conclusions about an image, but this is an assumption that we make. Cultural differences also often influence interpretations of images where level and type of education is not necessarily a factor (Messaris 1994a:168). It has also been shown that mere knowledge does not change conduct, attitudes, or instinctive responses (Greer & Gosen 2002:11).

In this sense, the important criterion for being visually literate should be the ability to apply the relevant knowledge, rather than merely to possess the knowledge. Assuming that level and type of education directly influences VL could thus be problematic. Avgerinou and Ericson (1999) have proposed a VL test based on a VL index of skills and abilities. According to Avgerinou and Ericson (1999), the main hindrance in constructing such a test is the lack of a conclusive definition of VL that is accepted by all scholars in the field. It is difficult to test what cannot be defined (Avgerinou & Ericson 1999:22). However, Avgerinou and Ericson (1999) managed to compile a batch of tests that test the following abilities: visual memory, visualisation, critical viewing, (verbo)visual reasoning, visual reconstruction, visual thinking, constructing meaning, reconstructing meaning, knowledge of visual conventions, knowledge of visual vocabulary/definitions, visual association, and visual discrimination.

It is generally perceived by researchers that, if participants in a study do not interpret visuals according to the understanding of the researcher, these participants are naïve viewers, and therefore have low VL. As mentioned above, cultural differences often influence interpretation. It is difficult to determine whether a 'misinterpretation' is due to cultural difference or a lack of VL. Testing VL in a multicultural society is thus problematic, especially if VL is seen as a complex combination of abilities as listed by Avgerinou and Ericson (1999) and described by Messaris (1994a) and Lester (1995) respectively.

The issue might be simplified by distinguishing between four types of VL, where the one type is concerned with the interpretation of the visuals, and the gaining of the intended meaning. The second is concerned with appreciation of aesthetics. The third is concerned with direct experience of the production of visuals, which Messaris calls *Production literacy* (1994:180-183). The fourth would be awareness of manipulation, of both the viewer (through the message) and the message itself by the producer of the message, as described by Messaris (1999a).

This study is primarily concerned with awareness of manipulation, but it would be short-sighted to approach these 'types' of VL in isolation to each other. They will naturally have an influence on each other. There is for example a very strong link between production literacy and awareness of manipulation (Messaris 1994a:183), although it has been shown that knowledge of production techniques does not necessarily influence the interpretation of photographs (Kelly & Nace 1994). Awareness of manipulation (of the visual itself) is much easier to test because the variables are precisely determined by the researcher. One is not dependent on a fluid concept such as meaning. Manipulation of the viewer through the visual can also be tested by looking at audience response.

The detection of artifice or artistry goes hand-in-hand with awareness of intentionality. If one is aware that a text is trying to communicate an intended message, one is more likely to detect methods used by the producer to manipulate the viewer into gaining a specific message.

The realisation of how this is achieved is an essential aspect of VL. There are various techniques used by producers that inhibit the detection of intentionality. The objective style, or using conventions of objectivity, for instance, is an effective method, especially in still photography. By copying the 'look' of documentary or photojournalistic images, the viewer is deceived into thinking that 'it is just so'. Adhering to rules of realism, even in a clearly fictional work, is another effective method discussed by Messaris (1994b) as illusionism. With the digital manipulation of photographs, the manipulation itself can be so seamless that there are no obvious signs to detect. It can be argued that the intention to manipulate is encoded in any visual image, but this encoding, as with most codes, is not universally understood. A possible list of signs is discussed in Chapter 2. How such images manipulate the viewer into arriving at intended interpretations and giving intended emotional responses is precisely the same as photographs that were not digitally manipulated.

5.5   Benefits of visual literacy

Messaris (1994a:3) lists four potential positive consequences of the enhancement of VL, which corresponds to some extent with the four 'types' of VL mentioned above. These are: enhanced

comprehension of visuals, general enhancement of cognitive abilities, enhanced resistance to manipulations attempted by the producers of images, and enhanced aesthetic appreciation.

In a digital photographic setting, the enhanced resistance to manipulations seems to be the most pertinent advantage. As Messaris (1994a) explains it, there seem to be various levels of VL: identification of the objects depicted in the image; understanding the spatial relationships among these objects; understanding the significance of the juxtaposing of these objects within the images; understanding the significance of the juxtaposing of various images. Although Messaris (1994a) argues that this does not, strictly speaking, constitute VL, this level of understanding necessarily precedes any awareness of artistry involved in the creation of the image and manipulation of the image. Messaris also discusses these two aspects in this order in *Visual literacy, Image Mind, Reality* (1994a). Messaris (1994a: 135) then goes on to state that it is only with the development of viewers' understanding of their own role in the interpretation process that they can be described as sophisticated viewers, implying that viewers will be able to control to some extent their interpretation of visuals instead of being manipulated into making intended interpretations only..

For many writers the main threat that the digital alteration of photographs poses is that it might deceive the viewer into believing that something is true when it is not, or that something really happened when it did not. Put differently, "It is the deception that the altered photograph contains only what the lens has recorded on film that is the lie" (Ritchin 1990:143). Combined with this threat is the fear of the possibility that when it is realised that this type of deception is possible, the belief in the veracity of photographs will diminish and eventually totally disappear. Wheeler (2002:33), for example, expresses concern that digital manipulation of photographs may accomplish what traditional photo fakery did not in 150 years – finally break down the credibility of photographs to the point that people will start believing that "unless otherwise specified, a journalistic photo is likely to have been altered".

The problem is therefore twofold. On the one hand, the viewer is in danger of being manipulated and deceived, and on the other hand, the photographic industry, especially the photojournalistic industry, is in danger of losing its credibility. Lester (1995:9) outlines some of the ramifications of this issue: "If the fine line between what is real and not real dissolves into a sea of pixels, the carefully nurtured concept of historical believability becomes another commodity in competition with entertainment." Lester (1995) argues that society's belief in the veracity of photographs is linked with its ability to identify and solve social problems as well as to learn from the past. These statements imply that social problems are being solved at present, and that society has been largely known to learn from the past, since photography came to be used to document events and situations, and that news is something totally distinct from entertainment. Although these statements are highly contestable, they do illustrate the problem that many have with the digital manipulation of photographs.

A few authors have suggested VL as a possible (partial) solution to both aspects of this problem. Some have also suggested the possibility that digital technology could herald in a new understanding and interaction with reality and photography, in which VL is also seen to play a crucial role.

Ritchin (1990:144) states that "[p]hotographs will have to be treated less monolithically, with the understanding that, like words, images can be used for a variety of purposes and can be produced according to different strategies". He laments the fact that photographic literacy is not encouraged by media practitioners, photographers and advertisers. If the photograph's capacity for meaning is taken seriously, photography will be understood as having an inherently paradoxical nature. A greater understanding of the photographic medium might therefore result from the influence of digital technology. Newton (2001:182) extends this idea by saying that what can be done in answer to the digital manipulation of photographs is to improve general comprehension of the complexity of visual truth through regular visual training from preschool through to the professionals in the business of creating media images.

The viewer must see the necessity of spending time on photographic images in order to engage actively with the interpretation process (Lester 1995:8-9). One must, however, take note of the fact that although society is becoming more and more dependent on the visual, the media do not encourage one to spend time on visuals. Sontag (2003:94) ascribes a phenomenon that she calls "image-glut" to the influence of television, which she says "keeps attention light, mobile, relatively indifferent to content". Because of the passive state that most viewers assume when engaging with visual media (not only television), viewers need to be actively stimulated all the time in order to retain their attention. In view of the variety of choice of media, messages are designed for immediacy, to produce the intended reading in the shortest possible time. Viewers are thus conditioned into superficial engagement with visuals. Sontag (2003:94-95) comments: "A more reflective engagement with content would require a certain intensity of awareness – just what is weakened by the expectations brought to images disseminated by the media, whose leaching out of content contributes most to the deadening of feeling.".

It thus seems unlikely that VL will be effective in a society bombarded with visuals, often making it impossible for the viewer to choose to spend time with any specific image. In one definition of media literacy, the ability to manage one's 'media-diet' (Thoman 1995 as cited in Media Awareness 2002: 7) is given as a crucial aspect of media literacy. If such a managing of the 'intake' of visuals is applied by the visually literate, it is much more likely that photographs will be approached with any intensity of awareness.

From this discussion it is thus evident that even though the definition of VL is far from settled, it remains a useful term when discussing engagement with photographs and specifically digitally manipulated photographs.

5.6   Conclusion

Approaching digitally manipulated photographs – or rather photography in general (seeing that the difference is not always evident) – as a literacy, encourages the treatment of such images as visual comments on, statements about, elaborations on and illustrations of events, situations, and ideas. This approach then becomes comparable, but not necessarily similar, to the written text in publications even though the visual and verbal systems of signification are vastly different.

The verbal aspects of visual systems are, however, also acknowledged in that aspects of VL are seen as something that can be learnt and improved. These aspects include knowledge of the production techniques and conventions of photographs themselves as well as knowledge of the production of publications, which casts doubt on the use of the term *visual literacy* as opposed to *media literacy* or *visual intelligence*. Visual literacy in a digital photographic setting is essential because digital technology makes the manipulative and deceptive aspects of photographs more pertinent.

The possession of VL knowledge allows the viewer to gain more than the intended meaning of a visual as well as a degree of immunity to manipulation and deception. Testing VL in a culturally diverse society is problematic and therefore assumptions about the correlation between the nature and level of education and the level of VL are made. Knowledge is, however, not necessarily translated to skill. The skill to apply this knowledge is not gained through frequent exposure to visuals alone, but also through the practice of analysing and/or creating visuals. An analytical approach to visuals is thus almost the most essential aspect of being visually literate in an era of over-exposure to visual media and ever-increasing average shot lengths in film and television. An analytical approach must therefore be accompanied by a management of visual 'intake' as well as an active attitude (as opposed to the passive attitude that is normally assumed when confronted with images as opposed to verbal text).

CHAPTER 6

STUDY DESIGN AND METHODS

6.1   Introduction

The discussion of the methodology of this study will be approached as a description of how the study was conceptualised, designed, modified, executed, analysed (Babbie & Mouton 2001: 98).

From the initial research question of whether perception of digital manipulation of photographs is influenced by visual literacy training, and what the participants' attitudes are towards the digital manipulation of photographs, various variables to be studied were identified. The conceptualisation of these variables, namely digital manipulation, visual literacy training (VLT) and possible signifiers of digital manipulation within a semiotic model have been dealt with in previous chapters. This section deals with the empirical component, and attempts to answer the research question and sub-questions, which are:

Main research question:
Is there a correlation between the perception of digital manipulation in photographs and visual literacy training?

Sub-questions:

1.   Is there a correlation between the perception of digital manipulation in photographs and general visual literacy training (VLT)?

2.   Is there a correlation between the perception of digital manipulation in photographs and visual production literacy training (VPLT)?

3.   Are there specific signifiers that signify digital manipulation, and if so, what are they?

4.   Does the context of the photograph influence the perception of digital manipulation in photographs?

5.   What are the participants' attitudes towards digital manipulation of photographs, and are attitudes influenced by context at all?

In this study the over-arching independent variables are the level of VLT and the level of and attempts to answer PLT received by the participants, with the secondary independent variable of viewing context. The over-arching dependant variables are awareness of digital alterations and attitudes towards digitally altered photographs. The study variables are classified and defined as follows   (Table6.1):

Table 6.1   **Over-arching variable classification and definitions**

	Variable name	Explanation
Independent	Level of VLT	Weeks of general training in the visual arts
Independent	Level of VPLT	Weeks of Photoshop training
Dependant	Awareness of digital alterations	Ability to recognise various types of alterations performed on photographs
Dependant	Attitudes towards digital alterations	Rating of credibility and acceptability levels of altered photographs
Dependant	Viewing context of image	Simulated image contexts: Family photography; billboard; news media.

6.2   Choice of research design

The survey method was chosen as the most appropriate type of design for this project. The survey method adequately measures the participants' recognition of digital alterations in photographs and at the same time gives an indication of attitudes towards these alterations. According to Babbie and Mouton (1998130-131), survey research is one of the most popular types of research and is especially suited to the study of public opinion. Participant attitudes regarding something specific are, however, difficult to assess because there are so many variables that can influence attitudes negatively or positively and because attitudes are self-reported (Reaves 2005:449). Where attitudes are concerned special precaution is needed against suggesting the research hypothesis (Reaves 2005:449). The various questions are therefore carefully phrased to be as neutral as possible.

This study is concerned with digital manipulation and because the Internet is one of the media in which photographs are frequently encountered, a digital questionnaire seemed especially suitable to this project. The digital questionnaire also has the benefit of not having to enter the data manually after the completion of the questionnaires, since the data was automatically transferred into a data base.

Because of the use of a digital questionnaire, various contexts could be simulated for the test visuals employed. The questionnaire was structured in such a way that participants were asked to answer several questions about images displayed on the computer screen. The use of a digital questionnaire also simplifies instructions to skip, being built into the programming of the questionnaire. If a participant answers "Yes" to a specific question, the next question will be different from what it would have been if the answer was "No". The closed-ended questions in the digital questionnaire were pre-coded (Babbie & Mouton 1998:412).

One of the main weaknesses of the survey method is that surveys are necessarily conducted in artificial circumstances (Babbie & Mouton 1998:263). In this research, various contexts were simulated for test visuals. The simulations could, however, never be 100% true to life, since the participants were constantly aware of the fact that they were completing a questionnaire that had been set for a specific purpose. This artificiality was therefore taken into account when conclusions were drawn from the data gathered.

One of the strengths of survey research is that it is flexible in the sense that "[m]any questions can be asked on a given topic, giving you considerable flexibility in your analysis" (Babbie & Mouton 1998:263). This flexibility is one of the main reasons that survey research was chosen for this project. The strength of survey research is that it allows for very large samples. This strength was, however, not relevant to this project, seeing that the sample was relatively small.

6.3 Population and sampling

The population for this study was sampled from students of the Vaal University of Technology. This population was chosen because it allowed easy access and made it possible to provide computers on which the participants could fill in the questionnaire.

The sampling was done according to two variables: level of study and nature of study. These two variables were assumed to have a direct influence on the level of both visual and computer literacy of the participants. Visual literacy was one of the main variables under scrutiny in this project, while computer literacy was relevant because the questionnaire was administered digitally. Participants were selected in order to provide a range in VLT as well as computer literacy training, in the following categories:

a) Students with no computer training, but some visual literacy training (e.g. first-year graphic design students after they had received a course in visual literacy, but before they started with computer training, or first-year fine arts students)

b) Students with neither computer training nor visual literacy training (e.g. Intro to IT students at the start of the semester, or management science students)

c) Students with some computer training and some visual literacy training (e.g. second-year photography or graphic design students)

d) Students with both considerable visual literacy training and computer training (e.g. third- and fourth-year photography, graphic design or fine arts students)

e) Students with considerable computer training, but no visual literacy training (e.g. third-year IT or computer systems students)

About 30 participants in each category were aimed at, making for a study population of 150. This number was based on realistic class sizes, especially of the visual arts courses which seldom have more than 30 students in a class. The final study population did not consist of equal numbers in all the groups and resulted in a population of 145.

6.4   Operationalisation

6.4.1   Questionnaire design

Because of the complexity of the research question, the careful design of the questionnaire was of utmost importance. The questionnaire had two elements: questions and test visuals. These will, however be discussed together because they are interdependent. The development of the questionnaire will be explained through a discussion of the initial version before pre-testing, as well as of the improved version (after pre-testing).

The questionnaire was pre-tested twice before the data was collected. The first testing was done in a first-year image manipulation software class, with a group of eight people. From this test it was found that the initial estimation of 15 minutes that it would take to complete the questionnaire was too short. Because the answers had to be typed in by the participants, typing speed caused some participants to take more than 30 minutes to complete the questionnaire. This had a impact on the organisational aspects of collecting the data. The first testing also suggested that the questionnaire map, that allowed non-linear navigation, be removed. Because the questionnaire had to be filled in in a linear sequence, the non-linear navigation was confusing to some participants. The questionnaire started with instructions to the participants, as presented in Figure 6.1:

NEXT

BACK

Instructions

Thank you for agreeing to participate in this research project. Please note that all responses are anonymous and that all responses will be handled according to the code of
research ethics of the VUT.

Completing the questionnaire should take about 15-20 minutes. Please ask the researcher present if you need any further information.

For the purpose of this questionnaire, digital image manipulation is defined as any manipulation that changes the meaning of a photograph. For example, changing a person's expression or adding visual elements that were not in the original photograph.

Please suggest any changes or additions to this definition in the box below.

Please answer all questions on a screen before clicking the continue button. If you prefer not to answer a question, either type in "no answer" or supply a reason for not answering. You are encouraged to supply general comments throughout the questionnaire in the spaces provided.

Figure 6.1   Introduction page of digital questionnaire

The definition of digital manipulation was left relatively open by allowing the participants to indicate what they understood under *manipulation*. The definition of image manipulation that is given refers to any change that will alter the meaning of the photograph. As seen in the literature review, such changes could be very minor. However, the examples given in this questionnaire in order to illustrate the concept are quite major alterations. This was done in order to simplify the concept for the benefit of the participants. The word *manipulation* was used instead of *alteration* as suggested in Section 2.1, because manipulation was more commonly used, and would thus be more familiar to the participants. The definition of digital manipulation was left open to the participants to allow those who regarded minor alterations as having an effect on the meaning of the image to include these alterations in their assessment of the visuals.

On the left-hand side, two buttons appeared. They stayed on the screen throughout the questionnaire. These buttons allowed participants to move forward or backward in the questionnaire. The buttons provided only linear navigation of the questionnaire.

The next page required the participants' particulars in order to record their level and nature of study as well as any other studies undertaken by them. This information was crucial because it would be used to classify the participants in terms of their level of visual literacy and computer literacy. The initial version required the students to indicate their current level and field of study as well as any previous studies that they had undertaken, if any. After pre-testing and evaluating the data that was generated, it was felt that more specific information was needed regarding the participants' training in the visual/applied arts, in order to make the classification of each individual participant more accurate, in terms of their assumed visual literacy. A further question was then added, requesting the participants to indicate whether they had had any visual training before, be it formal, informal, at secondary school level, or at tertiary level.

The second testing of the questionnaire was done by requesting volunteers from all the categories listed above to complete the questionnaire in a classroom situation. At least two participants from each category and a total of 17 completed the pilot questionnaires. This testing suggested a change in how the information regarding the field of study was recorded. Instead of recording text, the participants were requested to choose from a list, and each field was assigned a numeric value, which was then recorded as such. This was the only change suggested by the second testing of the questionnaire. These questionnaire answer sets were thus included in the main study, seeing that there was no difference in the actual data items recorded; only a difference in the way that it was recorded.

At the bottom of most questions in this questionnaire, a memo box would appear, which allowed participants to make comments throughout the questionnaire. This would allow them to augment their answers to the closed-ended questions. The closed-ended questions were pre-coded in the

questionnaire, but there were several open-ended questions that had to be coded manually before the data was analysed.

The next page of the questionnaire - after the student information page - showed the first image, Image 1, as well as the first question. Question 1.1 required the participants to indicate whether they thought the image was manipulated or not. The next page (Question 1.2) then required participants to give reasons for the answer given in Question 1.1. If the answer to question 1.1 was "Yes", the following page (Question 1.3) would ask whether the level of manipulation was seen to be minor, medium or major. If the answer to Question 1.1 was "No", Question 1.3 would require the participants to rate the image on a semantic differential scale (Babbie & Mouton 1998:154), giving ratings from 1-5 for the following variables:

1. highly credible
2. credible
3. undecided
4. not entirely credible
5. not at all credible

and

1. completely unacceptable
2. not unacceptable
3. undecided
4. acceptable
5. entirely acceptable

These variables were chosen in order to determine the attitude of the participants towards digital alterations of photographs. The number of variables was reduced from 5 (skilful / unskilful, pleasant/unpleasant, offensive/acceptable, and credible/not credible) to two: acceptable/unacceptable and credible/not credible, before testing commenced, in order to provide more focused results. An effort was made to choose images with as inoffensive content as possible so that participants would not confuse offence taken at the visual content with offence taken at the alteration of the images.

On the next page the participants were asked (Question 1.4) what manipulation techniques were used. The participants were also required to give reasons for their answer. Question 1.5 on the next page required the participants to indicate (by checking either of two boxes) whether they would be able to recreate the visual or not. A "Yes" answer would indicate that the participants would have been able to recreate the visual because they had received sufficient training, while a "No" answer would indicate that the participant would not have been able to recreate the visual because they had not received sufficient training. The "Yes" and "No" answers were linked to training because of the assumed link between visual

literacy, especially production literacy, and the level and nature of training. Question 1.6 would then be the same as Question 1.3 for those who answered "No" to Question 1.1.

Once all the questions were completed for any given image, the participants were shown the same image within its context, e.g. the family photograph was displayed in the album. The participants were then given a chance to change their answers if desired. The original answers as well as any, changes if any, were recorded, including the fact that changes were made. Questions were repeated for each image, with the first number of each question changing for each consecutive image. Please see Appendix B for the complete questionnaire.

Because context has such a great impact on any reading of visuals (Newton 2005:464, 465), it was decided that three different contexts would be used, and two images would be used in each context, resulting in a total of six images. This number was reduced from an initially planned 12 images in order to make the administration of the questionnaire more manageable.

Each context dictates the nature of the images. One will, for instance, not normally find an advertisement in a family album. The contexts chosen were a family album, news media (print and digital) and billboards. These contexts are traditionally associated with various degrees of manipulation. The family album and the news media are traditionally not associated with manipulation at all (although the literature review shows that such manipulations are not uncommon), while billboards are traditionally associated with major manipulation, because of the nature of the advertising industry (see Chapter 3). The impact of the viewing context will only be tested with whether answers are changed after viewing within context, due to the varying types and levels of alterations in the various images. One cannot compare perception of alteration techniques in a family photograph that was not manipulated at all with a bill-board image that was heavily manipulated.

Various levels of manipulation and techniques were used. It was decided that the images should not all be created specifically for the questionnaire, because that made the situation too unnatural. It was felt that images that were drawn from the Internet represented what students were likely to encounter in every-day situations. Several existing images that had been downloaded from the Internet were therefore used, in combination with some images that were created specifically for the questionnaire, where appropriate images could not be found, but also in order to be in control and be aware of precisely how the images were manipulated.

The next pages provided a short description of the visual content, technical information and motivation for the use of each of the six images (See annexure B for full reproduction of questionnaire):

Image 1 (Fig. 6.2)

Short description: Image 1 is a colour photograph of three smiling girls (about 12 years old) cycling on a spring morning, in a middle-class suburb. One of the girls is giving another a 'lift' on her bicycle. The background is not simplified, and the subject is centrally placed, which makes the image look like a snap-shot. The image will therefore look natural in a family album.

Lighting: Afternoon sunlight; clear sky

Viewpoint: Just below the eye-level of the girls

Lens: A slightly wide-angle lens (35 mm) was used.

Capture medium: Digital

Manipulation: None except for the default JPEG capture settings of the camera (typically slight increase of colour saturation and contrast)

Context: The photograph was digitally combined with a photograph of a family album.

Motivation: This image was chosen as an example of an un-altered family photograph. It was presumed that some participants might have expected all images to be manipulated, and therefore they might have found something in the image that looked altered. This would indicate a general attitude to photography.

Figure 6.2   Image 1 from questionnaire without (1a) and with context (1b)

Image 2 (Fig. 6.3)

Short description: Image 2 was downloaded from an Internet site advertising photo-restoration services.   The photograph shows an elderly woman wearing glasses, a dark floral dress and a dark cardigan, against an even white background.   It is a black-and-white image. The image was downloaded within its context (a simulated frame).   The image was then digitally reconstructed to appear without context.

Lighting: Early afternoon or late morning sunlight (fairly harsh light)

Viewpoint: Eye-level

Lens: Standard-long (precise focal length unknown)

Capture medium: Unknown

Manipulation: The image of the figure's head and neck was cut out from its original background, flipped horizontally, and placed back onto the shape of the body.   The background was also smoothed out, or totally replaced. The manipulation is very visible; hard edges are visible and there is a loss of detail.

Context: The image was downloaded within its context (a simulated frame).   The image was then digitally reconstructed to appear without context. This image as found within the context seems unnatural in that the woman's shoulders are too narrow.

Motivation: This image was chosen as an example of a family photograph that was highly manipulated. This might show that certain visual elements such as hard-edged shapes and loss of detail are seen as signifiers of digital alteration.

Figure 6.3   Image 2 from questionnaire without (2a) and with context (2b)

Image 3 (Fig. 6.4)

Short description: Image 3 is a colour image depicting a baby girl, with dragonfly wings, bathing in a poppy cup, with foam in the cup and on her head. This image was downloaded from a website advertising 'fairy art'. The background image looks like a typical stock image.

Lighting: On-camera flash (on baby), soft directional lighting on background image

Viewpoint: Eye-level

Lens: Standard-wide (precise focal length unknown)

Capture medium: Unknown

Manipulation: The image was combined from at least three different images: the baby in the bath, the wings, and the flowers in the background. The wings were made transparent so that the background flowers are visible through them. Other manipulations such as colour contrast adjustments might also have been done. The alterations in this image are so apparent that it was thought that all participants would notice them.

Context: The image was digitally combined, faded and manipulated to look natural on an image of a billboard in a suburban area.

Motivation: Because of the blatant alterations, this image was chosen to serve as a control on the one hand (if a participant did not indicate that this image had been manipulated the rest of her/his answers would not be taken seriously, and the answer set would be excluded from the study) and as a measure of production literacy on the other. A participant might notice the manipulation, but not understand thoroughly how it was done, and also not be able to have created the image.

Figure 6.4   Image 3 from questionnaire without (3a) and with context (3b)

Image 4 (Fig. 6.5)

Short description: Image 4 shows a boy of about 14 doing a trick with a skateboard with a large, open, cemented area and a ramp, some grass and a dramatic sky in the background. It is a black-and-white image, except for the boy's shirt and elements of the boy's shoes, which are bright red.

Lighting: Mid-afternoon sunlight

Viewpoint: Lower than eye-level

Lens: Wide (28 mm)

Capture medium: Digital

Manipulation: The background in between the image of the boy and the shape of the shadow was extended to make it seem as if the boy was jumping much higher than he did. The background was also extended to the right to fill the billboard format. Various elements were deleted from the background. The boy's shirt and shoes were coloured red and the word 'Red' was inserted on the right. The contrast and tonal values of the image were manipulated to make the sky seem much more dramatic, and to make the figure of the boy stand out from the background.

Context: The image was digitally combined with an image of a billboard next to a road.

Motivation: This image is a highly manipulated image, which fits with the context of billboard advertising. The manipulations are, however, of such a nature that, although very noticeable, only one alteration (the red colouring) stands out. This might have the effect that the other manipulations that are more subtle will go unnoticed. All the participants would therefore notice the red colouring, but some might not notice all the other alterations.
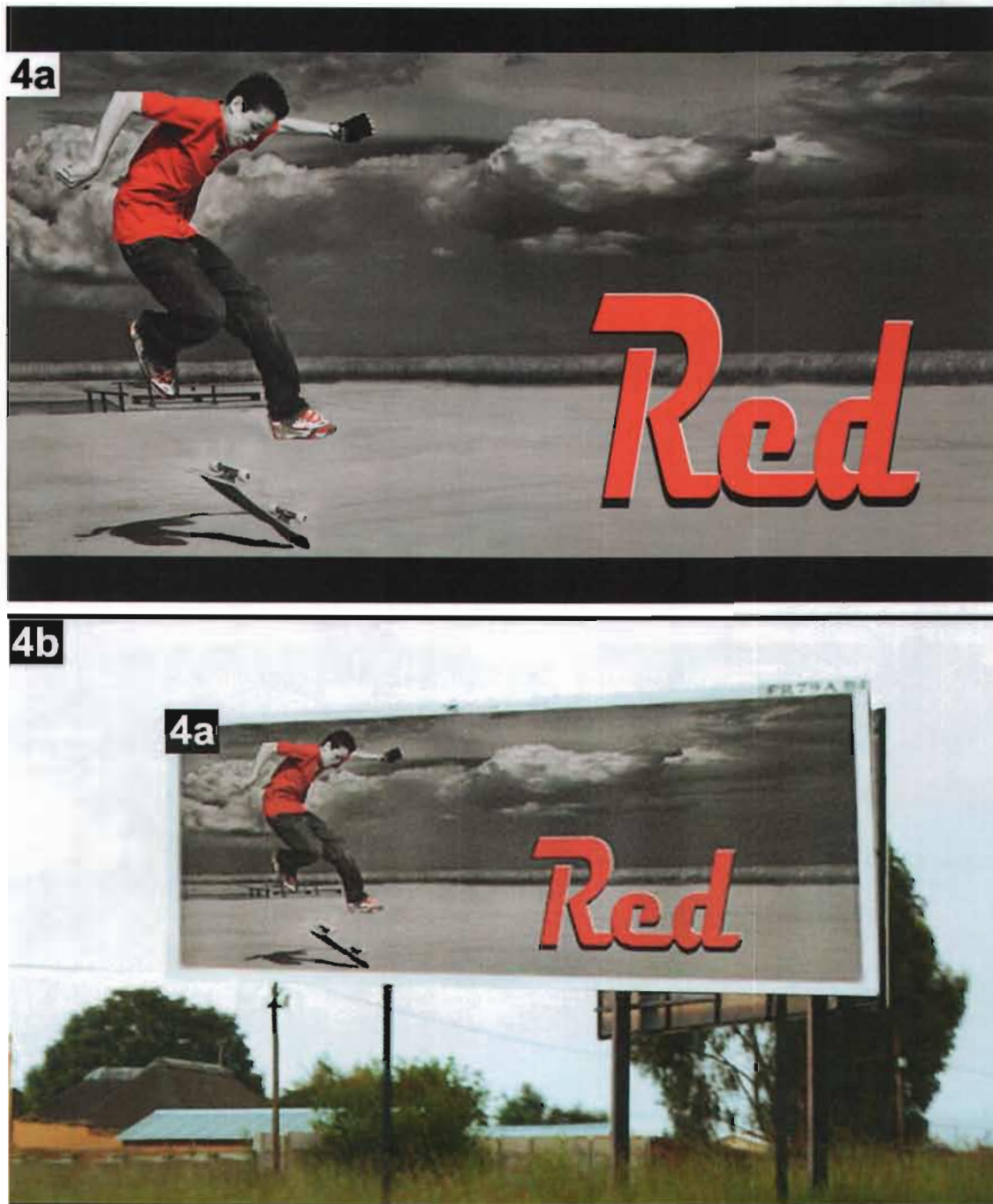
Figure 6.5   Image 4 from questionnaire without (4a) and with context (4b)

Image 5 (Fig 6.6)

Short description: Image 5 depicts a boy of about six years old approaching a man who is hugging a little girl. Both the girl and the boy are holding a packet of what seems to be food. There is a high fence behind the man and children, and several people dressed in Middle-Eastern clothing behind the fence, facing the fence. A person in military uniform (American) has his hand on what seems to be a gate in the fence. The image is in colour.

Lighting: Early morning or late afternoon daylight

Viewpoint: Slightly above the eye level of the boy

Lens: Wide (precise focal length unknown)

Capture medium: Unknown

Manipulation: Unknown, but presumably none, other than possible contrast and colour enhancements

Context: The image was cropped to fit into a newspaper web page layout.

Motivation: This image was chosen as an example of a news image published on the Internet. Although one cannot be 100% sure that no alterations were made to the image, the reputation and policies of the publication suggest that major image alterations will not be allowed.

Figure 6.6   Image 5 from questionnaire without (5a) and with context (5b)

Image 6 (Fig. 6.7)

Short description: Image 6 is a colour image depicting a 'Jet Sales House'/'Supermart' store, with several clients entering and leaving. There are sale signs up inside the store. A 'Jet Sales' house sign is above the entrance in the middle, and two 'Supermart' signs are on either side of this sign.

Lighting: Daylight outside, and fluorescent lights inside

Viewpoint: Eye level

Lens: 35 mm

Capture medium: Digital

Manipulation: The two 'Supermart' signs were inserted digitally. The signs were not placed 100% correctly, in order to make the manipulation visible. The image was also manipulated to look as if it was published in a newspaper. Creases were created, and a texture was overlaid.

Context: The image was placed in a newspaper layout, replacing the existing image.

Motivation: This image was created to look very similar to the original image that was published in the newspaper that was used. The original image could not be manipulated because of ethical considerations. The image is intentionally uneventful and unimportant.

Figure 6.7   Image 6 from questionnaire without (6a) and with context (6b)

Once the participants had completed all the questions for all 6 images, a final page appeared, thanking the participants for their time and cooperation. They were requested to click on the 'end' button. The end button caused the information entered into the questionnaire to be written to an .ini file which is readable in Notepad (see Figure 6.8). The .ini files were then gathered and saved into a single folder, from where it was automatically transferred to a preconstructed Excel spread sheet. Excel was chosen to host the data base, because of its flexibility, compatibility, and because it was familiar to me.


```
0-27-13-250 - Notepad
File  Edit  Format  View  Help
[General]
Definition=
StudyLevel=1st Year, Semester 2
Qualification=Fine Arts
PreStudy=0
PreStudyDetails=
Previs=1
PrevisDetails=Basic teachings and skills to be able to apply the right techniques a
[Image1]
Changed=0
Manipulated=0
Reason=The shadows of the girls are visable and the light falling on them is to the
Level=-1
Techniques=
TechComments=
Training=0
TrainComments=
Context_Manipulated=0
Context_Reason=The shadows of the girls are visable and the light falling on them i
Context_Level=-1
Context_Techniques=
Context_TechComments=
Context_Training=0
Context_TrainComments=
Credibility=3
Offence=1
GeneralComments=
[Image2]
Changed=0
Manipulated=1
Reason=when looking at the hair, its clear that it was cut out around from another
Level=0
Techniques=Brightness, contrast.
TechComments=
Training=1
TrainComments=
```

Figure 6.8   Extract from .ini file

6.4.2   Data analysis

The statistical analysis of the quantitative data gathered through the questionnaire was done using the SPSS 15 software package.

The analysis of the data gathered by means of the digital questionnaire was done in various steps, as required for each research question. These steps were:

a)   coding and classification of data

b)   describing the data

c)   performing a correlation analysis between variables

d)   path analysis

e)   textual analysis of the open-ended responses

a)   Coding and classification

Coding involves the interpretation of data into a form that can be easily processed by computer (Babbie, Halley & Zaino 2003:506). Each participant was graded according to the nature and level of their training. Various groupings were investigated according to the independent variables of training time in the visual arts or visual literacy training (VLT), Photoshop, or production literacy training (PLT) and computer literacy training (CLT). Although the questionnaire was not specifically designed to establish accurate estimates of the participants' computer literacy training or Photoshop training, these groupings were made according to the syllabi of the various courses attended by the participants. The nature and level of the participants' studies, together with possible previous training in the visual arts that they underwent, for instance art classes at school, were taken into account when grouping the participants, as well as the syllabi and year programmes of the various courses (see Annexure A).

The groupings were made in order to facilitate analysis of the data towards establishing whether the level of VLT and/or PLT (independent variables) of the participants had an impact on the dependent variables of the participants' awareness and attitude towards digital manipulation of images. The PLT of the participants for grouping purposes was determined through the level of Photoshop training, according to the syllabi of the various courses.

The following initial groupings were investigated:

Grouping 1

0-6 months' training in the visual arts (VLT)

6-18 months VLT

18 months or more VLT

Grouping 2

Without VLT (Participants who had had no training in visual arts whatsoever)

With VLT (Participants who had had some training in visual arts)

Grouping 3

1 month or less VLT

More than 1 month VLT

Grouping 4

Without CL (Participants who had received no computer training in programming or image manipulation/imaging software. End-user training was not considered.)

With CL (Participants who had received training in programming and/or image manipulation/imaging software)

Grouping 5

Without VPLT (Participants who had received no training in Photoshop)

With VPLT (Participants who had received some training in Photoshop)

The VLT was further specified in terms of weeks of training and working with the estimated average number of weeks of VLT for each participant. Weeks of VLT were calculated according to 16-week semesters. The time of year in which participants completed was taken into account. Weeks of Photoshop training was specified according to course programmes. Analysis of VLT in terms of number of weeks allowed for more clear results and made measures of statistical significance possible, seeing that the number of weeks could be treated as numerical data.

Participants were further grouped in terms of visual production literacy (VPL), according to the techniques that were listed in answer to the question, "Please list the digital manipulation techniques that were used in this image." VPL is treated as a dependent variable, determined from responses to the images, as opposed to VPLT, which is independently determined by the level and nature of the participants' training. Each participant was awarded a score per image according to how many valid techniques were listed. Table 6.2 shows the relevant techniques for each image with the maximum scores achievable for each image. The total score was then calculated for each participant for a digital alteration awareness (DAA) score.

Table 6.2. **Relevant techniques and maximum scores per image**

Image number	Manipulation	Max score
1	Head and neck flipped horizontally Background effaced Clothes reconstructed	3
2	Background inserted Wings inserted Wings made transparent Relative image size transformed Colour and contrast adjustments	5
3	Background extended Shape of shadow adjusted Large objects removed from background Colour added to grayscale Image The word 'Red' inserted Dramatic contrast enhancement Burning and dodging	7
4	Contrast enhancements Burning and dodging	2
5	Large objects inserted Creases added Texture overlaid	3
TOTAL		**20**

Further coding involved converting textual data from answers to why images were thought to be manipulated or not manipulated, to numeric data by coding the explanations according to categories that were found after reviewing the data.

b) Description of data

Measures of central tendency and dispersion are mainly used to describe the data in two ways: firstly, to describe the population sample in terms of the independent variables, and secondly, to describe the frequency of occurrence of the various answers supplied by participants. Descriptive statistics are mainly used to describe the quantitative data although frequencies for coded answers are also provided.

Simple bi-variate analysis is done through cross-tabulation in order to describe possible associations between variables. According to Babbie *et al.* (2003:251), cross-tabulation provides useful descriptions of the relationship between two variables, but it is often difficult to get a clear sense of how strong associations between variables are. Descriptive statistics should therefore be augmented by statistical significance testing as well as by some measures of association.

c) Statistical significance testing

Tests of significance are employed in order to ascertain the likelihood that results obtained in the study are an illusion caused by chance rather than by results that exist in the population (Babbie *et al* 2003:303). The type of test employed is dictated by the type of data analysed, be it numerical, ordinal or interval/ratio data. In this study, Chi-square testing and ANOVA were used.

d) Path analysis

In order to investigate relationships between the various dependent and independent variables, path analysis was employed. Path analysis extends the regression model by establishing the strength and direction of causes between multiple variables (Garson 2008:1).

The path analysis is presented in a path model which relates independent, intermediary and dependent variables. Single arrows indicate causation in the direction of the arrow. It is however important to note that path analysis does not confirm causation. According to Garson (2008:12), "path analysis merely illuminates which of two or more competing models, derived from theory, is most consistent with the pattern of correlations found in the data". Path analysis allows the researcher to compare the "relevant importance of different paths within the diagram" (Garson 2008:13).

e) Textual analysis

For the analysis of the textual data, guidelines suggested by Neuman (1997:420-422) were followed where possible. Although initial themes and codes were established through the literature survey, new codes were also found through open coding within the text, which often led to a better understanding of the numerical data analysis results. Pre-established codes were also investigated, especially regarding possible signifiers for manipulation. For example, in the literature review, a list of possible signifiers was compiled, aiding the coding of participant discourse.

The textual data was analysed in order to provide possible answers to the research question of what signs possibly signify 'altered' in the viewer's mind. Although some of the textual data was coded, transforming it into numerical data, it also provided qualitative information on participants' attitudes towards digital manipulation, and a better understanding of participants' world view in the light of which answers could be interpreted. The participants in this study were from a variety of cultural groups, and for the majority of the group English was a second or third language. It was therefore important to take the world view and compromised understanding and use of language into account when coding the data. Quotes from participant discourse are direct quotes with no changes to the original language and spelling, unless it was felt that the meaning was unclear, in which cases minimal changes were made.

The following analysis was done for the textual data:
- Identification of trends in the definitions given for digital manipulation of photographs
- Compiling list and coding of techniques listed as DAA scores per image and per participant according to Table 1
- Frequencies for explanations for all images - together as well as separately
- Frequencies for explanations for why the images were regarded as manipulated
- Frequencies for explanations for why the images were regarded as not manipulated
- Compiling of list of reasons given for answers to whether the image has been manipulated or not (explanations) and assigning a code to each type of explanation
- Identification of trends for answers to whether the image has been manipulated or not
- Identification of signifiers of digital manipulation from explanations as well as techniques listed
- Identification of trends regarding attitudes towards manipulation from General Comments as well as all the textual data combined

The independent variables relevant to the research questions are summarised in Table 6.3 together with a description of the variable and the means of measurement for each variable.

Table 6.3   Summary of independent variables with descriptions

Variable name	Description	Measurement
VLT	General training in the visual arts	Academic history
VPLT	Specific training in image manipulation software package, Photoshop	Weeks of Photoshop training
Viewing context	Simulated context within which each image is displayed	A predetermined context simulated for each image respectively

The dependent variables are summarised in Tables 6.4-6.7 in relation to the various research sub-questions (SQs), providing a description of the variable, the analysis strategy and the purpose of the analysis.

SQ1:   Is there a correlation between the perception of digital manipulation in photographs and visual literacy training (VLT)?

SQ2:   Is there a correlation between the perception of digital manipulation in photographs and visual production literacy training (VPLT)?

Table 6.4   **Summary of dependant variables with descriptions in relation to SQ1, SQ2**

Variable name	Description	Analysis strategy	Purpose
Altered	Correct/incorrect answers to the question, "Is this image manipulated or not?"	Cross-tabulation of answers vs. groupings with chi-square analysis	Investigation of the existence and significance of correlation between level and nature of training and correct/incorrect answers (SQ1)
Techniques listed	Alteration techniques listed by participants for each image judged to be manipulated	Textual analysis, compiling list, coding	Coding towards DAA scores (SQ1&2)
VPL (DAA scores)	Scores achieved through correct listing of alteration techniques for the various images	Cross-tabulation of DAA scores vs. VPLT with ANOVA testing	Investigating existence and significance of correlation between DAA and VPLT (SQ1&2)

SQ3: Are there specific signifiers that signify digital manipulation, and if so, what are they?

Table 6.5 **Summary of dependent variables with descriptions in relation to SQ3**

Variable name	Description	Analysis strategy	Purpose
Explanations	Explanations regarding why an image was thought to be either manipulated or not	Textual analysis, compiling list, coding	Coding of textual data
		Frequency of explanation categories for manipulated/not manipulated	Determining what causes participants to judge an image to be altered
Techniques listed	Alteration techniques listed by participants for each image judged to be manipulated	Textual analysis	

SQ4: Does the viewing context of the photograph influence the perception of digital alterations in photographs?

Table 6.6 **Summary of dependent variables with descriptions in relation to SQ4**

Variable name	Description	Analysis strategy	Purpose
changed	Whether the above-mentioned answers were changed after viewing the images within their contexts	Frequency of changed answers for each image separately	Determining the impact the viewing context has on whether images are regarded as altered or not altered

SQ5:   What are the participants' attitudes towards digital manipulation of photographs?

SQ 5.1 Are participant attitudes (in terms of acceptability ratings) towards digital manipulation of photographs influenced by viewing context?

SQ 5.2 Are participant attitudes (in terms of credibility and acceptability ratings respectively) towards digital manipulation of photographs influenced by perceived level of manipulation?

Table 6.7   Summary of dependent variables with descriptions in relation to SQ5

Variable name	Description	Analysis strategy	Purpose
Acceptability & credibility ratings	Rating of credibility and acceptability levels of altered photographs on a Likert scale of 1-5	Central tendencies for each image separately	Determining how acceptable and credible the alteration of images are to the participants in relation to the viewing contexts (SQ5)
Textual comments	Textual data retrieved from general comments and definitions	Establishing emerging trends of attitudes through textual analysis	Providing detailed descriptions of attitudes of participants towards image alteration in relation to viewing contexts (SQ5.1)
Level of alteration ratings:	Major, moderate or minor levels of digital alteration	Central tendencies of ratings before and after viewing images in context	Description of data (SQ5.1&2)
		Frequency of level of alteration ratings selected before and after viewing images in context expressed as percentages	
		Cross-tabulation of level of alteration ratings vs. credibility/acceptability ratings/image with Chi-square testing	Investigation of existence and significance of correlation between participant attitudes and perceived level of manipulation of the images (SQ5.2)

6.5   Conclusion

The study design and methods as discussed above allowed for the answering of the stated research questions through the investigation of pre-established variables. The study followed the basic model of a social survey in the form of a digital questionnaire. Test visuals were developed and sourced in order to provide a variety of more or less visible manipulation techniques in a variety of contexts.

The questionnaire was tested with and administered to students from various fields and levels of study at the Vaal University of Technology. Both numeric and textual date were generated through this questionnaire, which necessitated statistical analysis, done with the SPSS 15 software package as well as textual analysis which followed the guidelines set out by Neuman (1997).

The questionnaire provided rich data that allowed sufficient flexibility in the analysis. Results are discussed in the next chapter.

CHAPTER 7

DATA ANALYSIS AND RESULTS

7.1 Introduction

The results provided in this section include only those tables that have practical and theoretical implications for this study. Table 7.1 provides a summary of the various independent variables used in this study.

Furthermore, the questionnaire as a whole is analysed and evaluated. Besides the acceptance and rejection of hypotheses, a reflection on the available data in relation to the questionnaire provides some insights regarding issues outside the research questions that still relate to the issue of awareness of alteration of digital photographic images.

7.2 Evaluation of research questions and hypotheses

7.2.1 Sub-question (SQ) 1

Is there a correlation between the perception of digital manipulation in photographs and general visual literacy training (VLT)?

Hypothesis 1

A positive correlation exists between the number of weeks of VLT received and awareness of digital alteration of photographs[11].

Null hypothesis 1

There is no correlation between the number of weeks of VLT received and awareness of digital alteration of photographs.

A cross-tabulation of the various groupings and correct/incorrect answers to the question "Is this image manipulated?" was done for Groupings 1-5 in order to determine whether there was a correlation between VLT and perception of alterations, as shown in Tables 7.1-7.5.

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[11] The more VLT received, the greater the awareness of digital alterations will be.

Table 7.1   Cross-tabulation of Grouping 1 vs. manipulated/not manipulated answers for all images

Image number		0-6 months VLT (n=67)	6-18 months VLT (n=22)	18 months or more VLT (n=56)
1	Not manipulated (correct)	47.8%	68.2%	60.7%
	Manipulated (incorrect)	52.2%	31.8%	39.3%
2	Not manipulated (incorrect)	40.3%	31.8%	41.1%
	Manipulated (correct)	59.7%	68.2%	58.9%
3	Not manipulated (incorrect)	4.5%	9.1%	5.4%
	Manipulated (correct)	95.5%	90.9%	94.6%
4	Not manipulated (incorrect)	19.4%	9.1%	10.7%
	Manipulated (correct)	80.6%	90.9%	89.3%
5	Not manipulated (correct)	67.2%	81.8%	58.9%
	Manipulated (incorrect)	32.8%	18.2%	41.1%
6	Not manipulated (incorrect)	55.2%	54.5%	67.9%
	Manipulated (correct)	44.8%	45.5%	32.1%
1-6	Average correct	65.9%	74.3%	65.8%
	Average incorrect	34%	25.8%	34.3%

Table 7.1 shows frequencies and percentages of answers to whether the various images have been manipulated or not, together with average percentages of correct/incorrect answers for Grouping 1. From this table it can be seen that the majority of participants gave correct answers. The highest percentage of correct answers (74.3%) was achieved by the
6-18 months VLT group, while the other two groups achieved lowest percentage was achieved by the 18 months or more group (65.8). The 0-6 months group achieved 65.9% correct answers.

Table 7.2 shows frequencies and percentages of answers to whether the various images have been manipulated or not, together with average percentages of correct/incorrect answers, for Grouping 2. The highest percentage of correct answers (67.6%) was achieved by the Without VLT group, while the With VLT group achieved 65% correct answers.

Table 7.3 shows frequencies and percentages of answers to whether the various images have been manipulated or not, together with average percentages of correct/incorrect answers, for Grouping 3. The highest percentage of correct answers (68.2%) was achieved by the More than 1 month VLT group, while the 1 month or less VLT group achieved 65.9% correct answers.

Table 7.4 shows frequencies and percentages of answers to whether the various images have been manipulated or not, together with average percentages of correct/incorrect

Table 7.2   Cross-tabulation of Grouping 2 vs. manipulated/not manipulated answers for all images

Image number		Without VLT (n=37) Chi-square	With VLT (n=108) Chi-Square
1	Not manipulated (correct)	45.9%	59.3%
	Manipulated (incorrect)	54.1%	40.7%
2	Not manipulated (incorrect)	40.5%	38.9%
	Manipulated (correct)	59.5%	61.1%
3	Not manipulated (incorrect)	0%	7.4%
	Manipulated (correct)	100%	92.6%
4	Not manipulated (incorrect)	24.3%	11.1%
	Manipulated (correct)	75.7%	88.9%
5	Not manipulated (correct)	75.7%	63%
	Manipulated (incorrect)	24.3%	37%
6	Not manipulated (incorrect)	51.4%	63%
	Manipulated (correct)	48.6%	37%
1-6	Average correct	67.6%	67%
	Average incorrect	32.4%	33%

answers, for Grouping 4. The highest percentage of correct answers (68.6%) was achieved by the With CL group, while the Without CL group achieved 65.8% correct answers.

Table 7.5 shows frequencies and percentages of answers to whether the various images have been manipulated or not, together with average percentages of correct/incorrect answers, for Grouping 5. The highest percentage of correct answers (69.3%) was achieved by the With VPLT group, while the Without VPLT group achieved 66.2% correct answers.

Table 7.6 provides a summary of the average correct/incorrect scores achieved by the various groupings. Table 7.6 shows that the difference in the various averages between groups is marginal.

Table 7.3 Cross-tabulation of Grouping 3 vs. manipulated/not manipulated answers for all images

Image number		1 month or less VLT (n=67)	More than 1 month VLT (n=78)
1	Not manipulated (correct)	47.8%	62.8%
	Manipulated (incorrect)	52.2%	37.2%
2	Not manipulated (incorrect)	40.3%	38.5%
	Manipulated (correct)	59.7%	61.5%
3	Not manipulated (incorrect)	4.5%	6.4%
	Manipulated (correct)	95.5%	93.6%
4	Not manipulated (incorrect)	19.4%	10.3%
	Manipulated (correct)	80.6%	89.7%
5	Not manipulated (correct)	67.2%	65.4%
	Manipulated (incorrect)	32.8%	34.6%
6	Not manipulated (incorrect)	55.2%	64.1%
	Manipulated (correct)	44.8%	35.9%
1-6	Average correct	65.9%	68.2%
	Average incorrect	34.1%	31.9%

Table 7.4 Cross-tabulation of Grouping 4 vs. manipulated/not manipulated answers for all images

Image number		Without CL (n=75)	With CL (n=70)
1	Not manipulated (correct)	49.3%	62.9%
	Manipulated (incorrect)	50.7%	37.1%
2	Not manipulated (incorrect)	40%	38.6%
	Manipulated (correct)	60%	61.4%
3	Not manipulated (incorrect)	8%	2.9%
	Manipulated (correct)	92%	97.1%
4	Not manipulated (incorrect)	17.3%	11.4%
	Manipulated (correct)	82.7%	88.6%
5	Not manipulated (correct)	65.3%	67.1%
	Manipulated (incorrect)	34.7%	32.9%
6	Not manipulated (incorrect)	54.7%	65.7%
	Manipulated (correct)	45.3%	34.3%
1-6	Average correct	65.8%	68.6%
	Average incorrect	34.2%	31.4%

Table 7.5   Cross-tabulation of Grouping 5 vs. manipulated/not manipulated answers for all images

Image number		Without VPL (n=101)	With VPL (n=44)
1	Not manipulated (correct)	48.5%	72.7%
	Manipulated (incorrect)	51.5%	27.3%
2	Not manipulated (incorrect)	39.6%	38.6%
	Manipulated (correct)	60.4%	61.4%
3	Not manipulated (incorrect)	5.9%	4.5%
	Manipulated (correct)	94.1%	95.5%
4	Not manipulated (incorrect)	19.8%	2.3%
	Manipulated (correct)	80.2%	97.7%
5	Not manipulated (correct)	66.3%	65.9%
	Manipulated (incorrect)	33.7%	34.1%
6	Not manipulated (incorrect)	52.5%	77.3%
	Manipulated (correct)	47.5%	22.7%
1-6	Average correct	66.2%	69.3%
	Average incorrect	33.8%	30.7%

Table 7.6   Summary of average percentages for correct/incorrect scores achieved by the various groupings

Grouping number	Specific group	Average correct %	Average incorrect %
1	0-6 months VLT (n=67)	65.9%	34.1%
	6-18 months VLT (n=22)	74.3%	25.8%
	18 months or more VLT (n=56)	65.8%	34.3%
2	Without VLT (n=37)	67.6%	32.4%
	With VLT (n=108)	67%	33%
3	1 month or less VLT (n=67)	65.9%	34.1%
	More than 1 month VLT (n=78)	68.2%	31.9%
4	Without CL (n=75)	65.8%	34.2%
	With CL (n=70)	68.6%	31.4%
5	Without VPL (n=101)	66.2%	34.8%
	With VPL (n=44)	69.3%	30.7%

Table 7.6 suggests that the variables analysed do not produce significant evidence of a correlation between correct answers and level/nature of study. This assumption is supported by Chi-square testing, which shows no significance in any of the groupings. Before accepting null hypothesis 1, the variable of correct/incorrect was replaced with DAA score.

Even though a separate question was set, asking the participants to list the techniques used in the images that they thought had been manipulated, many participants listed the techniques as part of the reasons that they gave for their answers in SQ 1. The techniques listed were mainly used to determine the DAA score for each participant (see Table 6.2).

Total DAA scores for each participant were analysed in relation to the various groupings to investigate a possible correlation between awareness of digital alteration techniques and participant level and nature of study. Table 7.7 shows these results.

Table 7.7   Cross-tabulation of groupings 1-5 vs. DAA scores

Grouping no.	Grouping description	Total DAA score	Max. score (nx20x6)	Percentage
1	0-6 months VLT. (n=67)	187	1340	14%
	6-18 months VLT(n=22)	68	440	15%
	18 months or more VLT (n=56)	200	1120	18%
2	Without VLT (n=37)	99	740	13%
	With VLT (n=108)	356	2160	16%
3	more than 1 month VLT (n=67)	187	1340	14%
	Less than 1 month VLT (n=78)	268	1560	17%
4	Without CL*(n=75)	215	1500	14%
	With CL (n=70)	240	1400	17%
5	Without VPLT (n=101)	278	2020	14%
	With VPLT (n=44)	177	880	20%

Table 7.7 shows that in Grouping 1 the highest score (18%) was achieved by the group with 18 months or more VLT. The medium and low groups scored close to each other with 14% and 15% respectively; in Grouping 2 the highest score (16%) was achieved by the group with VLT (1). The group with no VLT scored 13%; in Grouping 3 the highest score (17%) was achieved by the group with more than one month VLT. The group with less than one month VLT scored 14%; in Grouping 4 the highest score (17%) was achieved by the group with CL. The group without CL (0) scored 14%. The highest score overall (20%) was achieved by the group with VPLT. The group without VPLT scored 14%.

The highest difference in scores can be found in Grouping 5, with a difference of 6%. The average difference between the other groups is 3%. Null hypothesis 1.1 is therefore accepted while the visual assessment of the table indicates that Grouping 5 warrants further investigation, which is done in SQ 2.

7.2.2 Sub-question 2

Is there a correlation between the perception of digital manipulation in photographs and visual production literacy training (VPLT)?

The hypothesis and null hypothesis for SQ 2 as stated in Chapter 1 are as follows:

Hypothesis 2

A positive correlation exists between the number of weeks of VPLT received and awareness of digital alteration of photographs[12].

Null hypothesis 2

There is no correlation between the number of weeks of VPLT received and awareness of digital alteration of photographs.

VPLT is measured in terms of weeks of Photoshop training, seeing that the production of digitally altered images was mainly performed with Photoshop at the Department of Visual Arts and Design, Vaal University of Technology, from where the study population was sampled.

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[12] The more VPLT received, the greater the awareness of digital alterations will be.

Table 7.8 Cross-tabulation of weeks of Photoshop training vs. DAA score totals for the whole group (n=145)

		Total (n)	Total scores	Max. score	Percentage
	0	101	278	2 020 (101x20)	14%
	1	14	48	280 (14x20)	17%
Weeks of Photoshop training	2	9	30	180 (9x20)	17%
	4	15	65	300 (15x20)	22%
	8	6	34	120 (6x20)	28%
Total		145			

Table 7.8 shows the distribution of DAA score totals achieved by participants (maximum score is 20/image and 120/participant) in relation to the weeks of Photoshop training they received. Table 7.8 shows scores achieved by each category translated into percentages of the maximum score achievable by each category. The highest percentage was achieved by the group with eight weeks of Photoshop training (28%) while the lowest score was achieved by the group with zero weeks of Photoshop training (14%), while the groups with one and two weeks of Photoshop training both scored 17% and the group with four weeks of Photoshop training scored 22%. There is therefore a 14% difference between the highest and lowest scores and a 6% difference between the highest score and the second highest score.

Levene's Test of Equality of Error Variances showed that variances between groups were significantly similar with an ANOVA value of 0.674. A between subjects effects significance level of $p=0.0-0.05$ indicates that it is statistically sound to infer that increased number of weeks of Photoshop training does increase the participants' awareness of digital image alteration techniques. Hypothesis 2 is therefore accepted.
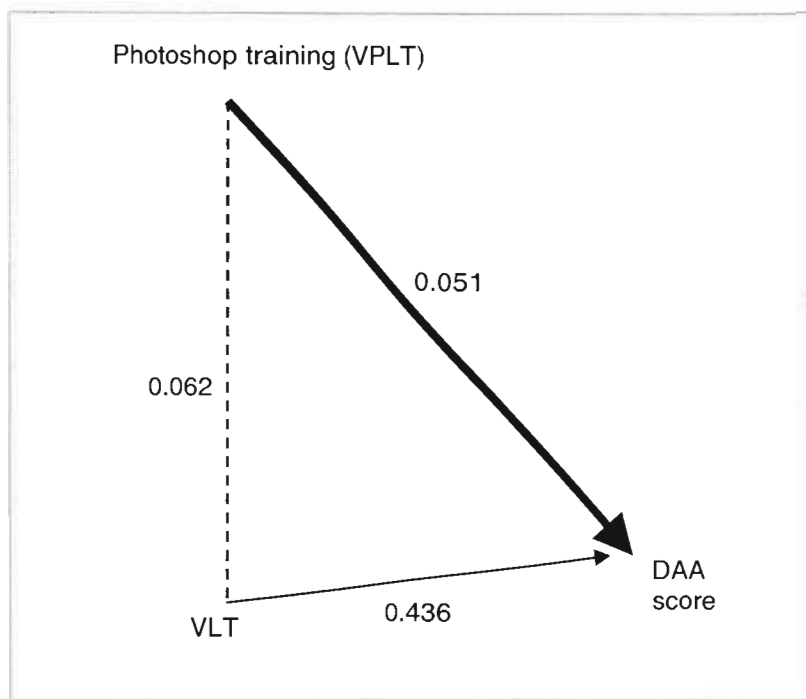
Figure 7.1   Path analysis diagram illustrating the relationship between Photoshop training, VLT and VPL

A path analysis diagram of the relationship between VLT, VPLT and DAA scores illustrates that there is a relationship between VLT and higher DAA scores (standardised regression coefficient = 0.436), but that it can be inferred with much more certainty that higher levels of Photoshop training are associated with higher DAA scores (standardised regression coefficient = 0.051). The diagram illustrates that there is a link between VLT and VPLT, but the one variable cannot be said to cause the other. Pearson's r values indicate positive correlations between VLT and DAA scores (r = 0.051) as well as between VPLT and DAA scores (r = 0.436). Relative to the correlation between VLT and DAA scores, the correlation between VPLT and DAA scores is significant.

7.2.3   Sub-question 3 (SQ3)

No hypothesis was formulated for SQ3 seeing that the data relevant to this question was qualitative. Therefore only textual analysis was used. The data relevant to SQ3 was taken from the explanations given as to why an image was thought to be manipulated and from techniques listed for manipulated images.

The answers to Question x.1a (the explanations for why the participant thought the image had been manipulated/not manipulated) were scrutinised in order to shed more light on the question of what signs signify that an image has been altered. The textual data was converted to numeric data by coding the explanations according to categories that were found after reviewing the data.

The participants' understanding of what manipulation is (from definitions supplied) as well as what they perceive to be realistic or not was taken into account while doing the coding. (For instance where a participant described the way the girls in Image A sat on their bicycles as unrealistic: "It seems impossible that the girl with blonde hair would be in the same one seat bicycle as the other.") The categories with the coding are displayed in Table 7.9.

All quotes from participant discourse in this chapter are verbatim, except where the meaning is unclear due to language errors, in which case the quotes are corrected. The motivation for some of the coding needs to be further explained and illustrated. Typical styles (Category 2) that were mentioned were 'documentary', 'snapshot', 'black-and-white' and 'old photograph'. Some examples are:

> "… documentary styled associated with objective and truthful viewpoint …"

> "… documentary styled usually associated with no manipulation burning and dodging not considered as unethical manipulation"

> "It looks like a very old family photograph. The highlights are blown out and the there is no detail in the black. Furthermore the image is very flat. "

> "… there is no tonal balance, it looks like a snapshot."
> "… no, is a black-and-white portrait picture of old person and all details are there …"

Any explanations that made reference to computerisation or the use of software packages, of which there are quite a few, were classified as 'other' because these explanations seem only to confirm that the participants thought that the images had been manipulated.

Table 7.9   Categories and coding of explanations for manipulated/not manipulated

0	**No answer**
1	**Context,** where context is cited as a reason for the answer, for example, "It looks like a photograph for a newspaper."
2	**Style**, where the style of the photograph is cited as the reason for the answer, e.g. "… documentary style associated with objective and truthful viewpoint".
3	**Implausibility**, where implausibility with the participant's view of reality is cited as the reason for the answer, e.g. "Only the girl on the back of the bike is smiling at the camera" or "The child has wings and is amongst flowers and manipulation is obvious."
4	**Real/plausible**, where correspondence with the participant's view of reality is cited as a reason for the answer, e.g. "It all looks real."
5	**Techniques visible**, where the visibility of manipulation actions, such as hard edges of shapes, smudged detail, or insertion of colour are cited as reasons for the answers, e.g. "You can see that the lady's image was cut out and put on another background."
6	**Techniques not visible**, e.g. "I can see no apparent manipulation, and the image looks completely normal. The only manipulation could have been the contrast and brightness, but I see no manipulation that completely altered the image."
7	**Unsure due to scepticism**, where they acknowledged that they could not see any signs of manipulation but realised that it does not rule out the possibility of the image being manipulated, e.g. "You won't know if it's done properly."
8	**Nature of content,** where the nature of the content of the image is given as an explanation, e.g. "It can be a father hugging and kissin[g] his child so I see nothing wrong with it."
9	**Other,** e.g. "Image is confusing", "This looks like a scan[n]ed image; there are wrinkles on it."
10	**Pixilation,** where pixilation in the image is cited as the explanation for the answer, e.g. "Because u can [see] the pixels in the child's face"; "The size of the picture was taken; they enlarge the picture so that it could look big."
11	**Use of camera,** e.g. "This totally looks like a picture has been taken by a camera and has just been developed without any edits, air-brushing etc."; "This picture is of old photos method, the size of the picture is the original one also the use of camera"
12	**Too perfect to be real,** e.g. "The photograph looks too perfect to be entirely real."

The reference to the nature of the content could be said to be the same as correspondence with reality, but these explanations do not mention reality or the word real at all. From the explanations, it is clear that the participants felt that the nature of the content did not lend itself to manipulation. It seems as if the photograph of the content is confused with the content itself. The following are examples of explanations given for why the relevant images were regarded as not manipulated:

"… men can carry a baby as his own just to help their women where they can't …"

"… it looks like they are inside a mall or a shopping centre …"

"… 'cause it seems as if the person is scared to face the camera ... or was asked not willing to do the photo …"

In several of the answers (just under 10% of all the answers), the categories occurred in combinations, which indicates that participants mostly felt that a simple answer was sufficient. However, it was found that some very short answers combined more than one category, e.g. " … this is just a real image taken by a camera, it does not have any additional features" (combining 4, 6 and 11), and " … you won't know if it's done properly …" (combining 6 and 7). Some lengthy explanations that combined categories were also found. The following example combines Categories 1, 6 and 7:

"Unless the image has been cropped and terated so minor that you cant see the changes i would say it hasnt been manipulated. Plus it looks like a news image and they usually dont manipulate them, except maybe a bit of burning in and dodging in places and bringing out the colour a bit."

The number of categories that could be identified from the answers, as well the number of explanations that did not fit into any of these categories ('other'), shows that the explanations given for why the participants thought a specific image had been manipulated or not manipulated are extremely varied.

The total number of occurrences for each category was considered, causing the total number of answers given to exceed the number of questions. Table 7.10 shows the frequency of occurrence for each category.

Table 7.10 Frequencies for explanation categories (combinations included in existing categories)

Explanation category	Frequency
0	28
1	21
2	61
3	176
4	189
5	265
6	85
7	18
8	54
9	74
10	3
11	4
12	6
TOTAL	984

Table 7.10 gives an indication of the distribution of categories, where 5 is cited most frequently for images that were thought to have been manipulated, followed by 3 (implausibility) and 8 (nature of the content of the image). The least frequently cited categories were 12, 11 and 10, in that order.

The Category 5 majority was naturally influenced by the fact that the majority of the images had in fact been manipulated, with only two not manipulated. The research question focused on signifiers for the presence of alteration and not the absence of alteration. Table 7.11 shows the distribution of categories for explanations for why images are seen to be altered.

Table 7.11   Frequency of explanation categories for altered only

Explanation category	Frequency	Percentage of total citations
0	8	1%
1	9	1.6%
2	18	3%
3	172	30%
4	7	1%
5	261	46%
6	6	1%
7	10	2%
8	18	3%
9	53	9%
10	3	0.5%
11	1	0%
12	6	1%
Total citations	572	100

For the answers that indicated that the images had been altered, the most frequently cited category was 5 (46%). followed by 3 (30%) and 9 (9%).

In answer to research question 2, it can therefore be stated that the visibility of techniques, implausibility and some other factors allowed alterations to be perceived.

7.2.4   Sub-question 4 (SQ4)

The questionnaire allowed participants to change their answers after viewing the images within a simulated context in order to determine whether viewing context has any impact on DAA. The hypothesis and null hypothesis for SQ4 read as follows:

Hypothesis 4

Viewing context of the photograph influences the perception of digital alterations in photographs[13]

Null hypothesis 4

Viewing context of the photograph does not influence the perception of digital alterations in photographs[14].

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[13] I.e. answers to whether the images were manipulated or not are changed after viewing the images within context.

Hypothesis 4 was tested by analysing whether answers to "Is the image manipulated" were changed after viewing the images within context. Table 7.11 shows the number of changed answers to whether the image had been manipulated or not, for each image separately, as well as for the total number of changed answers. The table also distinguishes between answers changed to indicate whether the image was thought to have been altered or not.

Table 7.12   Changed answers for each image separately

		Not altered	Altered	Total
	1	6	2	8
	2	1	9	10
Image Number	3	1	1	2
	4	1	0	1
	5	0	13	13
	6	5	1	6
Total		14	26	40 (4.7%)

Table 7.12 shows that only 40 answers out of a total of 840 answers (4.7%) to whether the images had been manipulated or not were changed after the images were viewed within context. For Image 1, six answers were changed to 'not manipulated' while two were changed to 'manipulated'. For Image 2, one answer was changed to 'not manipulated' while nine answers were changed to 'manipulated'. For Image 3, one answer was changed to 'not manipulated' and one was changed to 'manipulated'. For Image 4, only one answer was changed to 'not manipulated'. For Image 5, 13 were changed to 'manipulated'. For Image 6, five answers were changed to 'not manipulated' and one was changed to 'manipulated'.

By far the majority of answers were not changed. 'Changed' as a variable will therefore not be explored further. The null hypothesis is accepted with reservation, which is an acknowledgement that the questionnaire did not provide sufficient data to give conclusive results regarding SQ4.

7.2.5   Sub-question 5 (SQ5)

A revision of the data showed that references regarding the attitudes of the participants towards manipulation could be found in the definitions, and especially in the general comments. Themes were identified separately and then reviewed and combined into one set.

The themes that emerged from the definitions and general comments could be divided into positive, negative, and impartial attitudes. The following themes were identified:
Positive:

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[14] I.e. answers to whether the images were manipulated or not are not changed after viewing the images within

a)   Manipulation mostly implies the enhancement of images and is useful.
        "Manipulation is used in various art fields to enhance or better the
        existing image! Altering the original colours and subject matter can
        help convey a total differant message that the original image did."

b)   Manipulation allows the intensions of the photographer to be achieved and makes
        anything possible, for example:
        " ... is the visual expression of anything throuth the photograph and
        control that changes…"

Negative:

c)   Manipulation takes away any element of objectivity; changes truth and credibility, and
        could be dangerous, for example:
        "One has to ask themselves the important question which is, does digital
        manipulation change the meaning of a photograph or enhace the meaning
        of a photograph. Objectivety is a problematic issue to deal with in
        photograph, but a digitally manipulated image cannot be truly objected
        even if the meaning was inhanced."

        "i think not everyone must know that. it could be very dangerous."

d)   Manipulating an image removes any sentimental value that the image had, for
        example:
        " ... the picture still have a sentimental value to it because no
        manupulation was done to it ..."

        "The typical family photograph is not about fancy effects or perfectly
        axposed images, it is more about the subject and the memories
        connected to the image."

e)   Manipulation is negative if family photographs are manipulated, or, in the context of
        photographic studies, for example:
        "Some images can be manipulated to achieve different effects. But
        some images, like this family photo should not be; memories and life
        experienses should not be manipulated."

context.

"If the picture was taken and provided as an artwork, it would be said to be well taken, but at one point, if it was manupilated it would be unacceptable in a case of studies of photography, unless instructed to."

Impartial:

f)   Any manipulated image should be labelled as such.

"It should be explained that the photo is changed to computer generated object."

g)   Manipulation could be good or bad, depending on how it is used and the motivation for the manipulation.

From the comments regarding participants' training in Photoshop, four trends emerged, namely:

1. Participants would like to receive training in manipulation of images as illustrated by the following example (quoted verbatim):

"I feel if i can know a little better about the image manupulation i would have recognised lots of things and would have a little experience on the matter."

2. Admiration of manipulation techniques

"This had to have been the work of a professional!'

3. Criticism of manipulation techniques

4. The questionnaire sensitised participants to manipulation techniques (verbatim quote):

"By paying enough attention and having the idea to look for a manipulative image gave me the drive to pay attention on the image."

The following two tables show the frequency with which the above-mentioned themes occurred in the participants' discourse. These comments are drawn from questions that were optional, which explains the smaller number of participants.

Table 7.13   Frequency of general comment categories

Theme categories	Frequency
(a)	12
(b)	4
(c)	2
(d)	2
(e)	2
(f)	1
(g)	3
Total	26

Table 7.13 shows the frequencies from general comments, definitions and comments regarding Photoshop training. Only 26 of the comments related to the attitudes of participants towards the digital alteration of images. The most frequently cited category is (a) (n=12); the second most frequent category is (b) (n=4). Category (g) was cited three times; (c), (d), and (e) were each cited twice, while the least frequently cited category is (f) (n=1).

Table 7.14   Frequency of categories of comments regarding Photoshop training

Theme categories	Frequency
(a)	20
(b)	8
(c)	14
(d)	3
Total	45

Table 7.14 shows that (a) was mentioned the most frequently (20) and (c) was mentioned second most frequently (14). Category (b) was mentioned eight times and (d) was mentioned the least frequently (3).

From the analysis of the available textual data regarding participant attitudes, it can be gathered that attitudes expressed were mostly positive regarding the presence of manipulation and the need for Photoshop training. Although not statistically significant, seeing that such a small percentage of participants provided comments concerning their attitudes these results provide a background against which the analysis of the credibility and acceptability ratings can be viewed.

The hypothesis and null hypotheses for SQ 5 have been formulated as follows:

SQ 5

What are the participants' attitudes towards digital manipulation of photographs?

This over-arching question will be answered through textual analysis of qualitative data and will therefore not be formulated in terms of hypothesis and null hypothesis. The question is subdivided in terms of the measurements employed, namely credibility ratings, acceptability ratings and perceived level of manipulation as well as viewing context.

Hypothesis 5.1

Participant attitudes (in terms of acceptability and credibility ratings) are influenced by viewing context[15].

Null hypothesis 5.1

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[15] I.e. alterations are seen as more acceptable in advertising images than in news/family photographs.

Participant attitudes (in terms of acceptability and credibility ratings) are not influenced by viewing context[16].

Table 7.15   Modes of credibility and acceptability ratings for each image (n=145)

Context and image no.	Family images 1,2				Billboard images 3, 4				News media images 5, 6			
	Credibility	Acceptability	Credibility	Acceptability	Credibility	Acceptability	Credibility	Acceptability	Credibility	Acceptability	Credibility	Acceptability
Mode	3	1	3	1	4	0	3	1	3	1	3	1

Table 7.15 shows the acceptability and credibility ratings for each image, rated on the following Likert scales:

Acceptability:

    0.   Completely unacceptable

    1.   Not acceptable

    2.   Undecided

    3.   Acceptable

    4.   Entirely acceptable

Credibility:

    0.   Highly credible

    1.   Credible

    2.   Undecided

    3.   Not entirely credible

    4.   Not credible at all

For Images 1, 2 ,4, 5 and 6, the most frequently selected rating for credibility is 3 (undecided), and 1 (not acceptable) for acceptability. For Image 3, the most frequently selected rating for credibility is 4 (not entirely credible), and 0 (completely unacceptable) for acceptability. The three different contexts were rated almost precisely the same, indicating that for the participants the use of image alteration in the various images were 'not acceptable' and not entirely credible', with the exception of Image 3, which was rated as 'Not credible at all' and 'Completely unacceptable'. Hypothesis 5.1 is therefore rejected and the null hypothesis is accepted. Against the background of the textual analysis regarding participant attitudes, the above-mentioned result is surprising in that it is contradictory. A possible cause for this

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[16] I.e. there is no significant distinction between the acceptability ratings for news/family photographs and advertising

contradiction could be that only a small percentage of the participants provided general comments regarding their attitudes while ratings were given by the whole group. The null hypothesis is therefore accepted with reservation.

The hypothesis and null hypothesis 5.2 are formulated as follows:

Hypothesis 5.2

Participant attitudes (in terms of acceptability ratings) are significantly influenced by perceived level of manipulation[17].

Null hypothesis 5.2

Participant attitudes (in terms of acceptability) are not significantly influenced by perceived level of manipulation[18].

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Table 7.16   Cross-tabulation of acceptability ratings vs. level of manipulation ratings

		Acceptability rating					
		0	**1**	**2**	**3**	**4**	**Total**
Level rating	**Image has not been manipulated (-1)**	74 (9%)	120 (14%)	69 (8%)	34 (4%)	40 (5%)	337 (39%)
	Minor manipulation (0)	11 (0.1%)	47 (5%)	28 (3%)	13 (1%)	14 (2%)	113 (13%)
	Moderate manipulation (1)	32 (4%)	93 (11%)	45 (5%)	27 (3%)	15 (2%)	212 (24%)
	Major manipulation (2)	76 (9%)	75 (9%)	24 (3%)	21 (2%)	12 (1%)	208 (24%)
	TOTAL	193 (22%)	335 (39%)	166 (19%)	95 (11%)	81 (9%)	870 (100%)

Table 7.16 shows the distribution of acceptability ratings vs. level of manipulation ratings. The combination of acceptability rating 1 (not entirely acceptable) and level rating -1 (image is not manipulated) occurred for 14% of the answers, while the combination of acceptability rating 1 and level rating 1 (moderate manipulation) occurred for 11% of the answers. Chi-square testing shows that there is a statistically significant correlation between how credible the relevant images were perceived to be and the perceived level of manipulation (p = .000). Hypothesis 5.2 is therefore accepted.

Hypothesis 5.3

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images.

[17] I.e. minor alterations are seen as the most acceptable and major alterations are seen as the least acceptable.

[18] I.e. there is no correlation between level of alteration and acceptability ratings.

Participant attitudes (in terms of credibility ratings) are significantly influenced by perceived level of manipulation[19].

Null hypothesis 5.3

Participant attitudes (in terms of credibility ratings) are not significantly influenced by perceived level of manipulation[20].

Table 7.17   Cross-tabulation of credibility ratings vs. level of manipulation ratings

		Credibility rating					
		0	1	2	3	4	Total
Level rating	Image has not been manipulated (-1)	30 (3%)	32 (4%)	52 (6%)	153 (18%)	70 (8%)	337 (39%)
	Minor manipulation (0)	10 (1%)	10 (1%)	23 (3%)	55 (6%)	15 (2%)	113 (13%)
	Moderate manipulation (1)	10 (1%)	20 (2%)	30 (3%)	105 (12%)	47 (5%)	212 (24%)
	Major manipulation (2)	19 (2%)	12 (1%)	17 (2%)	86 (10%)	74(9%)	208 (24%)
	TOTAL	69 (8%)	74 (9%)	122 (14%)	399 (46%)	206 (24%)	870 (100%)

Table 7.17 shows the distribution of credibility ratings vs. level of manipulation ratings. The most frequently occurring combination is credibility rating 3 (not entirely credible) and level rating -1 (image has not been manipulated) (18%), with the second most frequently occurring combination being credibility rating 3 and level rating 1 (Moderate manipulation) (12%). Chi-square testing shows that there is a statistically significant correlation between how credible the relevant images were perceived to be and the perceived level of manipulation ($p = .000$). Hypothesis 3.3 is therefore accepted

7.3   Discussion and evaluation of questionnaire

7.3.1   Discussion of answers to the question, "Has this image been manipulated or not?"

Table 7.18 shows a summary of the analysis of frequencies of manipulated/not manipulated answers. Percentages of manipulated/not manipulated answers per image are listed, together with an indication of which answer is correct in relation to the image number. From Table 7.18 it can be seen that for Images 1-5 the majority of the participants were correct. The highest percentages of correct answers were given for Images 3 (94.5%) and 4 (85.5%), while the lowest percentage of correct answers (40%) was given for Image 6. Very similar percentages of correct answers were given for Images 1 (55.9%), 2 (60.7) and 5 (66.2).

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[19] Minor alterations are seen as the most credible and major alterations are seen as the least credible.

[20] I.e. there is no correlation between level of alteration and credibility ratings.

Table 7.18   Percentages and correctness of 'altered' answers per image

Image number	% Manipulated	% Not manipulated
1	44.1%	55.9% (Correct)
2	60.7% (Correct)	39.3%
3	94.5% (Correct)	5.5%
4	85.5% (Correct)	14.5%
5	33.8%	66.2% (Correct)
6	40.% (Correct)	60.0%

From the analysis of the answers to whether the images were manipulated or not, it is apparent that the majority of answers were correct. For only one image, Image 6, the majority of answers were incorrect. The over-all majority of correct answers are however not overwhelming at 67.1%. It is a clear indication that many of the participants could not tell whether the images had been manipulated or not.

For Image 1, the percentages for correct and incorrect answers are very close together. Altogether 44.1% of participants felt that the image had been manipulated; even though it is quite obviously a snapshot. This indicates a general scepticism which could have been caused by the questionnaire itself. Aspects of the image that seemed unfamiliar were ascribed to manipulation rather than camera angle or unfamiliarity with the subject matter.

The highest percentages were predictably achieved with the images with the most visible techniques, with the image with the most unrealistic content at 94.5% correct and the image with the most visible style or form-related technique at 85.5% correct. The reason for the lower percentage for Image 4 seems to be that the changing of a colour in the image was not mentioned in the introduction to the questionnaire as one of the examples of what manipulation entails.

The two images with more subtle manipulations (although not better executed) scored much lower percentages of correct answers. It is interesting to note that both these images would be regarded as extremely badly crafted photographs. In the case of the black-and-white photograph (Image 2), the very fact that it was black-and-white convinced many that it was an old image that would therefore not have been manipulated.

Image 6, on the other hand, is a colour image that gives no indication of being old. From these percentages it is clear that there are many factors that contribute to whether an image is seen as having been manipulated or not. Many of these factors are not related to what can actually be seen in an image and what cannot be seen.

The analysis of the first grouping gives an indication that some training in the visual arts has a positive impact on the ability to notice whether an image has been manipulated or not, but that any training above 18 months ceases to have a positive impact, with the percentage of correct answers declining from 74.3% for the 6-18months VLT group to 65.8% correct answers for the 18 months and above VLT group.

The next grouping divides the total group into only two groups: those with some VLT and those with no VLT at all. This grouping gave a surprising result in that the percentages of correct answers are almost equal. When comparing the results from these two groupings it thus seems that between 6 and 18 months of VLT impacts positively on awareness of manipulation.

This is however not strongly confirmed by the analysis of Grouping 3, which divides the total group into those with less than one month VLT (65.9% correct) and those with more than one month VLT (68.2% correct).

Analysis of Grouping 4 investigated the possibility that computer literacy could have some impact on the awareness of manipulation in the images. However, the results show only a 2.8% difference between the group with no formal training in programming and/or image manipulation software (65.8%), and those with CLT (68.6%). Grouping 5 shows an equally small difference between the group with VPL (69.3%) and without VPL (66.8%).

From an examination of the various scores of correct/incorrect answers it is clear that the various levels and fields of study do not have a strong impact on the number of correct answers given to whether an image has been manipulated or not. However, the correctness or incorrectness of an answer depends greatly on the specific definition of digital image manipulation of photographs held in the mind of each participant. Seeing that the participants were encouraged to expand or alter in another way the definition provided, some participants assessed the images with a much broader definition than others. This caused some to regard the images that had not been manipulated, except for possible contrast and colour enhancements, as manipulated. Other participants took the definition given to include only the examples mentioned. This often caused participants to regard an image that had been heavily manipulated as not manipulated, because the most visible technique was not mentioned in the definition.

7.3.2. Analysis of changed answers for manipulated/not manipulated

Another possible factor influencing whether an image is seen as manipulated or not is the context within which the image is displayed. The questionnaire displayed the images first without context and then with context, giving the participants a chance to review their answers after seeing the images within context in order to determine whether the presence of a context would change the participants' evaluation of the

images. In total, 4.7% (40) of all answers were changed after the images were viewed within context by 20.6% of the participants.

Rather than giving conclusive evidence that viewing context does not influence perception of digital image alterations, the results suggest that showing the viewer images first without context and then within simulated contexts is not an effective test of the impact that viewing context has regarding manipulation awareness.

The main reasons given for the changes made to answers are visible manipulation techniques in the image with the context that were not visible without the context. One such a technique which was mentioned with Images 2 and 5 was cropping, which was not considered as a digital manipulation technique for the purposes of this study. In this study context of the images therefore could not be confirmed as a factor determining whether an image was regarded as having been manipulated or not.

7.3.3 Discussion of analysis of techniques listed

An analysis of the techniques listed by participants for each image gives a clearer indication of awareness of manipulation. The more techniques listed by any participant, the more aware that participant is of manipulation in images.

An analysis of VMA scores achieved by various groupings of VLT, CLT and VPLT, shows that there is a correlation between nature and level of training and awareness of manipulation. This correlation is the strongest in Grouping 5, with the 'with VPLT' group scoring 20% out of the maximum score possible, and the Without VPLT group scoring 14%. These results suggest that Photoshop training specifically has a much greater impact on manipulation awareness than general training in the visual arts.

A further investigation into the correlation between Photoshop training and awareness of manipulation shows a 14% difference in score between those with eight weeks of formal Photoshop training and those with no Photoshop training.

It is notable that out of the possible seven manipulation techniques performed in Image 4, only four were noticed by any of the participants. The most comprehensive listing of techniques for Image 4 is shown in the following example of a participant's response:

> "Text has been added and colors have been made brighter the background has
> also been manupilated and shadow exaggerated."

Most of the participants scored 1 for Image 4, only mentioning the addition of red to a black-and-white image. This suggests that there might be factors other than VLT or VPLT that influence manipulation awareness, such as Gestalt laws and principles of visual communication. It can be speculated that because the addition of the red colour to the black-and-white image is so prominent, the rest of the image was disregarded. The placement of the red elements could also have an impact. These aspects fall outside the scope of this study and will have to be researched separately to establish their impact.

7.3.4   Discussion of credibility and acceptability ratings

From the mean credibility ratings for each image, it is clear that the participants mostly felt that the images were not entirely credible. The only image that was thought by the majority to be not credible at all was Image 3, which depicts a baby with dragonfly wings taking a bath in a tulip. Even Image 6, which was indicated by 60% of the participants to be not manipulated, was rated as not entirely credible. These results once again indicate a measure of scepticism about photographs.

The mean acceptability ratings for the various images are mostly 1, with only image 3, which was the most obviously manipulated, being rated as completely unacceptable. This indicates that the participants in general felt that the manipulation of photographs is not acceptable. Some participants indicated context as a factor influencing whether manipulation of images is acceptable or not, for example:

> "Some images can be manipulated to achieve different effects. But some images, like this family photo should not be; memories and life experienses should not be manipulated."

However, the low acceptability ratings might be motivated by other factors such as a dislike of the subject matter or the aesthetic qualities of the images, as suggested by some of the comments made by participants, for example:

> "The way the two people are riding the bicycle is totaly unacceptable."
> "It is a terrible photograph."

7.3.5   Discussion of level of manipulation ratings

The level of manipulation ratings are interesting in that no images were thought by the majority to have been manipulated only in a minor degree. Most of the images were thought to have been moderately manipulated, while Images 3 and 6 were thought to be highly manipulated. If these ratings are compared to the number of techniques performed for each image, as shown in Table 7.1, it is notable that the image with the most manipulation techniques performed on it (Image 4) was rated as moderately manipulated while an image with only three techniques performed (Image 6) was regarded as highly manipulated before viewing the image in context and as equally moderate and high after viewing within context. However, there is less than 1% difference between rating 1 and 2 for Image 4.

The most visible technique in Image 6 is the insertion of relatively big signs, while in Image 4 it is the addition of colour. The insertion of objects was therefore seen as being a slightly more severe manipulation than the addition of colour to a black-and-white image.

7.3.6 Discussion of definitions of digital manipulation of photographs

The definition supplied in the questionnaire was mostly left unchanged by the participants. Those who did suggest changes mostly proposed that the definition should include image enhancement as well. Some argued that image enhancements do alter the meaning of a photograph.

This notion of what digital manipulation is, caused some participants to indicate that un-manipulated images had been manipulated. In the case of Image A, no manipulations had been made, but in the case of Image E, it is assumed that the photographer or photo editor of the publication had performed image enhancement procedures such as improving contrast, tonal balance and colour saturation. Merely analysing the correctness of the answers would therefore have given a skewed image of the participants' manipulation awareness.

7.3.7 Discussion of explanations given for answers to whether the images had been manipulated or not

The analysis of the frequency of occurrence of explanation categories for why the various images were seen as manipulated or not, gives an indication of how the participants approached the visuals, and what causes a viewer to decide whether an image has been altered or not. These categories could therefore also be translated to signifiers for manipulation. Those categories that were cited most frequently were therefore taken to be the most visible or prominent signifiers.

A list of 12 categories was drawn up from the explanations given by the participants, with a category ('other') that included explanations that did not reoccur or were nonsensical. The explanations were therefore varied, but the vast majority cited visibility of techniques followed by implausibility.

Visibility of techniques is therefore the main reason that an image is seen as having been manipulated. This shows a general understanding that images do not have to seem unreal when compared to experience of the world to be manipulated. If a manipulation technique is visible, it means that there are incoherencies within the image structure that do not conform to our experience of the photographic medium (Brugioni 1999). Image 4 was indicated to have the most visible manipulation techniques, seeing that almost 10% of the explanations cited Category 5, for Image 4 alone. The technique that was almost

exclusively mentioned was the adding of colour in a black-and-white image, even though this technique was not mentioned in the definition supplied. This is acknowledged by the following example:

"[O]bvious colour manipulation was used. And in this image it definately changes the meaning of the image, or at least reinforces it."

The fact that implausibility is given second most frequently as an explanation indicates that if something in an image does not agree with one's conception of reality, it is assumed that the image has been manipulated rather than allowing one's view of reality to be changed.

This is illustrated to some extent by the responses to Image 6, which had been manipulated (SuperMart signs were pasted onto an image of a Jet/Sales House store). Several participants recognised the manipulation because they are familiar with the nature of Jet and Sales House, not because they noted the badly pasted signs, even though the news article in which it was displayed, stated that Jet and Sales House were going to buy SuperMart, and the original photograph did show a combination of Jet/SalesHouse and SuperMart:

"I havent seen a Jet logo with the Sales house logo at the same time Because one store closed a long time ago."

One participant, however, indicated that he/she was familiar with the specific store, and gave that as a reason why the image had not been manipulated. This participant obviously just did not notice the SuperMart signs at all:

" ... having frequented the store it appears the same way as it was when visited ..."

Some participants did not recognise the specific store, but noted that SuperMart was not part of Jet/SalesHouse, and therefore the image must be manipulated:

"... jet and supermart is not one thing ...",

"... it cant be jet; super mart and sales house at the same store ..."

"I think there are some images that have been added like the super mart, as it seem unreal to me for the Jet store to have something like that."

Instead of believing the 'news' story of this image, these participants labelled the image as having been manipulated, and did not regard the image as evidence of a changed state of affairs.

It is also interesting to note that, for Images 1 and 5, which had not been manipulated, the majority of explanations for why the participants did think the images had been manipulated fell in Categories 3, 5 and 9, in that order (see Table 8.10.3). Participants therefore saw implausible elements in photographs.

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Once again, the images did not fit with how the participants expected the subject matter to appear. Consequently the participants labelled them as having been manipulated, and they were not convinced that it is possible for two people to ride on a single-seat bicycle (Image 1), or for a child to have slightly deformed features (Image 2), for example.

About a third of the participants therefore found Images 1 and 5 to be implausible and/or marked by manipulation techniques. The following are examples of such responses:

"The person on the back of the bycicle looks a bit funny, like its been added into the picture. But done very well."

"I think there were three bicycles and have been manipulated into two."

"… because not all the shadows are there …"

"The light doesn't fall equally on the images. The other image is lighter and the other more darker not necessarily because of the level they're on."

This could indicate scepticism towards images shown digitally, or images shown within the context of the questionnaire. In a general comment, one participant did state that the questionnaire made the person pay more attention to the images than normal. It could, however, also indicate a lack of experience with the photographic medium. This possibility is confirmed by Table 8.1.7, which shows that the majority of participants who thought that Images 1 and 5 had been manipulated were from the low VPL groups:

For Image 1, 52 participants from the Without VPL group gave the incorrect answer, as opposed to 12 from the 'with VPL' group. For Image 5, almost double the amount of incorrect answers was supplied by participants from the Without VPL group. The participants from the With VPL group are generally Photography and Graphic Design students and Fine Arts students who have received Photoshop training. These courses also expose the students to experience with the photographic medium (see appendix A for the syllabi of the various courses).

Explanations for images not having been manipulated mainly fell in Categories 4, 6 in that order, and 2 and 9 following in third place. Correspondence with reality can be said to be the main reason why images are taken to be not manipulated. Invisibility of techniques is mentioned less than half times as frequently as correspondence with reality, whereas for an image to be taken as manipulated, visibility of technique was mentioned most frequently. Correspondence with reality is, of course, the main trademark of the photographic medium; it is therefore natural that this explanation is cited so often, even for images that had been manipulated, such as Images 2 and 6, which have both been manipulated.

Even the majority of the With VPL group indicated that Image 6 had not been manipulated because of correspondence to reality, as shown by Table 8.10.4.

Many participants trusted that because they could not notice any marks of manipulation, the image had not been manipulated. This indicates again that for these participants correspondence with reality alone does not guarantee that an image has not been manipulated. A few participants did acknowledge that, even though they could not notice any marks of manipulation in certain images, they realised that the images could still have been manipulated. The following explanations came from participants who indicated that the relevant images had not been manipulated:

> "… you wont know if its done properly …"

> "Because it seem as if the picture was taken just like this because the child in the guys arms have a little bag with sumting in it and the other child that is walking also have a littel bag with something. But if there is any manipulation in this picture the artist did fool me."

The third most frequent category of explanations for why images were not thought to be manipulated, is 2 (reference to the style of the photograph). Some examples are:

> "… documentary styled associated with objective and truthful view point …"

> "… documentary styled usually associated with no manipulation burning and dodging not conciderd as unethical manipulation …"

> "It looks like a vrey old family photograph. The highlights are blown out and the there is no detail in the black. Further more the image is very flat."

> "There is no tonal balance, it looks like a snapshot."

> "… no, is a black and white portrait picture of old person and all details are there …"

For Image 2 for which style was the most frequently mentioned, the lack of colour was associated with old photographs and the assumed age of the photograph in turn seemed to indicate no manipulation. It seems as if it was assumed that, because the image had been taken before digital image manipulation technology was widely available, the image would not have been manipulated.

Explanations that occurred infrequently, both for whether the images had been manipulated and for whether they had not been manipulated, were 1 (reference to the context of the image), 7 (scepticism and unsure), 10 (pixilation), 11 (use of camera) and 12 (perfection). Of these, 1 occurred most frequently. The infrequent mention of Category 1 was somewhat surprising because the questionnaire specifically prompted consideration of context. Context was not mentioned in relation to Images 3 and 4 (billboard images) at all, and most often in relation to Images 5 and 6, which are news images. This indicates that news images do inspire more confidence in their fidelity to the original image. To some extent this is because of the context within which they are found. An example of such an explanation is:

"This just looks like a picture been taken maybe for a magazine article or documentary etc."

Scepticism towards all images was demonstrated by very few participants. The participants who did display such scepticism were mostly from the With VPL group. Participants who communicated scepticism tended to regard most of the images as manipulated, and therefore their answers were often incorrect according to the simplistic concept of image alterations as described in the instructions of the questionnaire. Some examples of such explanations are:

".. all images are manipulated in some way. ethically or unethically ..."

"I believe this image is manipulated for manipulation is avaliable to all people. One our labs have manipulate images to satisfy the public, with didital images can easily be manipulated. The contrast is defferent between the last 2 girls and the the sky and the pallecites."

Some participants regarded any alteration to an image as manipulation, as illustrated in the following example:

"Unless the image has been cropped and t[rea]ted so minor that you cant see the changes i would say it hasnt been manipulated. Plus it looks like a news image and they usually dont manipulate them, except maybe a bit of burning in and dodging in places and bringing out the colour a bit."

Pixilation visible in the image was mentioned only three times as reasons for why the relevant images were thought to have been manipulated, even though all the images were pixilated due to low resolution. This could indicate that pixilation has come to be seen as naturally occurring when images are displayed digitally, or it could indicate that the majority of the participants had just not noticed it because they did not know to look for it.

The mention of the use of a camera as an explanation for why images had not been manipulated would indicate a trust in the photographic medium. This explanation was mentioned only four times in total, which indicates that such a trust was very minimal in the context of this questionnaire.

The explanation that an image was too perfect to be real was given only six times in total. Three of these were given by the same participant. This indicates that the 'perfectness' of an image was not really something that was considered as a possible reason for an image being manipulated. This might be due to the nature of the images, of which three were documentary style. One could speculate that it would have been a stronger consideration if a front cover of a magazine had been included in the test visuals.

If the explanations given by the participants are compared to the list of possible signifiers for manipulation given in Chapter 2, one finds that correspondence can be found with both the denotative and the connotative signifiers. The denotative signifiers that were mentioned are hard edges, inconsistent shadow quality and direction, and colour and text added to a black-and-white image. The connotative signifiers that were mentioned are implausibility, impossibility, perfection and pixilation. From the frequency of explanation categories, it seems that the denotative and connotative signifiers are equally important in making a viewer aware of manipulation in an image.

From the explanations one could also establish a list of signifiers that would signify 'not altered': documentary style, aged black-and-white, photorealism, and the nature of the content. These signifiers could of course easily be simulated or falsified.

7.3.8   Coding and analysis of textual data regarding attitudes towards manipulation

The themes that emerged from the general comments give a somewhat clearer indication of attitudes towards manipulation than the credibility and acceptability ratings, although comments were given by only a small percentage of the total study population. As with the credibility and acceptability ratings, with many of the comments it is unclear whether the comment pertains to the image aesthetics or the manipulation techniques in the image.

Frequencies of positive versus negative comments, as well as impartial comments contradict the acceptability and credibility scores discussed earlier (see Table 7.15), but because the general comments were optional, these frequencies and percentages do not really give an indication of the attitudes of the whole group. The specific themes that emerged are, however, worthy of discussion.

The positive comments were mainly inspired by the aesthetic and creative possibilities that manipulation offers while the negative comments were inspired by the notion that manipulation removes the links that the images might have with reality. The negative comments are therefore based on the belief in the photograph's portrayal of reality.

It is interesting to note that family photography is the only context mentioned by participants in relation to negative attitudes towards manipulation. These participants felt that family photographs have sentimental value and that manipulation would remove that value. However, one participant felt that a good, pleasing image was worth more than sentiment, or that the sentimental value was not necessarily influenced by manipulation:

"I believe it is fine to manipulate family pics, for no one like to show bad pictures of their family. People would rather see their images clearer and beautiful than normal dull pics."

The comments that indicated impartial attitudes pertained to the notion that manipulation is acceptable if it is labelled as such and if it is used judiciously.

The comments made in relation to the participants' Photoshop training reveal that many of the participants felt that training in manipulation techniques would be beneficial. From these comments it also emerged that the questionnaire itself sensitised participants to digital manipulation of photographs, which could be the first step in an education process.

7.4   Conclusion

The qualitative and quantitative data discussed on in this chapter provides a rough sketch and framework for the practical and theoretical implications to be discussed in the following chapter, that will provide a more complete and meaningful picture.

The data gathered by the questionnaire is rich and varied and could warrant other approaches to the analyses as well. The analyses presented in this chapter focused on that which would be useful in answering the research questions established at the outset.

For the numerical data, each variable was analysed separately through descriptive methods, either through cross-tabulation or frequencies and tested for statistical significance.

The textual data was coded according to guidelines set out by Neuman (1997:420-423). Frequencies of the various coded categories were then analysed. Themes in the textual data were also identified with examples.

It was found that there is some correlation between level and nature of training and perception of digital manipulation in photographs, but that the only statistically significant correlation (at a confidence level of 0.5) is between Photoshop training and manipulation awareness (standardised regression coefficient = 0.051. It can therefore be concluded that, although general VLT will probably improve manipulation awareness slightly, training in image manipulation software (in the case of this study Photoshop) specifically is far more effective.

Photoshop training thus improves production literacy, providing experience with the various techniques and sensitising viewers to visible signs of alteration techniques. It was found that the visibility of

techniques and implausibility of the content are the main factors that allow alterations to be identified, although there are several other factors that play a smaller role.

The results suggest that viewing the image first within only the context of the questionnaire and then within a simulated context, does not have a significant impact on whether an image is judged to have been manipulated or not. This does however not rule out the possibility that perception of the presence of image alterations is influenced by non-simulated viewing context.

Viewing context in general is shown to have little impact on participants' evaluation of the various images. Attitudes towards digital alterations were not significantly influenced by viewing context in that the three contexts were rated similarly in terms of credibility and acceptability.

Perceived level of manipulation was however found to have a far greater impact on participant attitudes in that the more extensive the manipulations were seen to be, the less credible and the less acceptable the alterations were rated to be.

According to the acceptability and credibility ratings, participant attitudes seemed to be negative towards the digital alteration of photographs, regardless of context. The general comments conversely show that some participants regarded the alteration of family photographs as far less acceptable and less positively than the alteration of billboard images and news media.

The general comments also show that those participants who provided general comments felt that they would appreciate training in digital alteration techniques. General comments were mostly positive, in contrast to the credibility and acceptability ratings.

The research questions were answered more or less conclusively through the analysis of the data gathered by means of the digital questionnaire constructed for this study, giving rise to some useful recommendations regarding VL education and methodological aspects. Subsequently, it was also possible to suggest areas of further research.

CHAPTER 8

CONCLUSION

8.1   Summary

The main issue that motivated this study is whether there is a correlation between VLT and awareness of digital alterations of photographs. From this central issue, various sub-questions were formulated. The first sub-questions distinguish between general VLT and VPLT in relation to digital alteration awareness (DAA). The remaining 3 sub-questions interrogate attitudes of participants towards DAA as well as the possible impact that viewing context might have on DAA and attitudes toward digital alterations of photographs.

From the literature review, it was found that there is a dilemma with regard to the manipulation of images that are reproduced in mass media publications and the Internet, displayed as photographs (Lester 1988:42; Mitchell 1992:7; Hantz & Diefenbach 2002:1). Data analysis results show that 67% (see Table 7.11) of the answers to the question of whether the images were manipulated or not were correct. This indicates that there was at least 33% confusion regarding whether images were manipulated or not.

There are numerous reasons for the existence of this dilemma that were thoroughly discussed. The first of these reasons that were discussed is the semiotic nature of the photographic medium and the functioning of the photographic message (Chapter 2), which elicits belief in the medium on an unconscious or even emotional level (Newton 2001:184; Krauss 1990:18; Barthes 1972: 196). Rational critical viewing will only override the initial response to a photograph if enough time is taken with an image (Sontag 2003:94).

In the current study participants were presented with only six images in an environment that encouraged them to take time in assessing the images (not a realistic simulation of how images are normally encountered) which makes the 33% incorrect answers all the more telling.

The second factor that was discussed was the social reception (Chapter 3) and use of the photographic medium that has constructed a myth of photographic objectivity (Green-Lewis 1996:31; Schwartz 1999:1; Newton 2001:84). This myth has been strengthened by the establishment and guarding of the photojournalism industry as well as by the cementing of the notion of a split between expressive and documentary photography over the years (Schwartz 1999:6, 165). The digital manipulation of photographs has contributed largely to the erasing of this split (Meyer 2000:3). It is the fear of some in the photojournalism industry that the credibility of the medium will be compromised by the abuse of image

alterations (Lester 1988:42), while it is the hope of others that digital technology will help to sensitise viewers to the intentionality of photographic media (Meyer 2000,2003).

The central research questions necessitated an investigation into the nature of digital image manipulation and attitudes of various groups towards digital manipulation of photographs. The literature suggests that definitions of (Hantz & Diefenbach 2002:4-7; Messaris 1994b:197; DigitalCustom 2003:1, 2; Holderness 1997:1; Mitchell 1992:87-115, 162-189; Greer & Gosen 2002) as well as attitudes towards manipulation (Reaves 1989; Fahmy, Fosdick & Johnson 2005:11, 12; Cobb 2003:1; Lang 2006:1; Kelly & Nace 1994: 6) depend on the context and use of the images. Distinctions are made between hard news, news illustration, cover images and content images, advertising and photojournalism/documentary as well as news media and other media such as fashion and entertainment.

The results of this study do not corroborate the literature mentioned above in that viewing context was not found to have a significant impact on perception of, nor attitudes to digital alterations (see Table 7.17). It is, however, acknowledged that the design of the study was not ideally suited to the evaluation of the impact of viewing context, suggesting a possible avenue for further research even though similar findings were made by Terry & McBride (1992 as cited by Kelly & Nace 1994 and Greer & Gosen 2002).

Definitions of image alterations were mainly based on non-permissible procedures for the various types of media and uses of photographic imagery as outlined by DigitalCustom (2003:1, 2) which are reproduced as Annexure C. Analysis of participant understanding of the definition of *digital manipulation* indicates that image enhancements are seen to be included, although it falls under the permissible procedures according to DigitalCustom (2003).

The literature shows that attitudes towards published manipulated photographic imagery range from outrage to embracing in news and documentary media. It is clear that manipulation is consistently frowned upon if not declared. An emphasis is placed on the integrity of the photographer to refrain from producing deceptive images, i.e. to apply codes of visual ethics (Newton 2005; Wheeler 2002; Lester 2005. Study results show that participants generally tend to regard alterations as unacceptable, since alterations cause images to be judged as less credible (see Table 7.15), although textual data indicated some positive attitudes.

In other non-documentary media it is mostly argued that if images are not presented as the truth, manipulation is allowed. This is, of course, problematic because the nature of the photographic medium is that photographic images come across as truth. Analyses of results show that participant attitudes were significantly influenced by the perceived level of alteration (see Tables 7.16 and 7.17), corroborating

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findings by Greer and Gosen (2002). If an image is judged to be drastically altered, it is seen to be unacceptable and lacking in credibility, regardless of the viewing context.

VL was discussed as a possible solution to the dilemma of digitally altered published images presented as photographs (Ritchin 1990: 144; Lester 1995:9; Newton 2001: 182; Messaris & Moriarty (2005: 492). The specific kind of literacy needed in a viewer to be aware of digital alterations performed on a photograph was also discussed. Definitions and discussions on VL position VPL as an additional aspect of VL, placing more emphasis on knowledge and understanding than production (Lester 1995:9; Barry 1997:6; Chauvin 2003:145; Ogasawara 1997:308). Paul Messaris (1994a:2), however, places more emphasis on VPL.

The analysis of quantitative as well as qualitative data gathered through a digital questionnaire indicated that experience with digital manipulation of images, rather than knowledge of visual communication principles and history, plays a greater role in awareness of digital alterations in photographs (see Tables 7.7 and 7.8).

Although the results show that there is a positive correlation between VLT and an awareness of manipulation in photographs, the over-all awareness was quite low (highest DAA score amongst the groups was 4 out of a possible 20, and an overall highest DAA score of 8). Training in general VL, therefore, does not significantly improve a viewer's awareness of digital alterations in photographs. This study suggests that although viewers with high VPLT fared better, even they struggled to identify the more subtle techniques. A higher level of VPLT was, however, linked to more critical attitudes, which often caused participants to be overly suspicious of the images.

A study done by Kelly and Nace (1994:5, 6) suggested that knowledge of image manipulation possibilities does not influence trust in photographs as much as context does. This study suggests that rather than knowledge, experience of image manipulation tools and techniques should have an impact on awareness of digital image alterations in photographs in two ways: such experience will make the viewer sceptical of all images, causing the images to be scrutinised more closely and such experience will allow the viewer to recognise the denoted or connoted signs of manipulation.

In Chapter 2 (page 22), a list was compiled of signifiers that function denotatively and connotatively. From the textual data a list of explanations (or signifiers) for why images are seen to be manipulated or not manipulated was also compiled. On comparison one finds that the pre-compiled list does encompass the list compiled from the data. The most frequently cited signifier signifying 'altered' is implausibility, which functions connotatively, while the second most frequently cited signifier is 'visibility of techniques', which functions denotatively.

This study was not geared towards establishing whether photographs are still believed or not. The emphasis was rather on establishing levels of awareness of digital manipulations in photography as well as establishing the attitudes of participants towards the manipulation of photographs.

Analysis results show a general negative attitude towards the digital manipulation of photographs. However, the numeric data is inconclusive because there was no clear separation between attitudes towards the photographs themselves and the manipulation of the images. However, the textual data shows that participants felt that image manipulation was a worthy skill to learn but that certain images, especially family photographs, were best left as they are because they represent memories, the truth of personal pasts

Analysis of the data shows that 'correspondence to reality' was cited most frequently for images that were judged to be not altered, while 'visibility of techniques' and 'implausibility' were cited most frequently for images judged to be altered (for a full list, see Tables 7.14 and 7.16). The likelihood that a photographic image will convince a viewer of something that does not conform to the viewer's previous visual experience and worldview is thus slim.

The statement by Ivins (cited in Newton 2001:84) that "[t]he nineteenth century began by believing that what was reasonable was true, and wound up believing that what it saw a photograph of was true", could now be inverted to the effect that the 20th century started off believing that what it saw a photograph of was true, and wound up believing that what was reasonable was true (Newton 2001:84).

8.2   The contributions of the study and possibilities for further research.

The current study contributes to photography and visual literacy theory in that it shows that an increase in VPL in the viewing public, through specific training in image manipulation software packages, will increase DAA. It will allow photographs to be understood for what they are: subjective points of view put forward by the creators of the photographs or the publication team.

From the participant discourse a list was compiled (Table 7.14) of explanations or signifieds for why images are seen to be altered, which could possibly be used in sensitising viewers to the presence of image alterations. It is therefore recommended that visual literacy courses include practical experience with image manipulation software packages together with general VLT. Study participants showed enthusiasm for such training.

Although it was one of the aims of this study to evaluate the impact of viewing context on DAA, it was found that the use of simulated contexts was not effective and did not provide conclusive results. It is

therefore recommended that further research refines the simulations of display contexts or that tests are rather done with images as they appear in published media, within known circumstances. Further research is needed to develop an ideal methodology for developing test visual for the study of viewing contexts in relation to awareness of digital image manipulation.

Previous studies have concentrated on public assessment of credibility and tolerance of manipulated photographs, with some conflicting results regarding the role played by viewing context (see Reaves 1989; Terry & McBride 1992; Kelly & Nace 1994; Geer & Gosen 2002). Further research is needed to establish more conclusively whether the manipulation of photographs is acceptable to the general public, within realistic settings (as precedented by the Greer & Gosen (2002) study), and realistic viewing contexts. The current study seems to show that the perception of photography as a medium is changing from being perceived as a necessarily factual medium to medium that contains more subjective comment, but results are inconclusive.

The study done by Kelly and Nace (1994) investigated the possible impact knowledge of image alteration techniques could have on perceived credibility of photographs, with the finding that knowledge specifically did not impact greatly on perceived credibility. The question posted by Greer & Gosen (2002: 12) regarding the possible effect of repeated exposure to published manipulated photographic images on perceived credibility remains unanswered. Further research into the impact of experience with and training on image manipulation software packages on perceived credibility of photographs would provide greater understanding of the future of the photographic medium in mass media, contributing to the efforts of organisations such as the Media Awareness Network's efforts to improve public media and visual literacy (Media Awareness Network 2008)

Some of the explanations given by participants regarding whether the relevant image was manipulated or not, point towards other factors that influence awareness of digital alterations in photographs such as gestalt principles and principles of visual perception which falls within the field of experimental psychology (see Zakia 1997 for an application of gestalt principles in photography). Further research is needed to establish the nature and influence of such factors on perception of visual signs (specifically signs of digital alterations), which also relates to viewing context and intertextual effects from the perspective of visual literacy or media literacy rather than experimental psychology (see Arnheim 1997, Gregory 1995, 1998). Such research will contribute more to the understanding of visual persuasion techniques, building on work done by Messaris (1997a) than to awareness of digital manipulation of photographs, but will nevertheless contribute to the field of visual literacy and media literacy.

The presence of external influences on DAA inherent to various communication media must mot be overlooked and suggests that awareness of digital alterations of photographs is ultimately a question of

multimodal literacies, involving the use of software tools as well as the "ability to access, analyse, evaluate, and communicate information in any variety of form that engages the cognitive processing of a visual image" (Chauvin 2003:125).

BIBLIOGRAPHY

ANTIWAR, 2004, Abu Ghraib Abuse Photos [Online]. Available at:
http://www.antiwar.com/news/?articleid=8560 Accessed: 13/062007.

Author Arnheim, R. 1974. Art *and visual perception : a psychology of the creative eye : the new version.*
Berkeley : University of California Press,

Aufderheide, P. 1997. Media Literacy: From a Report of the National Leadership Conference on Media
Literacy. *In* Kirby, R. *Media Literacy in the Information age.* New Brunswich: Transaction. 79-88.

Avgerinou, M. 2005. What is Visual Literacy. [Online]. Available at: <www.IVLA.org>. Accessed: 08/07/06

Avgerinou & Ericson. 1999. Testing Visual Literacy: Some Progress With Research? *In* Griffin, R.E.,
Gibbs, W.J., Wiegmann. B. (eds). *Visual Literacy In An Information Age. Selected Readings of the
International Visual Literacy Association.* International Visual literacy Association. 21-26

Babbie, E, Mouton, J. 2001. *The practice of social research.* Cape Town: Oxford University Press.

Babbie, E. Halley, F. Zaino, J. 2003. Adventures in Social Research, Data Analysis Using SPSS
11.0/11.5 for Windows. 5th ed. California: Sage Publications

Barry, A. M. S. 1997. Visual Intelligence: Perception, Image, and Manipulation in Visual Communication.
SUNY Press

Barthes, R. 1967. Elements of Semiology. London: Jonathan Cape.

Barthes, R.1972. Myth Today *in,* Sontag, S. 1982. *Fontana pocket readers Barthes.* Glasgow: Fontana.
93-149

Barthes, 1978. The Photographic Message *in,* Sontag, S. 1982. *Fontana pocket readers Barthes.*
Glasgow: Fontana. 194-210

Batchen. G. 1997. *Burning with Desire, The conception of Photography.* Massachusetts: Massachusetts
Institute of Technology.

Best of Photojournalism 2007 . [Online]. Available at:

<http://bop.nppa.org/2007/still_photography/rules/preparing_images.html.en>
Accessed: 27/02/2007.

Blinder, D. 1986. In defence of Pictorial Mimesis. *Journal of Aesthetics and Art criticism.* 45(1):19-28

Bossen, H. 1985. Zone V: Photojournalism, Ethics, and the Electronic Age. In *Studies in Visual Communication.* 3 (11). Annenberg School Press. 22-32

Bright, S. 2005. *Art Photography Now.* London: Thames & Hudson

Brugioni, D.A. 1999. *Photo Fakery, The History and Techniques of Photographic Deception and Manipulation.* Virginia: Brassey.

Burgin, V. 1986. Re-reading Camera Lucida in *The End of Art Theory, Criticism and Postmodernity.* London: MacMillan Education.

Burns, J. Foreword. In Silva, J. 2005. *In the Company of God.* Johannesburg: STE Publishers and Picturenet Africa

Chandler, D. 1999. Semiotics for beginners. [Online].
http://www.aber.ac.uk/media/Documents/s4B/semiotic.html. Accessed: 31/07/1999.

Chapnick, H. 1994. *Truth Needs No Ally: Inside Photojournalism.* University of Missouri Press,

Chauvin, B. A. 2003. Visual or Media Literacy?.In *Journal of Visual Literacy.* 23(2):119-128.

Cobb, C. 2003 Digital Fakery [Online]. Available at: <http://www.frankwbaker.com/digitalfakery.htm>.
Accessed: 18/10/2007.

Debord. G. 1976. The society of the Spectacle. Translated by Knabb, K. 2002. [Available on the internet at:] http://www.bopsecrets.org/SI/debord/. Accessed: 27/02/2007.

DigitalCustom. 2003. DigitalCustom Model Ethics Guidelines draft version 2.0. [Online]
<http://www.digitalcustom.com/howto/mediaguidelines.asp>. Accessed: 6/06/2003.

Doman, J. 1998. The impact of electronic imaging on the veracity and authenticity of the Documentary Photograph. B-Tech dissertation. Vaal Triangle Technikon.

Edmunds, H. 1940. *The Mediumship of Jack Webber*. Watford: Taylor Garnett Evans & Co.

Fahmy, S, Fosdick S.B, Johnson, T.J. 2005. Is Seeing Believing?: A Survey of Magazine Professionals' Practices and Attitudes Toward Ethical Standards for Photographs. In *Journal of Magazine and New Media research*.7(1): 1-18, Spring.

Frizot, M. 1998. *New history of photography*. Milan: Amilcare Pizzi.

Garson, D. 2008. Path Analysis. Statnotes: Topics in Multivariate Analysis. [Online] Available at: <http://www2.chass.ncsu.edu/garson/pa765/path.htm#pathcoeff> Accessed:21/05/08

Gaede, R. J. 1999. The semantic and pragmatic comprehension of visual rhetorical codes by literate and illiterate adults in a health communication setting. Docutoral Dissertation. Technikon Free State.

Galassi, P. 1981. *Before Photography, Painting and the Invention of Photography*. New York: Museum of Modern Art.

Gavard, S. 1999. Photo-graft: A critical analysis of image manipulation. A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfilment of the requirements of the degree of Masters of Arts

Greer, J.D., Gosen, J.D. 2002. How Much Is Too Much? Assessing Levels of Digital Alteration as Factors in Public Perception of News Media Credibility. In *Visual Communication Quarterly*. 4(10): 4-13, Summer

Green-Lewis, J. 1996. *Framing the Victorians, Photography and the Culture of Realism*. New York: Cornell University

Gregory, R. 1995. *The artful eye*. Oxford : Oxford University Press

Hantz, A.M and Diefenbach, D.L. 2002. Digital image Manipulation, communication Theory and the Public Trust. Paper presented at the annual Conference of the International Visual Sociology Association.

Hill, J.T. 1998. W. Eugene Smith: His Techniques and Process. In Hill, J.T. and Mora, G (Eds.). 1998. W. Eugene Smith, *The Camera As Conscience*. London: Thames and Hudson

Hirsch, R. 2000. *Seizing the Light, a History of Photography*. USA: McGraw-Hill

Hobbs, R & Frost, R. Measuring the Acquisition of Media-Literacy Skills. In
Reading Research Quarterly, Vol. 38, No. 3 (Jul. - Sep., 2003), pp. 330-355.

Holderness, M. 1997. DoD Memorandum on Digital Manipulation, Or, the US Army to the rescue!,
[Online]. Available at: http://media.gn.apc.org/manipdod.html. Accessed:14/06/2007.

Katzman, M. 2007, Art of the Photogravure: A Comprehensive Resource Dedicated to the Photogravure,
[Online]. Available at: <http://www.photogravure.com/history/chapter_camerawork.html>. Accessed:
26/02/2007.

Kazmierczak, E. T. Iconicity, Diagrammatics, and Aesthetic Preferences. A Semiotic Perspective on
Visual Literacy and Information Design. *Visual Sociology.* 16: 89-99

Kelly, J,E and Nace, D. 1994. Digital Imaging & Believing Photos in *Visual Communication Quarterly.* 1:
4-5, Winter.

Klages, M. 2007. *Literary Theory - A Guide for the Perplexed.* Continuum Press. [Online]. Available at:
http://www.colorado.edu/English/courses/ENGL2012Klages/pomo.html

Koenig, 1998. Photographic portraits. *In* Frizot, M. 1998. *New history of photography.* Milan: Amilcare
Pizzi.

Krauss, R. 1990. A Note on Photography and the Simulacral. *In* Squiers C. S., ed., *The Critical Image:*
Essays on Contemporary Photography. Seattle, Washington: Bay Press. 15-27

Kress, G & van Leeuwen, T. 1996. *Reading Images: The Grammar of visual design.* New York:
Routledge.

Kress, G, R. Jewitt, C. Bourne, J. Franks, A. Hardcastle, J. Reid, E. 2005. *English in Urban Classrooms:*
A Multimodal Perspective on Teaching and Learnin. New York: Routledge

Lane, D. 1993-2007. HyperStat Online Statistics Textbook. [Online] Available at:
<http://davidmlane.com/hyperstat/A6642.html>. Accessed: 05/04/2007

Lang, D. 2006. Charlotte Observer Photographer Fired For Altering Colors. [Online].
<http://www.pdnonline.com/pdn/newswire/article_display.jsp?vnu_content_id=1002914629> Accessed:
02/10/2007.

Laurie, A. 2002. A Barthesian semiotic reading of image and text combinations with special reference to the work of Paul Weinberg and the author. B-Tech Dissertation. Vaal University of Technology.

Lester, P.M. 1988. Faking images in Photojournalism. In *Media Development*, (1) 41-42.

Lester, P.M. 1995. Digital literacy: Visual Communication and Computer Images in Computer Graphics. [Online]. Available at: http://commfaculty.fullteraon.edu/lester/writings/digital_literacy.html. Accessed: 2005/05/13

Lester, P.M. 2005. *Visual Communication: Images with Messages.* Canada: Thomson Wadsworth

Magnum Photos. 2007. History of Magnum. [Online] Available at: <http://agency.magnumphotos.com/about/history.aspx>. Accessed on: 27/02/2007.

Marien, M, W. 2002. *Photography, a Cultural History.* London: Laurence King.

McLean, N. 2007. Multimodal literacies. Conference presentation presented at NAACE annual strategic conference. 27 February to 2 March 2007

Media Awareness Network. 2008. [Online]. Available at: <http://www.media-awareness.ca/english/teachers/media_literacy/what_is_media_literacy.cfm> Accessed on 05/11/2008

Messaris, P. 1994a. *Visual "Literacy" Image, Mind, and Reality.* Oxford: Westview.

Messaris, P. 1994b. Visual literacy vs. visual manipulation in *Critical Studies in Mass Communication.* 11(2): 197

Messaris, P. 1997a. *Visual Persuasion: The role of images in advertising.* California: SAGE.

Messaris, P. 1997b. Visual "Literacy" in Cross-Cultural Perspective. *In.* Kirby, R. (ed). *Media Literacy in the Information age: Current Perspectives.* New Brunswich: Transaction. 135-162.

Messaris, P. Moriarty, S. 1995. Visual Literacy Theory. *In* Smith, K., Moriarty, S., Barbatsis, G. & Kenny, K., eds. *Handbook of Visual Communication: theory, methods, and media.* Mahwah: Lawrence Erlbaum Associates. 479-502

Meyer, P. 2000. Redefining Documentary Photography. [Online] Available at: <
http://www.zonezero.com/editorial/editorial.html>. Accessed: 18/10/2007

Meyer, P. 2003. In defence of Photographer Patrick Schneider. [Online]. Available
at:<http://zonezero.com/editorial/octubre03/october.html> Accessed: 10/10/07.

Mitchell, W.J.1992. The Reconfigured Eye: Visual truth in a post photographic era. Massachusetts: MIT
Press.

Moriarty, S. 2005. Visual Semiotics Theory. *In* Smith, K., Moriarty, S., Barbatsis, G. & Kenny, K., eds.
Handbook of Visual Communication: theory, methods, and media. Mahwah: Lawrence Erlbaum
Associates. 247-242

Moriarty, S and Kenny, K. 2005. Taxonomy of Visual Communication and a Bibliography. [Online]
Available at: <http://www.ivla.org/resources.htm> Accessed 15/04/2008

Morris, E. 2008. Directors statement: Standard operating procedure. [Online]. Available at:
<http://www.sonyclassics.com/standardoperatingprocedure/site.html> Accessed: 09/07/08.

Nesbit, M. 1994. Photography and history *in* Frizot, M. 1998. *New history of photography.* Milan: Amilcare
Pizzi.

Neuman, L. 1997. *Social Research Methods: Qualitative and Quantitative Approaches.* MA: Allyn and
Bacon.

Newton, J.H. 2001. *The Burden of Visual Truth.* London: Laurence Erlbaum Associates.

Newton, J.H. 2005. Visual Ethics Theory *In* Smith, K., Moriarty, S., Barbatsis, G. & Kenny, K., eds.
Handbook of Visual Communication: theory, methods, and media. Mahwah: Lawrence Erlbaum
Associates. 429-444

NPPA, 2007. History. [Online]. http://www.nppa.org/about_us/history/. Accessed: 26/02/ 2007.

NPPA, 2007. NPPA Code of Ethics. [Online]. Available at:
<http://nppa.org/professional_development/business_practices/ethics.html>. Accessed: 26/02/2007.

Ogasawara, H. 1997. What Is "Visual"?: Toward the Reconstruction of the Visual Literacy Concept *in*

IVLA Book of Selected Readings. 303-308

Panofsky, E, 1991, *Perspective as Symbolic Form.* Massachusetts: Zone Books

Parrish, F.S. 2002. *Photojournalism: an introduction.* Belmont, CA : Wadsworth/Thomson Learning

Petterson, R. 2002. Image Manipulation. In *Media and Education.* University of Adam Mickiewicz. April 20-23.

PEW. 2004 News Audiences Increasingly Politicized: Online News Audience Larger, More Diverse. [Online] Available at: <http://people-press.org/reports/display.php3?PageID=838>. Accessed: 27/02/2007.

PDN Staff. 2003. NCPPA Strips Photog's POY Awards. [Online]. Available at: <http://www.pdnonline.com/pdn/search/article_display.jsp?vnu_content_id=1963706> Accessed: 02/10/2007.

Photo comparison. 2007 Online. Available at: <http://www.poynter.org/resource/45119/done.swf>. Accessed: 02/10/2007.

Pioch, N. 2002. WebMuseum, Paris: Jaques-Louis David. [Online]. Available at: <http://www.ibiblio.org/wm/paint/auth/david/>. Accessed: 10/10/2007

Plato. 380 BC. *The Republic.* Translated by Lee. H. D. P. 1955. Harmondsworth: Penguin

Prosser, J. 1998. The status of image-based research. In *Image-based research: A Sourcebook for qualitative researchers.* Edited by J. Prosser. London: Falmer Press: 97-112

Raney, K. 1999. Visual Literacy and the art Curriculum. In *International Journal of Art Design Education.* 18(1): 41-45.

Reaves, S. 1989. Digital alteration of photographs in magazines. Annual Convention. (B) 3-21.

Reaves, S. 2005. A Survey of Reactions to Photographic Manipulation. *In* Smith, K., Moriarty, S., Barbatsis, G. & Kenny, K., eds. *Handbook of Visual Communication: theory, methods, and media.* Mahwah: Lawrence Erlbaum Associates. 445-458

Riis, J. 1971, *How The Other Half Lives,* New York: Dover Publications

Ritchen, F. 1990. In *Our Own Image.* New York: Aperture.

Rosenblum, N, 1997. *A world history of Photography, Third Edition,.* New York: Abbeville.

Saayman-Hattingh, H, M. 2005. The Practice of South African Social Documentary Photography: 1980-2000. Doctoral Dissertation. Vaal University of Technology.

Salomon, G. 1984. Television is "Easy" and Print is "Tough": The Differences Investment of Mental Effort in Learning as Function of Perceptions and Attributions. In *Journal of Educational Psychology.* 76(4). 647-658.

Saint-Martin, F. 1990. *Semiotics of visual language.* Bloomington : Indiana University Press

Sagne. J. 1998. *All Kinds of Portraits* in *The New History of Photograph.* Milan: Amilcare Pizzi.

Saussure, F. 1915. Nature of the Linguistic sign. In Lodge, D. 1988. *Modern criticism and theory.* London: Longman.

Saussure, F. 1916. Course in general Linguistics. [Online]. Available at: http://www2.sims.berkeley.edu/courses/is296a-3/s06/Saussure.pdf >. Accessed: 27/06/2006.

Schwartz, D. 1990. On the Line: Crossing Institutional Boundaries Between Photojournalism and Photographic Art. In *Visual Sociology Review.* 5(2): 22-29. [Online]. Available at: <http://sjmc.cla.umn.edu/faculty/schwartz/contents/contents.html>. Accessed: 15/02/2007.

Schwartz, D. 1992. To Tell The Truth: Codes of Objectivity in Photojournalism in Communication. 13: 95-109. [Online]. Available at: http://sjmc.cla.umn.edu/faculty/schwartz/contents/contents.html>.Accessed: 15/02/2007.

Schwartz, D. 1999. Objective Representation: Photographs as Facts. In *Picturing the Past: Media, History, and Photography.* University of Illinois.

Silva, J. 2005. *In the Company of God.* Johannesburg: STE Publishers and Picturenet Africa

Simkin, D. 2002. John Jabez Edwin Mayall (1813-1901). [Online]. Available at:<www.spartacus.schoolnet.co.uk/DSmayall.htm> Accessed: 10/10/2007.

Sims, E. O'Leary, R, Cook, J, and Butland, G. 2002. Visual Literacy: What is it and do we need it to use learning technologies effectively? [Online] Available at: <http://www.ascilite.org.au/fonferences/aukland02/proceedings/papers/ellen_sims_et_al.pdf>. Accessed: 06/06/2006.

Sonneson, G. 1989. Semiotics of photography. On tracing the index. In *Rapport 4 från Semiotikprojektet*. Lund: Institutionen för Konstvetenskap [Online]. Available at: <http://www.arthist.lu.se/kultsem/pdf/rapport4.pdf>. Accessed: 15/02/2007.

Sonneson, G. 1990. The semiotic function and the genesis of pictorial meaning. In Tarasti, Eero, ed.,Center/Periphery in representations and institutions. *Proceedings*. 3rd Annual Meeting and Congress of The International Semiotics Insitute, Imatra, Finland.

Sonesson, G. 1995. Pictorial Semiotics. [Online] Available at: <http://carbon.cudenver.edu/~mryder/itc_data/semiotics.html> Accessed on: 31/06/1999.

Sonneson, G. 1999a. Iconicity in the ecology of semiosis. in *Iconicity*. Johansson, T. D, Skov., Martin, & Brogaard, Berit (eds.). 59-80. Aarhus: NSU Press. [Online]. Available at <http://www.arthist.lu.se/kultsem/sonesson/LifeworldIconicity1.html>. Accessed: 08/02/2007

Sonneson, G. 1999b Postphotography and beyond. From mechanical reproduction to digital production. In "*special issue*" of *VISIO*, 4,(1): 11-36.

Sonneson, G. 2000. Visual signs in the age of digital reproduction. Published in *Ensayos Semióticos, Dominios, modelos y miradas desde el cruce de la naturaleza y la cultura. Proceedings of the 6th International Congress of the IASS, Guadalajara, Mexico, July 13 to 19,* Gimate Welsh, Adrián, (ed.), 1073-1084. México: Pourrua.

Sonneson, G. 2004. Pictorial semiotics. Internet Semiotics Encyclopaedia. [Online] Available at: <http://www.arthist.lu.se/kultsem/encyclo/pictorial_semiotics.html> Accessed: 01/10/07.

Sontag, S. 2003. *Regarding the pain of others.* London: Penguin

Stonehill, B. 1998. *Online Visual Literacy Project.* [Online]. Available

at:http://www.pomona.edu/Academics/courserelated/classprojects/Visual-lit/intro/intro.html Accessed: 27/06/06.

Terry, D. W., & McBride, M. H. 1992. Is seeing believing where silver and silicon meet?: A matter of credibility in advertising and news photography contexts. Paper delivered at the seventy-fifth meeting of the Association for Education in Journalism and Mass Communication, Montreal, Quebec, 5 August

Thoman, E. 1995. The three stages of media literacy. Media Awareness Network. [Online]. Available at: <http://www.media-awareness.ca/english/teachers/media_literacy/what_is_media_literacy.cfm> Accessed on 05/11/2008

Tyner, K. 1998. *Literacy in a digital world.* Mahwah, NJ: Erlbaum.

Vernon, M.E. 1997. The credibility of news photography in the digital age. Unpublished master's thesis, University of Nevada, Las Vegas.

Wallace, R. 1971. *The World of Leonardo.* USA: Time

Webster University. 2006. *Webster University Journal Policy for the Ethical Use of Photographs.* [Online]. Available at: <http://graphicssoft.about.com/gi/dynamic/offsite.htm?zi=1/XJ&sdn=graphicssoft&zu=http%3A%2F%2Fwww.webster.edu%2F%7Ebarrettb%2Fjournal_ethics.htm>. Accessed: 27/06/06.

Weinberg, A. 1986. On the Line: The New Colour Photojournalism. University of Pennsylvania Press

Wells, L. 2004. Photography: A Critical Introduction. London: Routledge

Wheeler, T.H. 2002. *Phototruth or Photofiction? Ethics and Media Imagery in the Digital Age.* Lawrence Erlbaum: Mahwah.

Zakia, R. D. 1997. *Perception and imaging.* Boston : Focal Press

Annexure A

VUT COURSE DESCRIPTIONS

Fine Arts

- National Diploma. Fine Art (Duration: 3 years)
- Baccalaures Technologiae (B-Tech). Fine Art (Duration: 4 years)

Recommended subjects: Afrikaans, English, Third Language, Mathematics, Art, History

Points required: 26 points Calculate my points

General admission requirements apply: University admission requirements

Other requirements: A portfolio of works of art will also be evaluated. Prospective students may be required to complete a placement test. In addition to the portfolio, prospective students will be expected to complete four prescribed practical projects, whish will be submitted at the interview. Relevant industrial experience may be accepted as a minimum entry requirement.

Overview

Essentially, a training in Fine Arts equips the graduate to operate as a practising professional artist in the national and international arenas. Given the diversity of skills that the graduate will have, however, he/she would be sufficiently skilled to do such work as murals, portraits, illustration, computer art and computer animation. These are linked to the various Fine Art disciplines such as drawing, painting, sculpture, printmaking, ceramics and computer technology.

Career Opportunities

The major opportunity is to be a practising artist. Successful practising artists are able to earn a very good income from the sale of their work. Again given the diversity of the skills acquired during the Fine Art course, the graduate should be able to find employment in educational institutions, museums, art galleries, publishing houses, advertising agencies, film companies and TV production houses. The graduate would also have acquired skills to operate as an entrepreneur and set up hi/her own business.

Graphic Design

- National Diploma: Graphic Design (Duration: 3 years)
- Baccalaures Technologiae (BTech): Graphic Design (Duration: 4 years)
- Magister Technologiae (MTech): Graphic Design (Duration: 5 years)

Recommended subjects: English HG, Art/Design, History of Art, History/Social Studies.

Points required: minimum **21 points (excluding Life Orientation)**

General admission requirements apply: University admission requirements

Other requirements: Prospective students are subjected to a selection process and an interview. Please see detailed admission requirements stipulated below. Full Graphic Design admission requirements are available for download through this website (seeGraphic Design admission criteria).

Course Structure: Syllabus

If you meet the minimum criteria for application: As space in the first year Graphic Design course is limited to 30 students all prospective Graphic Design students who wish to enrol in the VAD department at VUT must go through a selection process.

Overview

What does a Graphic Designer do? The Graphic Designer contributes greatly to the visual environment by designing posters, signs, adverts, publications, packaging and corporate identities. These are created through the use of computer graphics and various electronic and other media skills. The role of the Graphic Designer is constantly expanding as communication becomes more important in out technology driven society. The Graphic Designer is seen as an initiator of creative ideas for the promotion and selling of services and products. A designer is required to combine a command of new technologies and visual language with an entrepreneurial attitude.

Career Opportunities

Advertising Agencies, Design Studios, Illustrators, DTP, Computer Graphic Animator, Photographic Manipulation, Editorial Design, Communication Design, Web Page Design and Interactive Design.

The Application Process

- Contact the Graphic Design Department (016) 950 9894 or the Departmental administrator (016) 950 9174. The selection tests/briefs are available on this website or they can be e-mailed/faxed to you.
- The **minimum admission requirement** is a National Senior Certificate (NSC) with an achievement rating of 3 (Moderate Achievement 40-49%) or better in four recognised NSC 20-credit subjects. Applicants also need to meet selection criteria in terms of the recommended subjects at school level and/or an extensive art and design portfolio (see table below).
- Recommended subjects for Graphic Design are **English HG, Art/Design, History of Art, History/Social Studies.** Students that do not have the recommended subjects at school level are at a distinct disadvantage.
- **NB: Candidates are at an advantage to be considered for selection if they meet the following criteria:**
- have Visual Art, Design, History of Art, History or Social Studies as a senior certificate subject in which they have excelled (achieved an average of 65% or

higher).

- have completed some kind of Graphic Design or related training (eg. College) and have obtained an average of at least 60 %.

NB: Minimum selection criteria - a minimum of **21 points** (excluding Life Orientation) on the Admissions Point Score (APS) in order to be considered for admission.

POINTS RATING FOR APS:	PERCENTAGE OBTAINED IN NSC:
8	90-100%
7	80-89%
6	70-79%
5	60-69%
4	50-59%
3	40-49%
2	30-39%
1	0-29%

Once you have completed the selection briefs:

Call the Visual Arts and Design department: Graphic Design section to arrange for an interview.

- An interview date will be scheduled. Please bring the following to the interview: copy of your ID, certified copy of Grade 12 certificate (or copy of latest written exams), extensive portfolio of art/design work.
- The completed selection tests must be sent back to the department within one month of completion.
- It is the responsibility of the student to contact the VAD department within 4 weeks of completing all aspects of the selection process including the interview to determine whether their application was successful.
- Students who have not completed this selection processes will not be considered for admission.

The selection tests/briefs comprise of the following:

Drawing Competency - Self portrait drawing, still life drawing.

Graphic Design Awareness - Type project: design an alphabet, use that alphabet to render your name, logo design project, business card.

The tests should be completed on (minimum) A4 size paper in the medium stipulated on the brief.

All correspondence should be addressed to:

Kate Chmela-Jones

Lecturer: Graphic Design

016-9509894

e-mail: kate@vut.ac.za

Department of Visual Art and Design - Graphic Design

Vaal University of Technology

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Vanderbijlpark

1911

Photography

- National Diploma. Photography (Duration: 3 years)
- Baccalaures Technologiae (B-Tech). Photography (Duration: 4years)

Overview

Photographers work in the world of visual communication. Through the media of still images they communicate with individuals and masses. Their role is to convey ideas, concepts, and information by means of a photograph. This form of communication can be found in newspapers, magazines, pamphlets, billboards, books, posters and many other media. Work can be done for exhibitions, printing in publications, packaging and posters or for use in audiovisual presentations, multimedia productions and the Internet. Photographers are required to work with sophisticated equipment and to be familiar with the various photographic processes. Most photographic work presents a range of practical problems including lighting, composition, exposure, development and printing, as well as the opportunity to create various special effects. The photographer is also a business person, dealing with a variety of clients on a day to day basis, making a living through effective visual communication.

Career Opportunities

Photographers can be employed in various industries or may be self employed as Freelance Photographers. A Freelance Photographer would work for various clients and would photograph a wide range of subjects. A Photographer could be employed by the media, covering news, events and photographing people, places and events of public interest for both newspapers, magazines or television.

An Industrial Photographer would work for large organisations and take photographs that range from industrial interiors, portraits for annual report to close-up images for manufacturing faults. Educational institutions such as universities employ Photographers to prepare materials for teaching and training purposes, as well as for promotional work. Medical organizations, hospital clinics and training hospitals make use of photographic images for training and education. This type of work can include medical and scientific photography, macro photography and photomicrography as well as many specialised techniques. The advertising industry is one of the biggest users of photography. Photographs of products and services are used in many advertisements. Most of this type of work is done in the studio where lighting can be controlled. Digital image manipulators are highly sought after. With the latest digital imaging technology and appropriate computer software the door to world electronic media opens with many new and exciting career options to follow.

Course structure: Syllabus

Recommended subjects: Afrikaans, English, Third Language, Physical Science, Mathematics, Computer Literacy

Points required: 26 points   Calculate my points

General admission requirements apply: University admission requirements

Other requirements: Prospective students may be subjected to a placement test and possible personal interviews. Relevant industrial experience may be accepted as a minimum entry requirement.

Fashion Design

FASHION

- National Diploma: Fashion (Duration: 3 years)
- Baccalaures Technologiae (B-Tech): Fashion (Duration: 4 years)
- Magister Technologiae (M-Tech): Fashion

Overview (What does a fashion designer do?)

A fashion designer researches new trends and produces ideas for a season by attending fashion and trade shows, correctly interprets fashion trends, presents storyboards to senior management, develops specification sheets for all product designs. A designer also does garment and pattern construction for individual customers. You can establish your own label and sell them to boutiques or chain stores.

The broad aim of this course is to produce innovative designers and fashion communicators, who will make outstanding and directional contributions within a variety of fashion professions in South Africa and internationally.

Further more, the course aims to provide a learning environment in which innovation, invention and originality can be developed within a range of different, but closely related fashion pathways. Fashion graduates will contribute effectively in a climate of change. They need to be versatile fashion specialists to possess an in depth knowledge of their chosen fields as well as breadth of knowledge and critical understanding of the professional fashion environment.

The core of fashion design is studies at different levels according to learner' choices of pathways. Throughout the course learners will be provided with the opportunity to participate in group and team projects, that bring together learners from the different specialist pathways of Fashion Design and occasionally some of the design disciplines of other courses.

There are lectures and seminars on cultural studies which, together with structured tutorials and regular reviews of work, enable the learner to develop kry communication skills and make judgements on utility and quality in art and design. Learners will benefit from learning in an environment where almost the entire range of arts and design disciplines are taught.

Career Opportunities

Graduates work across a very wide spectrum of careers in Fashion. While a few do become household names, the majority do not establish their own labels, but work successfully and influentially as pattern makers, designers and garment constructers at fashion houses, have their own enterprises, workshops and boutique managers, fashion buyers, buyers or representatives for manufacturers or retail stores, costume designers (full time or freelance), fashion curators in museums, designers and pattern makers at any performing arts organisation, fashion illustrators for magazines, fashion consultants, fashion stylists, marketing agents, fashion co-ordinators or quality controllers.

Each year, a number of graduates go on to study at post-graduate level, many at the Vaal University of Technology.

Recommended subjects: Clothing/Needlework, Art, Mathematics

Points required: 26 points   Calculate my points
General admission requirements apply: University admission requirements
Other requirements: Prospective students may be subjected to a placement test and possible personal interviews. Prospective students should display an aptitude for 2D - 3D (dimensional) drawing.

Public Ralations Management

- National Diploma. Public Relations Management (Duration: 3 years)
- Baccalaures Technologiae (B-Tech). Public Relations Management (Duration: 4 years)
- M Tech: Public Relations Management

Overview
The PRO (PRP) should be equipped to be a link between the company and the public, be able to communicate effectively with the internal and external public, liaise with the press and other media; compile and edit press releases, bulletins, journals, brochures; organise a variety of functions and be responsible for the corporate image of the company.

Career Opportunities
Can be employed as a Public Relations Practitioner by commerce and industry, central, provincial and local government, tertiary and other educational institutions, the news media and PR consultancies. Professional Status: A qualified practitioner can register as a member of the Public Relations Institute of South Africa.

Compulsory school subjects: English HG (C) or SG (B)

Recommended subjects: Computer Skills
Points required: **26 points**   Calculate my points
General admission requirements apply: University admission requirements
Other requirements: Prospective students may be required to complete a placement test.

Enquiries: Department of Hospitality and Tourism

FACULTY OF HUMAN SCIENCES

Head of Department: Hospitality and Tourism
Vaal University of Technology
Private Bag X021
VANDERBIJLPARK
Tel: (016) 950-9279
Fax: (016) 950-9788

Information Technology

- National Diploma. Information Technology (Duration: 3 years)
- Baccalaures Technologiae (B-Tech). Information Technology
- Magister Technologiae (M-Tech). Information Technology
- Doctor Technologiae (D-Tech). Information Technology

Course Structure: Syllabus

Points required: 28 points   Calculate my points

General admission requirements apply: University admission requirements

Other requirements: All first year students are required to take an aptitude and or placement tests in order to assure that correct placement is done in appropriate courses.

Overview

What does an IT Specialist do? The person will find himself/herself in any of a wide variety of computerised environments. Responsibilities may include the maintenance of systems in use, system analysis and design and/or programming of new systems, network administration, database administration, user support. The computer specialist communicates with management and the different users of the system, which makes this position an important link in the global setup of the organisation. Management of IT functions is a possible position in the career development of the keen IT specialist.

Career Opportunities

Computerisation of most facets of modern society creates a multitude of possibilities. In-service training includes the development of prototypes or systems and/or the supervised support of existing systems. The typical entry level is that of a programmer with a quick advance to the level of a senior programmer. Further promotions are to the level of Systems Analyst, Network Administrator or Database Administrator. Career Status: IT specialists can acquire membership of the Computer Society of South Africa.

Enquiries: Department of Information & Communication Technology

FACULTY OF APPLIED & COMPUTER SCIENCES

Head of Department: Information & Communication Technology

Vaal University of Technology
Private Bag X021
VANDERBIJLPARK
Tel: +27 16 950-9254

Fax: +27 16 950-9793

Instructions

Thank you for agreeing to participate in this research project. Please note that all responses are anonymous and that all responses will be handled according to the code of
research ethics of the VUT.

Completing the questionnaire should take about 15-20 minutes. Please ask the researcher present if you need any further information.

For the purpose of this questionnaire, digital image manipulation is defined as any manipulation that changes the meaning of a photograph. For example, changing a person's expression or adding visual elements that were not in the original photograph.

Please suggest any changes or additions to this definition in the box below.

Please answer all questions on a screen before clicking the continue button. If you prefer not to answer a question, either type in "no answer" or supply a reason for not answering. You are encouraged to supply general comments throughout the questionnaire in the spaces provided.

On what level are the majority of your subjects?
Click on the arrow to choose from the ist below

For what qualification are you currently enrolled?
Click on the arrow to choose from the list below

Before enroling for the current qualification, did you previously study towards another tertiary qualification?
● Yes
● No

If yes, please give details

What training have you received in the visual arts?
● Formal training on tertiary level
● Formal training but not on tertiary level
● None

Please give details

IMAGE 1A

NEXT
BACK

Question 1.1: Is this image manipulated?

- Yes, at least one image manipulation technique was used.
- No, this is an entirely unmanipulated image

NEXT
BACK

Question 1.1a: Please give a reason for your answer in question 1.1?

[ ]

IF QUESTION 1.1= NO:

NEXT
BACK

Question 1.1: Is image 1a (as displayed in context 1b) manipulated?

- Yes, at least one image manipulation technique was used.
- No, this is an entirely unmanipulated image.

The image is now displayed within it's context. Would you like to revise your previous answers?

- Yes
- No

NEXT
BACK

Question 1.1a Please give a reason for your answer in question 1.1?

[ ]

[displays previous answers with fields activated if yes, and de-activated if no.]

NEXT
BACK

Question 1.2: Assuming the image is manipulated, how will you rate the manipulation in this typical family photograph?

- 1. completely unacceptable
- 2. not acceptable
- 3. undecided
- 4. acceptable
- 5. entirely acceptable

- 1. highly credible
- 2. credible
- 3. undecided
- 4. not entirely credible
- 5. not at all credible

NEXT
BACK

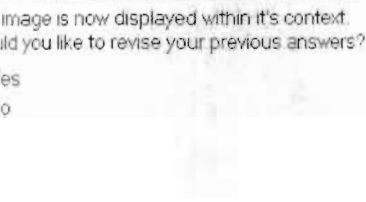Question 1.3: Any general comments?:

IF QUESTION .1= YES:

NEXT
BACK

Question 1.1b. To me, the level of manipulation is:

○ Minor
● Moderate
● High

NEXT
BACK

Question 1.1c: Please list the main image manipulation techniques that were used?

Any general comments?

NEXT
BACK

Question 1.1d: Do you posess the image manipulation skills to have been able to produce this image on your own?

● Yes, I have received sufficient training
● No, I lack sufficient training.

Any general comments?

NEXT
BACK

Question 1.3: Any general comments?:

NEXT
BACK

Question 1.1: Is image 1a (as displayed in context 1b) manipulated?

● Yes, at least one image manipulation technique was used.
● No, this is an entirely unmanipulated image.

The image is now displayed within it's context. Would you like to revise your previous answers?

● Yes
● No

DISLAYS PREVIOUS ANSWERS WITH FIELDS ACTIVATED IF YES, AND DE-ACTIVATED IF NO. ANSWERS WITH OR WITHOUT CHANGES ARE RECORDED SEPERATELY

NEXT
BACK

Question 1.1a: Please give a reason for your answer in question 1.1?

[displays previous answers with fields activated if yes, and de-activated if no.]

DISLAYS PREVIOUS ANSWERS WITH FIELDS ACTIVATED IF YES, AND DE-ACTIVATED IF NO. ANSWERS WITH OR WITHOUT CHANGES ARE RECORDED SEPERATELY

NEXT
BACK

Question 1.1c: Please list the main image manipulation techniques that were used?

Any general comments?

DISLAYS PREVIOUS ANSWERS WITH FIELDS ACTIVATED IF YES, AND DE-ACTIVATED IF NO. ANSWERS WITH OR WITHOUT CHANGES ARE RECORDED SEPERATELY

NEXT
BACK

Question 1.1d: Do you posess the image manipulation skills to have been able to produce this image on your own?

● Yes, I have received sufficient training.
● No, I lack sufficient training.

Any general comments?

END OF SPLIT, RETURN TO .2 AND .3

NEXT

BACK

Thank you for your co-operation and your time.

This is the end of the questionnaire.

To exit the questionnaire and submit your answers, click on end.

end

Annexure C

DigitalCustom Model Ethics Guidelines draft version 2.0

USA

DigitalCustom Model Ethics Guidelines
To Protect The Integrity of Journalistic
Photographs in Digital Editing

[These guidelines are sponsored by DigitalCustom Group, Inc. to assist primarily news, travel and nature editors to formulate internal policies for the ethical, objective application of digital image editing procedures to journalistic photographs.

DigitalCustom seeks comments on these guidelines so that, over time, they may be improved, clarified and grow with the technology and industry thought. Input may be sent to feedback@digitalcustom.com. Release Version 2.0 reflects comments received by DigitalCustom during a one-year period through February 2003.

DigitalCustom Group, Inc. grants the public an unlimited license to reprint, copy and distribute these guidelines; provided that any general publication of these guidelines shall identify DigitalCustom as the sponsor, and use DigitalCustom's title for the guidelines (including any designation of "Comment Draft #__," with the version date).

DigitalCustom Group, Inc. sponsors the development of these guidelines as part of its mission to advance the art, science and profession of digital image editing.

Proposed policies that have been the subject of material comments are asterisked (*), indicating that the proposal is under review for the next draft.]

1.0 True-to-Life And Utility-Enhancing Procedures

The following digital image editing procedures are permitted to compensate for limitations and defects inherent in the digital photographic process, provided that the impact is to make the photograph more true-to-life (i.e. accurate):

1.0.1 Color balancing/correction
1.0.2 Burning
1.0.3 Correction of lens distortion
1.0.4 Despeckling
1.0.5 Dodging
1.0.6 File optimization
1.0.7 Focus adjustments
1.0.8 Glare elimination
1.0.9 Overall lightening or darkening
1.0.10 Red eye elimination

2.0 News/Editorial Images (Permissible Procedures)

The following digital image editing procedures generally are permitted for news/editorial purposes, unless the nature of the publication requires images to be precisely representative of what was photographed.

2.0.1 Cropping, darkening or focus-softening to reduce/eliminate superfluous material in a manner that preserves the context of the event.

2.0.2 Enhancing an image, or part of an image, when it serves an investigative purpose. The use of enhancement techniques should be disclosed.

2.0.3 Legally-required (or advisable) concealment of a subject's identity, done in an obvious way (e.g. pixilation).

2.0.4 Adding realistic proportionate "motion" to moving objects. (Some commentators have taken exception to this guideline and argued that motion should not be "added" when it was not

part of the image out of the camera. This point, in essence, is that the photographer and not the digital editor should determine whether to create an image with motion. The same issue arises with respect to the application of "fisheye effects" and other effects in image post-production. These important issues must be resolved between a photographer and his/her publication. A digital editor should respect whatever policy is communicated.)

3.0 News/Editorial Images (Impermissible Procedures)

The following digital image editing procedures generally are not permitted for news/editorial purposes:

3.0.1 Adding, removing or moving objects in such a way that the context of the event is altered.

3.0.2 Age progression or regression (e.g. adding gray to hair).

3.0.3 Changing a subject's facial expression, gestures, clothing, body parts or personal accessories.

3.0.4 Retouching that enhances or reduces the apparent quality or desirability of an item, or the aesthetics of a place.

3.0.5 Using "motion" to create a misleading impression that the subject is moving at a different speed than he/she/it was moving during the events.

3.0.6 Using effects or color changes in such a manner that it is unclear whether the effects or color changes were applied through digital editing or were part of the original event that was being covered.

3.0.7 Using any other digital editing procedure in a way that creates a misleading impression of the events, participants or context.

3.0.8 In nature photographs, special care should be taken to represent animal and plant life in its actual environment, habitat and context (e.g. do not lighten a background to make it appear that a nocturnal animal is diurnal or place an animal in fabricated geographical settings).

3.0.9 It is impermissible to manipulate a nature photo so as to create a false appearance that animals were associating with other animals (including humans), to group animals together in a manner that did not naturally occur or to increase the number of animals in a group.

3.0.10 The enhancement of nature images for the purpose of investigation or viewability is permissible, provided the manipulation is incidental, obvious or specifically disclosed to the viewer.

3.0.11 It is impermissible to represent a fabricated phenomenon as natural (e.g. adding a shooting star or rainbow).

3.0.12 These procedures are impermissible whether accomplished through digital editing or physical editing ("mortising") of images.

4.0 Promotional Images For News Publications (Permissible Procedures)

The following digital image editing procedures are permitted to achieve promotional objectives (e.g. on publication covers and introductory areas of an article) in a manner that is not misleading as to the events, participants or context:

4.0.1 Modifications of image composition are disfavored and should be disclosed. The cropping of an image to exclude damage constitutes a modification.

4.0.2 Cropping, rotation or image enhancement beyond the repair of after-acquired damage or deterioration (including contrast change) are substantive modifications of an image that should be applied to archival images only when necessary to achieve a proper archival purpose (e.g. analysis of a particular architectural feature) and in a manner that is consistent with the principles herein.

4.0.3 Cropping of the secondary support, frame or vignettes in the original should be avoided when possible. Secondary supports, frames and vignettes should be considered an integral part of a photographic artifact and may carry valuable historical information, such as watermarks, signatures, stamps and studio names. A digital image of a secondary support, frame or vignette may be restored in a manner that is consistent with the photo restoration.

4.0.4 Reference To Journalism Ethics: It is impermissible to modify a historical image in a manner that would violate ethics pertaining to manipulation of journalistic images. Reference is made to the "DigitalCustom Model Rules To Preserve The Integrity of Images For Journalistic Purposes" (Release Version #2.0, March 1, 2003)(available at www.digitalcustom.com).

4.0.5 Skin and hair beautification.

4.0.6 Title (or other text) overlays.

4.0.7 The use of other digital editing procedures in a way that is not misleading as to the events, participants or context.

5.0 Promotional Images For News Publications (Impermissible Procedures)

Same as 3.0.

6.0 Preservation of Source Materials and Ancillary Principles

The original unedited file captured by the photographer (or scanned), and all files integrated into a composite picture, should be preserved as evidence of the extent of editing.

6.0.1 The publication should designate one or more editors to decide ethical issues related to digital image editing procedures.

6.0.2 Artists and technicians who perform digital image editing services that are subject to ethical guidelines should be provided with the guidelines, and be instructed promptly to disclose to the publication any known variance from the guidelines.

6.0.3 Absent information to the contrary, a digital editor may assume that editing instructions received from a designated contact person at a publication are consistent with the publication's policies.

6.0.4 These guidelines do not address the issue of who has discretion over journalistic image editing for a particular publication (e.g. the photographer, publisher, editor, reporter). The publication should make clear its policies in this regard.

6.0.5 These guidelines are addressed only to journalistic images and are not intended to limit the procedures that might be applied to commercial images, artistic images or images for personal purposes.

(Version 2.0 - March 1, 2003)