THE SEMANTIC AND PRAGMATIC COMPREHENSION OF VISUAL RHETORICAL CODES BY LITERATE AND ILLITERATE ADULTS IN A HEALTH COMMUNICATION SETTING

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Zu jeder Kunst gehören zwei:

einer, der sie macht,

*und einer, der sie braucht.**

- Ernst Barlach

* Every art requires both someone who produces (or creates) it and someone who has a need (or use) for it (Schurek, 1959:138).

Declaration

I, the undersigned, hereby declare that the work contained in this dissertation is my own independent work and that the dissertation, or parts thereof, has not previously been submitted by myself or any one else to any other institution in order to obtain a degree.

1999-09-06
Date

N.J. Gouws
Signature

Abstract

The focus of the study was on the comprehension of visual rhetoric in printed health learning visuals by literate and illiterate adults. The broad aim of the study was to establish whether visual rhetorical codes, which usually perform a strong phatic function, constitute a significant readability barrier in an illiterate adult target group. The literature investigation of the study covered (1) a semiotic perspective of the distinction between visual and verbal texts, (2) visual rhetorical articulation for closed visual texts and (3) the readability of development visuals with the emphasis on health education.

The design of the empirical component of the study involved the production of three health education posters with a Tuberculosis theme which were encoded with varying degrees of visual rhetoric taking existing guidelines for the design of development visuals into account. In order to measure the semantic (or literal) and pragmatic (or figurative) comprehension of the visual rhetoric, 300 voluntary, confidential, structured interviews were conducted with clinic patients attending Primary Health Care clinics in the greater Bloemfontein area following the refinement of the test visuals and questionnaires during a pilot phase. The mainly Sesotho speaking and pre-dominantly female study population consisted of 150 literate adult patients (>21 years of age, 12 years of formal schooling or higher) and 150 illiterate adult patients (>21 years of age, 6 years of formal schooling or lower and the demonstrated inability to read and understand the full text of an acronym).

The working hypotheses of the study, which read that (1) on the semantic

level, the comprehension of visual rhetorical codes in a closed visual text does not differ between literate and illiterate adults, and that (2) on the pragmatic level, the comprehension of visual rhetorical codes in a closed visual text differs between literate and illiterate adults, were both accepted following chi-square analysis which tested for independence of the literate and the illiterate study population groups.

Flowing from the result obtained, design guidelines for the utilisation of visual rhetorical codes in a development communication context, as well possibilities for further research, were formulated.

Ekserp

Die fokus van die studie was op die omvang van die verstaanbaarheid van visuele retoriek in gedrukte visuele gesondheidsopvoedingsmateriaal by geletterde en ongeletterde volwassenes. Die oorhoofse doel van die studie was om te bepaal of visuele retoriese kodes, wat normaalweg 'n sterk fatiese funksie vervul, 'n betekenisvolle versperring op leesbaarheid vir 'n ongeletterde volwasse teikengroep inhou. Die literatuurondersoek van die studie het (1) die semiotiese perspektief van die onderskeid tussen visuele en verbale tekste, (2) die visuele retoriese artikulasie van geslote visuele tekste en (3) die leesbaarheid van ontwikkelde visuele materiaal - met die klem op gesondheidsopvoeding - gedek.

Die ontwerp van die empiriese komponent van die studie het die vervaardiging van drie gesondheidopvoedingsplakkate met 'n Tuberkulose-tema behels, wat met verskeie grade van visuele retoriek geënkodeer is deur bestaande riglyne vir die ontwerp van visuele ontwikkelingsmateriaal in ag te neem. Die visuele toetsmateriaal en vraelyste is gedurende 'n ondersoekfase eers verfyn. Daarna is 300 vrywillige, vertroulike, gestruktureerde onderhoude gevoer met pasiënte wat Primêre Gesondheidsorgklinieke in die groter Bloemfontein-area besoek het, ten einde die semantiese (of letterlike) en pragmatiese (of figuurlike) omvang van die visuele retoriek te bepaal. Die hoofsaaklik Sesotho-sprekende, vroulike studiebevolking het bestaan uit 150 geletterde volwasse pasiënte (>21 jaar, met 12 of meer jare formele onderrig), en 150 ongeletterde volwasse pasiënte (>21 jaar, met 6 of minder jare formele onderrig, en met die getoetse onvermoë om die volledige teks van 'n akroniem te

lees en te verstaan).

Die werkhipoteses van die studie, wat lui dat (1) die omvang van visuele retoriese kodes in 'n geslote visuele teks op semantiese vlak nie verskil in die geval van geletterde en ongeletterde volwassenes nie, en (2) dat die omvang van visuele retoriese kodes in 'n geslote visuele teks op pragmatiese vlak verskil ten opsigte van geletterde en ongeletterde volwassenes, is beide aanvaar nadat 'n Chi-kwadraatverwerking uitgevoer is om die onafhanklikheid van die geletterde en ongeletterde studiebevolkingsgroepe te toets.

Vanuit die resultate wat verkry is, is riglyne ontwerp vir die gebruik van visuele retoriese kodes in die konteks van 'n ontwikkelende gemeenskap, en moontlikhede vir verdere navorsing is geformuleer.

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List of abbreviations

AIDS	Acquired Immuno Deficiency Syndrome
BLIX	Acronym in Swedish for Picture Readability Index
BTLC	Bloemfontein Transitional Local Council
DOTS	Directly Observed Treatment Short Course
NC	No Comprehension (of semantic or pragmatic meaning)
NS	Not significant (at a specified value for α)
PC	Pragmatic comprehension of rhetorical content
PHC	Primary Health Care
PRI	Picture Readability Index
RCDV	Readability Checklist for Development Visuals
S	Significant (at a specified value for α)
SC	Semantic comprehension of rhetorical content
STD	Sexually Transmitted Disease
TB	Tuberculosis
WHO	World Health Organization

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Chapter 1

Introduction

1.1 Background

In a recent article about cognitive issues in the design of a virtual reality environment, McLellan (1998:197) points out that in order to reduce the cognitive effort in the navigation and interpretation of a virtual reality environment, it is important to provide the user with a continual feeling of challenge that is neither so difficult as to create a sense of hopelessness and frustration nor so easy as to produce boredom. McLellan's design guideline closely relates to a dilemma often encountered by visual communicators working in the field of health learning material design in developing countries which served as a basic point of departure for this dissertation. The one horn of the dilemma is that most authors recommend a simple, straight-forward style of presentation for visual material meant for a development communication context in order to avoid the risk of needlessly confusing the target group, especially when the overall levels of formal education in the target group are low. The other horn of the dilemma is that over-simplified visual materials often fail to attract and maintain (or continually redraw) the attention and interest of the viewer.

The theoretical basis for the dilemma may be described as an area of overlap between the phatic function of an image on the one hand and the readability of an image on the other hand (see Table 1.1). The term 'phatic communication' was coined by the anthropologist Bronislaw Malinowski (1884-1942), referring to those parts of a communicative act which deal with

Table 1.1 Overview of the phatic function-readability dilemma.

	Function	1st Horn of the dilemma	2nd Horn of the dilemma
1.	**Phatic function** (i.e. the ability of an illustration to attract and maintain the interest of the viewer)	Low phatic function The image fails to engage the viewer emotionally or intellectually. The viewer tends to become bored or irritated with the image.	High phatic function The image attracts and holds the attention and interest of the viewer and there is a high level of emotional and intellectual engagement.
2.	**Readability** (i.e. the ease with which the intended message with an image is understood in the target audience)	High readability The message which the author intends to convey with the image is easily grasped and accurately interpreted by the viewer. The image comes across as clear and straight-forward.	Low readability The viewer is left guessing about the intended meaning of the image. The image gives rise to aberrant (or unintended) interpretations.

establishing contact, as opposed to those areas of communication which primarily involve the exchange of information, ideas or feelings. Phatic language, for example, usually includes comments on the weather, inquiries about health and other phrases which are useful to "oil" the channels of communication (Watson and Hill, 1993:139).

With specific reference to visual messages, the term 'phatic function' derives from a theoretical framework by Peters (1978), where it is listed as one of six distinct communicative functions that an image may perform. Peters took a communication model by the linguist Roman Jakobson (1960) as a point of departure and adapted it for the analysis of visual images (for a discussion of Jakobson's work see, among others, Lechte, 1994). The six communicative functions are the phatic, referential, poetic, expressive, conative and meta-linguistic (or meta-pictorial) functions (a survey of these image functions is placed in the appendix).

According to Peters (1978:58), an image performs a phatic function when it attracts and maintains the attention of the viewer on three main levels, termed the material, referential and formal levels. For example, a photograph may establish contact with the viewer due to its extraordinary size (a material aspect of the image), due to the fact that the subject matter depicted in the photograph is of special interest to the viewer - a representational aspect of the image- or because the photograph has been overtly encoded by means of photographic technique, such as selective focus - a formal aspect of the image.*

In contrast, the readability of an image refers to the ease with which the

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* For pictorial attention research see Duchastel (1978); Duchastel and Waller (1979); Holiday (1980); Heinrich *et al.(* 1982), Levie and Lentz (1982), Evans *et al.* (1987), Levin *et al.* (1987), Pettersson (1993, 1998a, 1998b); Keller and Burkman (1993), Wileman (1993), Lester (1993).

intended (or preferred) meaning of a visual text is understood in a particular target group (Pettersson, 1993:159). The term 'readability' stems from education research concerned with the selection of reading material for children of different age groups (Sevrin and Tankard, 1988:70), where readability in the general sense refers to the "ease of understanding due to style of writing" (Klare, 1963:1), as opposed to legibility, which mainly pertains to typographic aspects such as font size and line spacing. An example of a highly readable visual text would be a photograph in which the subject matter, with which the target audience is familiar, is depicted with a high degree of realism (i.e. an attempt was made to minimize the difference in appearance between a real-life object as perceived in the original viewing situation and its pictorial representation) in the absence of too many image details that may detract from the main message of the photograph.

1.2 The phatic function-readability dilemma in a health communication setting

Printed health learning materials play an important role in Primary Health Care programs in developing communities, where audience illiteracy is often a pervasive problem (Van Aswegen and Steyn, 1987:vii). Patients commonly receive pamphlets or look at posters while sitting in the queue and in this way acquire some pre-knowledge on a topic such as family planning before seeing a health professional. With illiterate patients, however, printed health learning visuals with a dominant text anchor tend to confuse the patient and give rise to aberrant (or unintended) interpretations. For example, a cartoon depicting a tablet with moving legs and the caption "Don't let your pills run out" could generate a large variety of unintended interpretations in an illiterate target group due to the inability of the viewers to read and understand the accompanying caption on a figurative level (i.e. the readability of the cartoon is low). In a literate

target group, on the other hand, the same visual may be regarded as an engaging, humorous way of getting a message across (i.e. the phatic function of the cartoon is high). The challenge for visual communicators thus lies in finding a balance whereby printed health learning materials are simple enough not to confuse the viewer on the one hand, but also engaging enough to attract and hold the attention of the viewer on the other hand.

The above described scenario of a phatic function-readability dilemma in a health communication setting falls within the broader context of health promotion and health education issues in multi-cultural developing communities. In this regard, a model by Hugo (1997), that covers effective health education and communication, appropriate media use, socio-cultural sensitivity, media acculturation and specific health message evaluation guidelines, may serve as an appropriate theoretical framework to study the wider context of a specific situation in which a phatic function-readability dilemma may occur.

1.3 Aim

Against the above background, the stated aim of this study was to investigate the role of visual rhetorical codes, which usually perform a strong phatic function, in a health communication context with a view to establish whether visual rhetorical codes constitute a significant readability barrier, especially in a predominantly illiterate adult target group. This basic aim is in step with a recent prioritization of health education message design guidelines by Hugo (1996:174). Based on the views of both health education material producers and users, Hugo (1996:174) writes that:

- communication principles should receive higher priority than educational principles in health learning materials design, although the

latter factors are still important

- the role of socio-cultural factors such as the literacy (educational) level and language preference of the audience in appropriate message design should not be underestimated, and
- although the application of creative audio-visual effects are less important than achieving educational objectives, stimulating message design is still regarded as a relatively high priority to increase the emotional involvement of the audience.

1.4 Main delimitations

The focus of the empirical component of this study was on the semantic (or literal) and pragmatic (or figurative) comprehension of visual rhetorical codes in three rhetorically encoded health communication posters with a Tuberculosis theme by literate and illiterate adult clinic patients (i.e. persons 21 years of age or older) attending Primary Health Care clinics of the Bloemfontein Transitional Local Council in the greater Bloemfontein area (for a map see Figure 5.1).

The terms 'semantic' and 'pragmatic' derive from a theoretical framework by Goldsmith (1984) in which she adopts the terminology of Morris (1938) and posits that a visual message may be understood on three distinct semiotic levels. These are:

- the syntactic level of comprehension
- the semantic level of comprehension
- the pragmatic level of comprehension.

Syntactic comprehension was not measured in this study as it involves the ability

to perceive depth, figure-ground relationships and colour, but does not include the recognition of objects, and thus refers to a basic perceptual competence on the part of the viewer, as opposed to an interpretational competence (to recognise and attach significance to the image contents) measured on the semantic and pragmatic levels. As the successful utilisation of visual rhetorical codes primarily depends on the interpretational competence of the viewer, and not on the perceptual competence (even though perceptual competence may be regarded as a pre-requisite for semantic and pragmatic comprehension), the emphasis of the study was on semantic and pragmatic comprehension.

The study was further restricted in two main ways. Firstly, the measurement of the pragmatic comprehension of visual rhetorical codes was confined to the iconic level, excluding the interpretation of iconographic rhetorical codes. The terms 'iconic' and 'iconographic' are suggested by Eco (1990:36) to denote the distinction between visual components of an image which contain an overt cultural dimension (iconographic) such as "the three horsemen of the apocalypse" or "Pegasus", in contrast to those visual components of an image which are free from advanced cultural connotations (iconic) such as "a horse standing in profile". As iconographic rhetorical codes may lower the readability of an image due to their cultural content (as opposed to the purely rhetorical content), which would imply that the cultural dimension of an iconographic code constitutes a separate type of readability barrier, the measurement of iconographic codes was omitted from this study, even though cultural and audience-specific readability barriers were taken into account during the design phase of the test material (see Chapters 4 and 5).

Secondly, the design of the empirical investigation focused on the comprehension of printed health learning visuals, which are usually classed as closed visual texts (as opposed to open visual texts). In the case of a closed

visual text, a preferred reading is envisaged by the author(s) of the image, whereas with an open visual text there are no "correct" or envisaged readings and the viewer is invited to contribute proactively towards shaping the meaning of the image (Watson and Hill, 1993:135). An example of an open visual text would be the well-known abstract expressionist work of Jackson Pollock (De la Croix and Tansey, 1970:726). This means that the test materials and questionnaires utilized in the course of the empirical study were designed to measure whether visual rhetorical codes reduce the ease with which the study population understood the *intended* or preferred meaning of the test visuals (which may be regarded as closed texts), and that the diverse personal (or viewer-specific) connotations and associations which each individual viewer may have attached to the test visuals beyond their intended meaning were not recorded, as these apply mainly to open visual texts.

1.5 Hypotheses

Within the above main delimitations, the working hypotheses of the study were that:

- *on the semantic level, the comprehension of visual rhetorical codes in a closed visual text does not differ between literate and illiterate adults, and that*
- *on the pragmatic level, the comprehension of visual rhetorical codes in a closed visual text differs between literate and illiterate adults.*

The null hypotheses were that:

- on the semantic level, the comprehension of visual rhetorical codes in a closed visual text does not differ between literate and illiterate adults, and that
- on the pragmatic level, the comprehension of visual rhetorical codes in a visual text does not differ between literate and illiterate adults.

The above stated working hypotheses were formulated after a series of informal interviews with health education officers, clinic sisters, medical doctors, graphic designers and medical photographers in Bloemfontein and Johannesburg. A common perception which emerged from these informal discussions was that visual illustrations should be kept as literal and realistic as possible if they are intended for a target audience with low levels of formal education.

1.6 Research problem

Flowing from the above stated hypotheses, the principal research problem of the study was to demonstrate that there is *no significant difference* in the *semantic* comprehension of visual rhetorical codes between literate and illiterate adults, and to demonstrate that there is a *significant difference* in the *pragmatic* comprehension of visual rhetorical codes between literate and illiterate adults.

1.7 Main methodological issues

Two main methodological obstacles were encountered during the design of the empirical investigation, which utilized survey methodology to measure the readability of rhetorical codes in three rhetorically encoded health communication posters, involving 300 voluntary, confidential structured interviews with adult clinic patients by a research assistant in a clinic setting. Firstly, a methodological challenge lay in finding an appropriate way of translating the (theoretical) literacy-

illiteracy dichotomy into operational terms. As it soon became clear during the pilot work that clinic patients with low levels of formal education tended to claim a higher level of formal education than was actually the case, a control question was introduced whereby the patient was asked during the interview to read the full text of an acronym out loud to the interviewer. Patients who claimed a formal education of twelve years or more and who were able to read the full text of the acronym were classed as literate, whereas patients who claimed a formal education of six years or less and who were unable to read the full text of the acronym were classed as illiterate. Semi-literate patients (i.e. patients with a (claimed) formal education of between seven and eleven years) were excluded from the study. As discussed in greater detail in Chapter 5, even though the determination of (verbal) literacy is not a straight-forward matter, the classification of patients according to years of formal schooling is in step with related studies in the fields of health education* and cognitive psychology.**

Secondly, the appropriate formulation of questions for the structured interviews, which consisted of 12 items arranged according to the "inverted funnel" method (Schnetler, 1989:83), proved a difficult methodological obstacle to overcome as the visual literacy literature is rife with the concerns of researchers that the measurement of visual literacy skills is usually based on verbal responses (see, for example, Dwyer and Dwyer, 1989). This meant that the questions had to be formulated in such a way that the answer expected from the patient did not require a high degree of (verbal) articulation. For example, initial responses during the pilot phase of the study showed that a question such as "What photographic technique was used in these three pictures?" was inappropriate as it required the patient to articulate an answer such as "The

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* See, for example, Hugo and Skibbe (1991), Medical Research Council (1988).

camera zooms in on the subject matter as one progresses from the right photograph to the left photograph" which presupposes an understanding of the photographic concept "to zoom in" (i.e. to systematically lengthen the focal length of the lens during a single exposure or between successive exposures) and requires the patient to convey in words that the three images are meant to be viewed as a sequence from right to left. In contrast, the revised version of the question read "Does the size of the man's hands get bigger or smaller when one looks at the three photographs from right to left?", which the patient answered with either "bigger" or "smaller", thus avoiding the potential methodological pitfall that the measurement of visual comprehension is based on advanced verbal articulation.

1.8 Terminology

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

- Illiteracy refers to the inability to read and write with understanding a short simple sentence about everyday life (UNESCO, 1995:4)
- visual literacy may be defined as the ability to understand, enjoy and use images, including the ability to think, learn and express oneself in terms of images (Braden, 1996:13)
- an adult refers to a person 21 years of age or older
- development communication pertains to the design and implementation of an informative or instructional message intended to effect behavioural changes in a developing community (Servaes, 1995). A clear example would be a health education pamphlet

** See, for example, Moll (1994); Cole (1990) and Tulviste (1991).

advocating the use of condoms to lower the risk of contracting sexually transmitted diseases

- printed health learning materials may be defined as printed pamphlets or posters that are usually mass produced and form an integrated part of a health promotion strategy.
- phatic communication refers to those parts of communication which deal with establishing a favourable communicative atmosphere and maintaining contact, as opposed to those areas of communication which primarily involve the transfer or exchange of information. For example, phatic language includes comments on the weather, inquiries about health and other phrases intended to "oil" the channels of communication (Watson and Hill, 1993:139)
- visual rhetoric may be defined as the deliberate design of a persuasive structure in a visual message in order to ensure that a preferred reading occurs, based on the visual interactions which may occur between the individual elements which comprise the image, which may give rise to visual rhetorical figures, visual premises and visual arguments (Eco, 1990:38)
- semiotics pertains to the study of signs and sign systems (Leeds-Hurwitz, 1993:6)
- a code refers to "a group of signs organised into a system governed by consent among users" (Watson and Hill, 1994:33)
- the readability of a visual illustration refers to the ease with which the preferred meaning of an illustration is understood in a specific target audience, or sectors thereof (Pettersson, 1993:159)
- the appropriateness of a visual illustration refers to a concept broader

than readability and may be defined as the effectiveness with which the communicative objective with a visual illustration is achieved in a specified setting (Hugo, 1997:8)

- the semantic comprehension of a visual message denotes the ability to recognise depicted objects and to identify what they denote, presupposing the competence to perceive depth, texture, colour and other fundamental components of a visual image (Goldsmith, 1984:124)
- the pragmatic comprehension of a visual message may be defined as the ability to interpret a visual message beyond its literal meaning, implying an ability to comprehend figurative meaning and a familiarity with artistic manipulation and cultural conventions (Goldsmith, 1984:124)
- with a closed visual text, a preferred comprehension is envisaged by the author(s) of the image, as opposed to an open visual text, for which there are no "correct" or envisaged readings and the viewer is invited to contribute proactively towards shaping the meaning of the image (Watson and Hill, 1993:135).

1.8 Dissertation structure

The dissertation may be divided into two parts. The first part consists of a literature review (Chapters 2-4), which covers (1) a semiotic perspective of the distinction between visual and verbal texts, (2) the persuasive structure of a visual text and advanced visual rhetoric, as well as (3) the readability of a visual text in a development communication context. The intention with the literature study was to review the theoretical foundation of rhetorical articulation in a

development communication setting with the emphasis on health education material design. The literature review formed the point of departure for the design of the test materials and questionnaires utilized during the empirical investigation.

The second part of the study deals with the empirical component of the study (Chapters 5-6), comprising a discussion of the design of the field work (Chapter 5) and an analysis of the findings (Chapter 6). Chapter 5 covers (1) the research agreement with the Bloemfontein Transitional Local Council on the basis of which the investigation was conducted, (2) an overview of the mainly Sesotho speaking and pre-dominantly female study population, which consisted of 150 illiterate and 150 literate adult clinic patients (i.e. a total of 300 patients), (3) the design, production and refinement of the test visuals, (4) the construction and refinement of the questionnaires which were utilized during the 300 structured interviews, as well as (5) a discussion of the statistical handling of the data.

Flowing from Chapter 5, the result of the empirical investigation is discussed in Chapter 6, which comprises an evaluation of the research hypotheses, analyses of the semantic and pragmatic comprehension in the study population as well a ranking of the test visuals in terms of their readability and phatic function. In the final chapter, the dissertation ends with (1) an evaluation of the phatic function-readability dilemma in the light of the results obtained for the empirical investigation, (2) the formulation of design guidelines for visual rhetorical codes in a health communication context , (3) a protocol for the implementation of visual rhetorical codes and (4) perspectives for future research.

Chapter 2

A semiotic perspective of the distinction between visual and verbal texts

2.1 Introduction

In an article about the eclectic nature of visual literacy research, Braden (1996:9) notes that the notion of visual literacy has been steadily revised since its inception in the early 1960's to accommodate relevant research results from widely diverging topics of interest. One of the areas of study which has important implications for the theoretical basis of visual literacy is the visual-verbal dichotomy (i.e. the potential contradistinction between visual and verbal messages) in the sense that any attempt to measure visual literacy skills in a meaningful way requires sound definitions of the terms "visual" and "verbal". In this chapter, three theoretical perspectives of the visual-verbal dichotomy are discussed and illustrated by means of two examples. The theoretical perspectives are:

- the view that verbal texts are comprised of arbitrary signs whereas visual texts consist of iconic signs
- the redundancy theory based stance that verbal texts have a clear, predictable meaning in contrast to visual texts to which the viewer attaches an unique meaning, and
- the theory that scanning patterns differ significantly between pictorial and written texts.

2.2 Theoretical basis and definition of key terms

In many instances, the distinction between the terms "visual" and "verbal" is straight-forward. An example would be an everyday newspaper photograph, where it is generally accepted that the photograph itself constitutes the visual component and the accompanying caption forms the verbal (or written) component of a mixed visual and verbal message, or a lexi-visual language in the terminology of Pettersson (1993:170).

In his typology of languages (or linguistic expressions) used in mass communication, Pettersson proposes three categories. These are:

- audial language (or expressions based on sound),
- verbal language (or expressions based on words), which may be either written (lexigraphic) or spoken (oral), and
- visual language (or expressions based on sight).

These basic categories may give rise to various linguistic combinations, such as audiolexical language (i.e. a message consisting of written words accompanied by sounds) or oral-visual language (i.e. a message consisting of a visual image together with spoken words). Pettersson concedes that there are other types of language, such as tactile language (1993:122), but as these are usually not used extensively in mass communication they were omitted from his typology.

Pettersson seems to refer to language as "any system used as a means of communication between people" (Lotman, 1973, in Pettersson, 1993:121). A more recent definition of language by Barry (1997:107) reads as follows:

> The word *language*, derived from *tongue,* is commonly used to describe a system of verbal expressions that humans use to communicate with one another in oral or written form. It generally implies and orderly pattern indicative of a particular culture, steeped in its traditions and bound by generally understood meanings. Sometimes the word is extended beyond the verbal to include systems of signs for communication that can be composed of visual images or even body gestures.

Barry (1997:112) argues that an evolution of abstraction can be demonstrated in language beginning with Egyptian hieroglyphs and ending with the Latin alphabet. According to Barry (1997:108), Egyptian hieroglyphs contain a "visual" component in the sense that many hieroglyphs provide a pictorial representation of a real-life object, such as an eye, a snake or an owl, whereas the iconic content of the Latin alphabet is minimal, with the result that "alphabetic languages used today are the most abstract and highly stylised means of communication" (Barry, 1997:109). Concerning the visual component of a text written with hieroglyphs, Zauzich (1992:5) writes that:

> Although hieroglyphic signs are pictures, hieroglyphic writing was not a 'picture writing' in the true sense, where the picture and its meaning are always the same. The sign [owl], for example, does not usually mean "owl", but rather the letter "m". Between the pictorial sign [owl] and the (apparently!) abstract geometric letter "m" there is, in principle, no difference: both are arbitrary signs representing the sound "m" (Note: [owl] is the hieroglyphic sign in the original).

According to Leeds-Hurwitz (1993:6), the term "sign" refers to "something present that stands for something absent" which plays a central role in human communication, such as the cry of a baby which may signify or stand for hunger (Sless, 1986:2) or a cloud which may signify rain (Fourie, 1980:96). Seen from a semiotic perspective, human communication may be defined as:

> ... (1) a social process in which (2) a communicator / communicators (3) select (or even create) and use signs and codes (or a medium) in and in relation to (4) a particular context in order to (5) encode her/his feelings and opinions on a particular subject in a symbolic manner to form (6) a message and to transmit the message via (7) a channel in the expectation that (8) a destination or recipient(s) will (9) understand / interpret the communicator's message and attach (10) the same meaning to it as the communicator intended, and that, as a result of the destination / recipients' interpretation of the message (11) semiosis will take place which will contribute to (12) a mutual understanding of the subject under discussion (Fourie, 1996:20).

Even though the terms "message" and "text" are often used interchangeably, text usually refers to a message which has a physical existence independent of its sender, such as a written text or a photograph, which facilitates the generation and exchange of meaning (O'Sullivan *et al.*, 1994:317). A further difference is that in contrast to a message, a text is usually not created *ex nihilo*, but...

> ... a text is a construction, a composition (*compositio*) in which one makes use of already present materials as well as pregiven structures; or it is a web, a fabric (*textura*) which is woven from an

already existing stuff according to a pregiven pattern. Among other things the words, the idioms, the turns of phrase and the structure of the language, not invented by the author but encountered and taken over by him, belong to the materials and structures employed in the production of a text (De Beer, 1991:120).

2.3 Iconic versus arbitrary signs

Within the above-mentioned broad "process of making and using signs", or semiosis, (Leeds-Hurwitz, 1993:7), various types of signs may be utilised in a text (e.g. qualisign, sinsign, legisign, symbol, index or icon, see Parmentier, 1994:17). These include iconic and arbitrary signs, which derive from Pierce's typology of signs (often referred to as the trichotomies, see Johansen, 1993; Parmentier, 1994; Jensen, 1995; Fourie, 1996 among others). In an extensive review of Piercean semiotics, Parmentier (1994:16) notes that the distinction between an arbitrary sign and an iconic sign is based on the type of relation which exists between the sign and its referent (see also Fourie, 1996:41).

With an arbitrary sign, such as a written word, there is no formal resemblance between the sign and its referent, whereas an iconic sign directly resembles or "looks like" its referent. An example of an iconic sign would be an unmanipulated colour photograph of a flower which closely resembles the real-life flower.

Concerning the distinction between visual and verbal texts, many early semioticians seem to have blindly adopted Pierce's differentiation between arbitrary and iconic signs and subsequently have held that the term "visual" refers to a text comprised of iconic signs, whereas the term "verbal" denotes a text consisting of arbitrary signs (see, for example, Barthes, 1981:529). With regard to the role of the iconic sign in a text, Saint-Martin (1990:xiii) notes that Eco's

(1979) decisive analysis against the use of the iconic sign as a basic element of visual language was overlooked in the early stages of non-verbal semiotics. Referring to iconic signs, Eco (1990:32) writes that:

> From Pierce, through Morris, to the various positions of semiotics today, the iconic sign has cheerfully been spoken of as a sign possessing some of the properties of the object represented. Now a simple phenomenological inspection of any representation, either a drawing or a photo, shows us that an image possesses none of the properties of the image represented; and the motivation of the iconic sign, which appeared to us indisputable, opposed to the arbitrariness of the verbal sign, disappears - leaving us with the suspicion that the iconic sign, too, is completely arbitrary, conventional and unmotivated.

Even though Eco (1990:32) concedes that iconic signs reproduce some of the conditions of perception of the referent, the discrepancies which exist between an iconic sign and its referent underpin the arbitrariness of the iconic sign. This view is supported by Messaris (1994a:46), who provides a list of ten possible discrepancies between a concrete-representational image and its referent. These may be summarised as follows:

- The image cannot reproduce the full range of brightness levels and the full range of colours to which the eye is exposed when the referent is viewed,
- images such as outline drawings or stick figures entail major omissions of the features of their subjects, including omissions of colour

information,

- ordinary still images (i.e. not stereoscopic or holographic images) cannot reproduce the stereoscopic effect which occurs when the referent is viewed,
- ordinary still images cannot reproduce the effect of motion parallax when the referent is viewed from shifting points of view,
- many images, such as ancient Egyptian paintings for example, do not adhere to the real-world constraint that an object can only be viewed from a single point of view at any one point in time.

Over and above the arbitrariness of the iconic sign, a further difficulty with the view that visual texts are comprised of iconic signs which "look like" their referent, and that verbal texts are comprised of arbitrary signs, is that visual data (i.e. dots, lines, patterns) may be "seen" entoptically in the absence of a referent. Entoptics or entoptic phenomena are luminous geometric shapes such as dots, grids or u-shapes which are "seen" in the first stage of a trance state (or altered state of consciousness). As pointed out by Lewis-Williams and Dowson (1989:60), entoptics are human universals which derive from the structure of the human nervous system, with the consequence that all people who enter certain states of altered consciousness are liable to perceive these, regardless of their cultural background or previous visual experience. Even though entoptics are usually thought of as "visual" in the sense that they consist of basic visual elements such as lines and dots, entoptics are not iconic as they have no referent. By this is meant that entoptics are (unique) visual hallucinations, with the implication that the (original) entoptic phenomena experienced during a trance state are non-iconic, whereas any visual record thereof would be iconic. An example of a

visual record would be finger dots in South African Rock Art which are generally interpreted as depictions of entoptic dots "seen" by shamans during a trance dance (Lewis-Williams and Blundell, 1997; Dowson, 1989; Lewis-Williams and Dowson, 1989).

2.4 Redundancy theory

Acceptance of the fallacy that visual texts are comprised of iconic signs which resemble a referent led Ogasawara (1998) to shift the focus of the visual-verbal dichotomy from the nature of the sign-referent relationship to the type of meanings which a viewer may attach to a (visual or verbal) sign. His approach rests on redundancy theory, whereby certain parts of a text are considered conventional or predictable, established through frequent use of an understandable message, in contrast to other parts which are unique or new to the interpreter of the text (Watson and Hill, 1993:158; O'Sullivan *et al*, 1994:299). Ogasawara argues that any message with a high level of redundancy (i.e. the message contains many parts which could be left out without reducing the clarity of the intended message) may be thought of as visual, whereas a clear, predictable message, such as a road sign for example, may be regarded as verbal. He writes:

> The term visual is used when the meaning of a sign is redundant for the interpreter. The more redundant the meaning of the sign, the more we perceive the sign as visual. Conversely, the more clear the sign, the more we perceive the sign as verbal (Ogasawara, 1998:307).

An implication for communicators designing a visual material (i.e. a material

meant to be perceived with the eyes) for a specific target group is that "visual" and "verbal" are flexible terms which are based on the extent to which the target group interprets the intended message of the material as clear and predictable (verbal) or as new and unique (visual).

For example, a lexi-visual text described by Mishra and Nguyen-Jahiel (1998:10) (see Figure 2.1) illustrates a three dimensional object that projects the capital letters C, F and T as shadows on three perpendicular walls surrounding the object depending on the position of the light source. To most viewers familiar with the Latin alphabet, the shadows would probably represent the letters (or clear signs) C, F and T rather than abstract shapes, whereas most viewers who are not familiar with the Latin alphabet would tend to interpret each shadow as a distinct visual shape which does not carry a convention-based meaning with which the viewer is familiar.

A second example would the visual symbols (thumb up for correct and thumb down for incorrect) depicted next to their verbal equivalents "yes" and "no" in one of the posters which were used as test material during the empirical investigation described in Chapters 5 and 6, see Poster B. As pointed out in the introduction of this dissertation, the predominantly female and mainly Sesotho speaking study population consisted of 150 literate adults and 150 illiterate adults. In response to the question "What do the hands in the top right hand corner of the photographs mean?" during a structured interview conducted either in Sesotho, English or Afrikaans depending on the ability and preference of the patient, 74.6% of the literate patients gave the correct or expected answer (i.e. thumb up for correct and thumb down for incorrect) whereas in the illiterate group the percentage of correct answers was 33.3%. The reply of most literate patients who did not provide the correct answer was along the lines "thumb down means

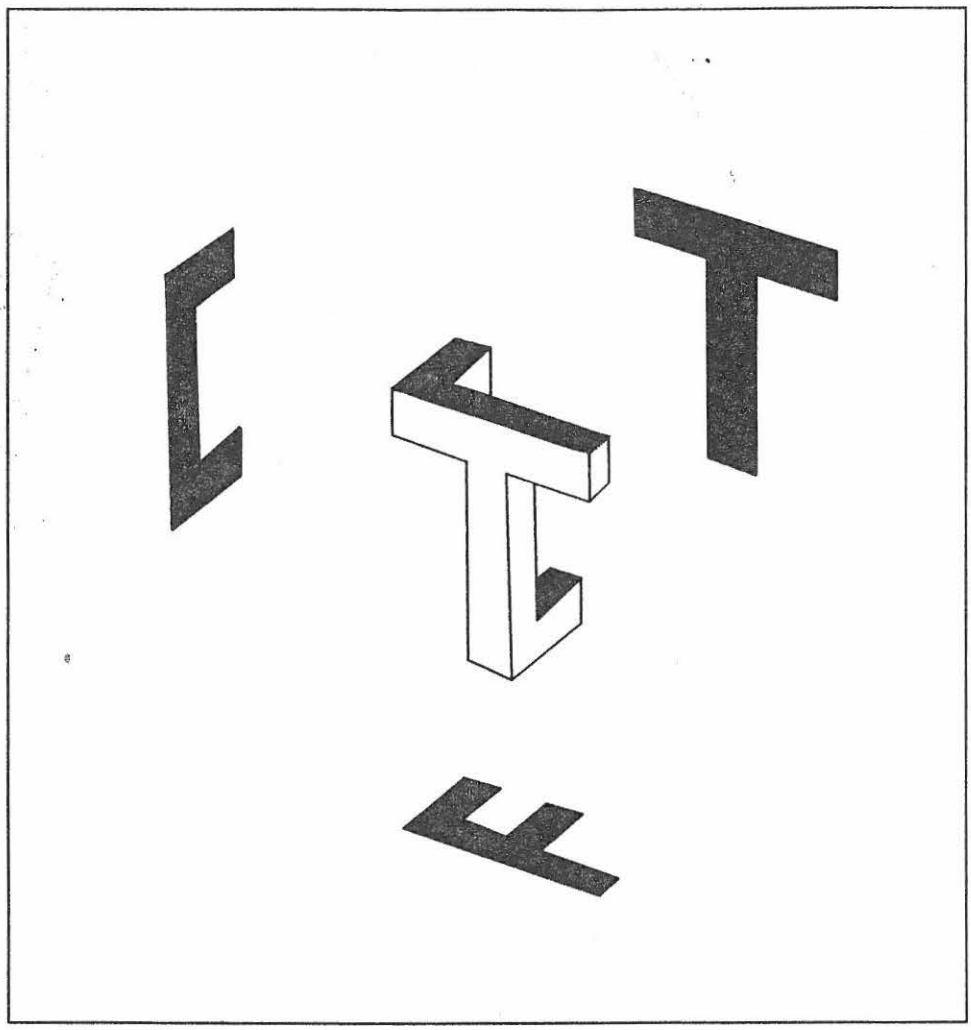

Figure 2.1 CFT triplet with shadows projected on three perpendicular walls surrounding the object. Source: Mishra and Nguyen-Jahiel (1998:10)

the man is sick and thumb up means he is well again" which points towards the formation of a context-orientated meaning based on a broad interpretation of the verbal anchors "yes" and "no".

The results suggest that the pictorial symbols were interpreted as "verbal" in the literate group because the intended meaning of the symbols was clear and predictable to most literate patients, presumably due to their ability to read and understand the accompanying written text. On the other hand, the inability of most members of the illiterate group to decipher the adjacent verbal text meant that the intended meaning of the symbols was unclear or redundant to them, and that the symbols were interpreted as "visual" in the sense that the viewers attached a new or unique meaning to them.

The results obtained are in agreement with health education design guidelines for developing communities suggested by Boeren (1994:113). He writes that:

> Because of their arbitrary meaning, visual symbols like letters, traffic signs, flags etc. should be avoided as much as possible. Visual-illiterates will take these signs at face value, i.e. give meaning to their visual qualities. An anti-smoking poster may depict a person smoking a cigarette which is partly covered by a fat red cross. To a pre-literate this may just be a messy drawing in which streaks of red paint partly obscure the scene.

In this regard, van Aswegen and Steyn (1987:81) pointed out, however, that a community may learn to interpret visual symbols inductively through repeated exposure, especially when the visual symbols are explained and discussed verbally in the initial receiving situation.

2.5 Scanning patterns

Ogasawara's (1998) above described approach, which concentrates on the type of meaning which the interpreter attaches to the perceived sign, appears to corroborate with Saint-Martin's (1990:xiv) view that visual language is essentially a language of space, in contrast to verbal language, which is essentially a language of abstraction. Saint-Martin (1990:xiv) refers to visual language as a language of space in the sense that in order to see a large visual field adequately, the viewer must "scan" the visual field, or effect several successive ocular fixations, which implies spatial relationships between those areas of the visual field which are perceived during a single centration of the eyes.*

Seen from this perspective, an Egyptian hieroglyph, for example, would be interpreted as a visual text when the viewer performs non-linear and unsystematic eye movements during the perception stage. However, when the same hieroglyph forms part of a text written in a hieroglyphic alphabet, someone able to read hieroglyphics would then scan the text as a whole in a linear, predictable way (i.e. following a predictable direction), and the hieroglyph in question would be classed as part of a verbal (or written) text.

The correlation with Ogasawara's (1998) approach is that to someone who is able to decipher a text written in hieroglyphs, the meaning of the text will be clear and the signs which comprise the text will form a predictable pattern, which is reflected in a predictable (or linear) scanning pattern. Conversely, to someone who is unable to decipher a text written in hieroglyphs, the text contains many potentially ambiguous or unclear signs, which may in turn relate to a non-

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* See Goldsmith (1984:271) for a review of eye movement studies by Buswell (1935); Wolf and Tira (1970) and Antes and Stone (1975); and discussions of attention and scanning issues by Levie (1987:4) and Molnar, (1997).

linear, unpredictable scanning pattern during the perception stage.

Even though the eye movement patterns in viewing a pictorial text may be regarded as unsystematic and unpredictable in relation to those of a written text, recent research suggests that:

- eye movements recorded during the perception of imagery are usually not entirely random, but tend to relate to the content of the visualised scene (Brandt and Stark, 1997). For example, in a text consisting of a discontinuous line of dots arranged in a s-shape the eye movements usually also follow an s-shape; and
- eye movement scanning patterns may be influenced by a large variety of external factors, as illustrated by Abed (1990), who found that mood music affects scanning patterns. For example, calm music correlated with a depressed level of eye movement activity and exciting music was associated with an elevated level of scanning activity.

2.6 Conclusion

To summarise, this chapter reviewed some difficulties with the early linguistically orientated theory that visual texts are comprised of iconic signs, whereas verbal texts consist of arbitrary signs - a theory which has been described as untenable by Eco (1990), Saint-Martin (1990) and Ogasawara (1998).

In contrast, there do not seem to be any areas of conflict between the redundancy theory based stance that the term "visual" refers to an unclear and unpredictable text whereas the term "verbal" refers to a predictable text with a clear meaning on the one hand and the view that scanning patterns differ between visual and verbal texts on the other hand.

A main thrust of the chapter is that "visual" and "verbal" may be regarded as flexible terms which rely on the nature and extent of the previous visual

experience in a particular target group, such as, for example, repeated exposure to a specific visual symbol, rather than on the type of (fixed) relation which exists between a sign and its referent.

In this regard, more visual literacy research is needed (1) to identify learnable visual literacy skills and (2) to identify teachable visual literacy skills (see Baca, 1990:70, and Braden, 1996:56 for a discussion of visual literacy research suggestions) so that the process which a particular target group undergoes in order to become familiar with a specific set of pictorial conventions may take place in a more systematic and meaningful way.

Chapter 3

Visual rhetoric

3.1 Introduction

In the context of a verbal text, rhetoric in the general sense refers to the use of language in such a manner as to impress the audience and to influence the hearers or readers for or against a certain course of action (Freese, 1975:11, in an introduction to Aristotle's "The 'art' of rhetoric"). In the context of a visual text, such as a photograph, video image or painting, rhetoric usually involves the intentional design of a visually persuasive structure, which is based on the visual interactions that may occur between the individual visual elements which comprise the image, as well as the rhetorical interactions which may take place between an image and its legend, surrounding text, soundtrack or other meta-pictorial code.

In this chapter, the persuasive structure of a visual message is examined in some detail. The chapter may be divided into four sections. These deal with (1) the definition and classification of visual elements (or visual sub-structures), (2) the various rhetorical relations and operations which may occur between visual elements, (3) the generation of advanced visual arguments and (4) a continuum of visual rhetorical articulation which is illustrated by means of examples.

3.2 The elements of a visual text

According to Eco (1990:36), the individual visual elements of a pictorial message

may be classed in terms of their configurational complexity. Eco suggests three categories. These are:

- visual figures
- visual signs
- visual semes.

Visual figures, such as dots, lines and other autonomous marks, are the least complex structural components of an image (Eco, 1990:36). As a general rule, visual figures are more easily recognised in chirographical (hand generated) than in mechanical (apparatus generated) images, because the former are built up from autonomous marks, whereas the visual elements of a mechanical image are usually generated simultaneously (Hård af Segerstad, 1984:217). The laws of perception which govern the viewing process of two or more visual elements (Gestalt laws), such as the laws of similarity, proximity, closure or continuity, mainly apply to visual figures (i.e. the less complex elements of an image) and are based on the observation that a figure-ground relationship exists between the visual element itself and its background (see, among others, Zakia, 1993:68; Bruce and Green, 1990:110; Pettersson, 1993:68; Barry, 1997:42; Hamlyn, 1994:37). The most pertinent perception laws have been summarised by Zakia (1993:68) as follows:

- the closer two or more visual elements that are similar in shape, colour and size are, the greater the probability that they will be seen as a group or pattern (the law of proximity)
- visual elements that are similar in shape, colour or size tend to be seen

as related (the law of similarity)

- visual elements that require the fewest number of interruptions will be grouped to form continuous straight or curved lines, such as a "line" consisting of closely spaced dots (the law of continuity)

When two or more autonomous marks (i.e. visual figures) are viewed in relation to one another, visual signs are created, such as the sun as a circle with radiating lines. More sophisticated visual signs (e.g. horse, wagon) are referred to as semes. Eco (1990:36) notes that semes are often also termed "images" or "iconic signs". A seme is the largest (most complex) visual element that an iconic code of a pictorial message may possess. It usually contains a visual phrase such as "horse standing in profile viewed from below".

The above described three categories (figures, signs, semes) are not 'watertight', but a continuum is envisaged ranging from autonomous marks which are distinct from the code of transmission of the image, such as the dots of a newspaper photograph, to complex semes which do not contain overt cultural connotations and are consequently not classed as an iconographic code, such as "Pegasus" or "the four horsemen of the Apocalypse" (Eco, 1990:37).

A drawback of Eco's classification of visual elements based on their configurational complexity is that colour and tonality are not accommodated, as is the case in Saint-Martin's concept of the coloreme. According to Saint-Martin (1990:5), a coloreme, or the basic unit of visual language, refers to a "zone of the visual linguistic field correlated to a centration of the eyes" and the term coloreme "corresponds to the percept that limits the regrouping of visual variables in the momentary unit of an ocular fixation" (1990:16). For example, even though a visual image such as a photograph may contain many visual components (colours, visual figures etc.), the viewer is usually only able to group some of

these components into one particular combination for the duration of an ocular fixation (or focus of the gaze). With regard to the role of colour, Saint-Martin (1990:8) writes that:

> ...the term 'coloreme', which underlies in its formation the importance of colour in visual reality, is used as a means of designating the minimal ensemble which regroups, together with the diverse qualities of colour, all the other visual components in every point of the visual field.

The theoretical basis for the coloreme as a basic unit of visual language is that a large expanse of the visual field cannot be perceived adequately by means of a single ocular fixation (also termed ocular centration, see Arnheim, 1971) and that in order to perceive a large visual field adequately, the viewer must "scan" the field, or effect several successive ocular fixations (Saint-Martin, 1988 and 1990:9).* As a coloreme refers to any coloured area of varying configurational complexity located on a visual plane which is perceived during a single ocular fixation (or which "is located at the termination point of an ocular fixation", Saint-Martin, 1990:6), two coloremes may never be perceived together (during a single centration), as is the case with visual figures, signs or semes.

For the purpose of this study, a confluence of the above-described two theoretical approaches by Eco (1990) and Saint-Martin (1990) respectively is suggested, whereby the visual elements which form the "building blocks" for visual rhetorical articulations (or for the persuasive structure of the image) may

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* See Clark (1996) for a discussion of three varieties of visual field, see also Section 2.5 in Chapter 2.

be defined as the visual ground, figure, sign or seme (of whatever colour or tonality) which the viewer of an image may perceive during a single ocular fixation.

According to Spoehr and Lehmkuhle (1982, in Lantz, 1996:33), the perception of individual elements in a visual text belongs to the first of two distinct phases of visual processing. During the first phase, which is very brief, the viewer usually becomes aware of visual figures (e.g. dots, lines), recognises objects, and forms initial emotional (or affective) impressions towards the image.

The second phase of visual processing (sometimes also termed the prolonged or caption directed phase of visual processing) is usually significantly longer in duration than the first phase and involves the discovery of relationships which stimulated visual interest, the linking of visual, verbal or auditory components of the message, and the formation of personal relevance which the image may have for the viewer (Lantz, 1996:35). The awareness of possible rhetorical relationships between the visual elements, which is discussed in the next section, thus belongs to the second phase of visual processing.

3.3 Rhetorical interactions between visual elements

Durand (in Burgin, 1990:70) defines rhetoric as *l'art de la parole feinte* (the art of fake speech) in the sense that figures of rhetoric may aim to persuade by means of mock transgressions of accepted norms and conventions (of language, logic, morals etc.). For example, with the rhetorical device of ellipsis in a literary context, the words needed to complete the construction or sense of a sentence are deliberately omitted.

Durand proceeds from the premise that literary figures of speech such as ellipsis have their visual equivalents. He identifies two dimensions of visual rhetorical interactions which may take place between the visual elements of an

image. The first dimension concerns the nature of the rhetorical operations and the second dimension deals with the relations between elements. These two dimensions of a visual rhetorical articulation roughly parallel the division of figures of rhetoric into two classes termed "metabolas" (based on the substitution of one signifier by another) and "parataxes" (based on the modification of normally existing relationships between successive signs) suggested by Barthes (1971:48).

On the first dimension, Durand describes four distinct operations, namely addition, suppression, substitution and exchange. Burgin (1990:72) notes that these four operations are reducible to two fundamental ones (addition and suppression) because substitution is in essence suppression followed by addition (an element is suppressed in order to be replaced by another) and exchange is nothing more than reciprocal substitution.

On the second dimension, the rhetorical relations between two or more visual elements may be characterised by identity, similarity, opposition or difference. According to Durand, two visual elements are identical when every aspect of each element is the same. The elements are similar when at least one aspect is identical and other aspects are disparate. Further, two elements are opposed if they belong to a paradigm with limited terms (e.g. male/female) whereas two elements are different when they have nothing at all in common (they are uniquely other).

The above listed rhetorical relations are further divided into relations pertaining to the form and content of a visual element. Stroebel and Bruno (1995:323) point out that even though form and shape are sometimes used interchangeably, form refers to the three-dimensional nature of the subject matter depicted whereas shape concerns the outline only.

The content of a visual element on the other hand refers to the subject matter depicted. When two elements are the same in the content relation and

opposed in the form relation, or the same on the form relation and opposed on the content relation, false homologies are created which Durand terms 'paradox' and 'ambiguity' respectively.

Making use of the above explicated two dimensions, Durand compiled an inventory of possible visual rhetorical occurrences reproduced here with minor adaptations as Table 3.1 (definitions of the literary terms in Table 3.1 are placed in Appendix B).

As regards the implementation of the inventory, he writes that:

> ...the most original ideas, the most audacious advertisements, appear as transpositions of rhetorical figures which have been indexed over the course of numerous centuries. This is explained in that rhetoric is in sum a repertory of the various ways in which we can be "original". It is probable then that the creative process could be enriched and made easier if the creators would take account consciously of a system which they use intuitively (in Burgin, 1990:81).

It is pointed out that Durand refers to rhetorical figures only and does not mention rhetorical premises or rhetorical arguments, a distinction which has been made by Eco (1990:37). Eco holds that pictorial rhetorical figures may be analysed utilising literary norms (e.g. metaphor, rhyme), whereas visual rhetorical premises and arguments rely on connotations of emotion and taste on the part of the viewer in order to come into being. For example, an image of a woman and a man looking lovingly at an infant could connote "family" and may become the premise for a visual argument such as "a nice happy family is something to appreciate" (Eco, 1990:38). In other words, the fundamental rhetorical interactions as described by Durand (1970) may be regarded as the “building blocks” for the advanced visual

Table 3.1 Durand's inventory of visual rhetorical interactions (based on Burgin, 1990:75)

Relation between visual elements	Rhetorical operation*			
	A Addition	B Suppression	C Substitution	D Exchange
1. Identity	Repetition	Ellipsis	Hyperbole	Inversion
2. Similarity of form	Rhyme	N/A	Allusion	Hendiadys
3. Similarity of content	Simile	Circumlocution	Metaphor	Homology
4. Difference	Accumulation	Suspension	Metonymy	Asyndeton
5. Opposition of form	Zeugma	Dubitation	Periphrasis	Anacoluthon
6. Opposition of content	Antithesis	Reticence	Euphemism	Chiasmus
7. Ambiguity	Antanaclasis	Tautology	Pun	Antimetabola
8. Paradox	Paradox	Preterition	Antiphrasis	Antilogy

* Definitions of literary terms are placed in Appendix B.

premises and arguments which an image may generate.

Durand's theoretical framework for visual rhetorical interactions was formulated with print media advertising images in mind, which are usually classed as closed texts. As stated in the introduction of this dissertastion, by closed text is meant that a preferred reading is envisaged by the author(s) of the image, whereas in the case of an open text there are no "correct" or envisaged readings and the viewer is invited to contribute proactively towards shaping the meaning of the visual (Watson and Hill, 1993:135). An example of a closed text is a print media advertisement discussed by Burgin (1990:79), which depicts four identical photographs of a passenger car. Each image has a different caption (Family shopping car, Practical estate car, Luxury saloon, Overnight sleeper).

Burgin argues that the visual repetition becomes ambiguous by the application of differing captions, which results in antanaclasis, comparable to the literary equivalent whereby the same word is repeated with a different signification. An example would be "In thy youth learn some craft, that in thy old age thou mayest get thy living without craft" (Burgin, 1990:78). In the above advertisement, the rhetorical mechanism of antanaclasis is utilised in order to ensure that a preferred reading along the lines "this car is versatile" occurs.

For a further illustration of a closed text with overt rhetorical content, see Velders (1996), who elucidates the role of visual metaphor (the substitution of an element by another which is similar in form) in modern print media advertisements with reference to the well-known triad "The Charites". Even though Burgin (1990:79) illustrates Durand's approach by means of examples from print media advertisements, he holds that:

> Our recognition of a good advertising photograph has little to do with its efficacy in the service of a product. It is rather the recognition of that

> *organised richness of signification*, combined with a foregrounding of the device, which may lead us to make the attribution 'aesthetic' in relation to any message whatsoever, whether it be visual or verbal and regardless of its institutional context. It is therefore not to be supposed that rhetorical analysis is suited only to advertising images (my italics, Burgin, 1990:81).

A possible critique of Durand's framework would be that it is restricted to the manifest rhetorical content of a visual message and does not go into the contributions which the author and the viewer of an image make to the "reading" process. By this is meant that Durand focuses on the grammar of visual rhetorical articulation, but does not explicitly state the roles which the persuasive intentions of the author or the visual literacy and visual intelligence of the viewer play.

With regard to the persuasive intentions of the author, an action theory adapted for the study of artefacts (including visual art works) posited by Dipert (1993:38) may serve as a useful point of departure for an in-depth study of the contemplating states, intentions or actions surrounding a visual rhetorical articulation (see also Kress and van Leeuwen, 1996:154, regarding the various interactive meanings which may be generated between the producer and the viewer of a visual message).

Concerning the role of visual literacy and visual intelligence, a conceivable scenario in the context of this study is that the majority of advanced rhetorical articulations in a visual text may be "lost" due to low levels of visual literacy and visual intelligence on the part of the viewer. Visual literacy in the general sense refers to the "ability to understand and use images, including the ability to think,

learn and express oneself in terms of images" (Braden and Hortin, 1982:169).*

Visual intelligence, on the other hand, pertains to "a quality of mind developed to the point of critical perceptual awareness in visual communication" (Barry, 1997:6). Whereas both visual literacy and visual intelligence emphasise competence in a visual context (e.g. the competence to perceive image content accurately, or the competence to express a simple idea making use of visual images). Visual intelligence as defined by Barry (1997:6) also stresses the skilled use of reasoning to achieve critical awareness of the potential wider implications which an image may have in a particular setting, such as awareness of the broad social implications which a visually persuasive health education pamphlet based on western medicine may have in a rural developing community, which may prefer traditional methods of health care.

3.4 Advanced visual arguments

In the previous section it was briefly indicated that, according to Eco (1990:38), visual rhetorical codes may be divided into three categories. These are:

- visual rhetorical figures
- visual rhetorical premises
- visual rhetorical arguments.

Eco (1990:38) holds that visual rhetorical figures rely on literary norms (such as metaphor, rhyme or any of the rhetorical interactions listed in Durand's inventory, see Table 3.1). Visual rhetorical premises on the other hand require connotations

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* See also Braden (1996:13) Baca (1990:65) and Messaris (1994a).

of emotion and taste on the part of the viewer to come into being. For example, the image of a man walking into the distance along a tree-lined road may connote "loneliness" and form the premise for a visual argument along the lines "Isolating oneself subconsciously from others causes loneliness". Concerning visual rhetorical arguments, Eco writes that:

> These are true syntagmatic concatenations imbued with argumentative capacity. They are encountered in the course of film editing so that the succession / opposition between different frames communicates certain complex assertions. For example, 'the character X arrives at the scene of the crime and looks at the corpse suspiciously - he must either be the guilty party, or at least someone who is to gain by the murder (Eco, 1990:38).

Even though it remains a topic of debate whether the term "argument" should be extended beyond its literary meaning to include pictures*, Messaris (1994a:33) provides an overview of three broad categories of formal devices commonly used by producers and directors to "argue a point" and to manipulate the viewer's response to a visual text. These are paraproxemics, false continuity and associational juxtaposition.

3.4.1 Paraproxemics

The term "paraproxemic" refers to camerawork which is based on proxemics (Meyrowitz, 1986; see also Galan, 1986). The study of proxemics (also referred to as spatial communication) focuses on the way people approach others or keep

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* See Fleming (1996); Blair (1996); Shelley (1996), Birdsell and Groarke (1996).

their distance and the role which space may play as a dimension of non-verbal communication (Watson and Hill, 1993:152). For example, an "intimate" distance between two people (from contact to about 10 centimetres) is usually associated with trust and the ability to express emotion physically, whereas strangers who have just met tend to maintain a "social" distance of about 1-4 meters (Barry, 1997:115).

With paraproxemics, the camera position and focal length of the lens are chosen in such a way that proxemic principles play an important role in the persuasive intentions of the visual communicator. For example, the sense of intimacy which an audience may experience towards an on-screen character may be amplified if that character is continuously imaged close-up (e.g. the face fills the frame) in contrast to other characters who are consistently depicted from a distance (e.g. the whole body fills the frame).

3.4.2 False continuity

False continuity may be defined as an editing technique which involves presenting two or more images which were taken in widely different and unrelated contexts in such a way that the viewer "reads" them as part of a coherent narrative. For example, the technique of false continuity may be employed to obtain "reaction shots".* With televised reaction shots, an image of an opponent is inserted while a candidate delivers a speech, thus creating the illusion that the facial expression of the opponent was in reaction to the words of the candidate, even though this was not necessarily the case in real life. Messaris (1994a:35) notes that reaction shots based on false continuity may also create the impression in an audience that there is an elevated level of

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* See Messaris *et al.* (1979); Morello (1988a, 1988b); Tiemens *et al.* (1985).

confrontation between two speakers even though in reality this is not necessarily the case.

3.4.3 Associational juxtaposition

Associational juxtaposition refers to a visual device which aims to create an association in the viewer's mind between two concepts through the intentional pairing of images. For example, a presidential candidate may be depicted against a national flag with the intention of generating a visual argument such as "this candidate would be a source of national pride if elected as president", whereby an association between the concepts of "national pride" and "the correct choice of presidential candidate" is created through the associational juxtapositioning of the two images (flag and candidate).

Associational juxtapositioning is extensively used in print media advertising where advertisers aim to create an association between a product and an image it is paired with. For example, an advertisement may depict a background image of a young man and woman eyeing each other seductively together with a foreground image of a product (such as whisky, diamonds etc.). As noted by Stout (1984 in Messaris, 1994a:37), the theoretical model on which the use of associational juxtapositioning in advertising is based, is that of Pavlovian conditioning, whereby an artificially induced response to a pictorial stimulus may be achieved. For example, the subjects who participated in studies by Rachman (1966) and Rachman and Hodgson (1968) were "turned into boot fetishists through repeated exposure to sexual images paired with pictures of boots" (Messaris, 1994a:37).

The above described persuasive devices of paraproxemics, false continuity and associational juxtapositioning, as well as all other forms of visual rhetorical

articulation discussed thus far, may be employed to generate both non-ideological and ideological visually persuasive texts. Even though the definition of ideology is not a straight-forward matter*, an approach to ideological discourse would be:

> ... a mode of argument that, while using probable premises and considering only a partial section of a given semantic field, pretends to develop a 'true' argument, thus covering up the contradictory nature of the Global Semantic System and presenting its own point of view as the only possible conclusion (whether this attitude is deliberately and cynically adopted by a sender in order to deceive a naive addressee, or whether the sender is simply the victim of his own one-sidedness) (Eco, 1979:278).

According to Eco (1979:277), both ideological (or disguised) and non-ideological (or open) rhetorical articulations may occur in three rhetorical categories (*inventio, dispositio, elocutio*), which are summarised in Figure 3.1. The categories may be defined as follows:

- *inventio* refers to the choice of persuasive subject matter
- *dispositio* concerns the way in which the subject matter is arranged and how enthymemes (i.e. syllogisms based on probable premises

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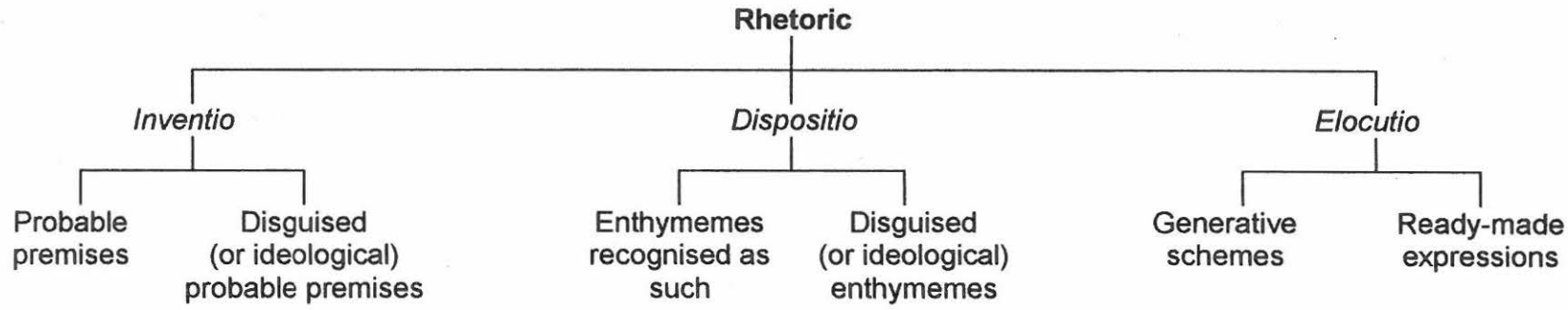
* See Watson and Hill (1993:89); O'Sullivan *et al.* (1994:139), see also Kaftandjiev and Stoyanova (1998) for an analysis of the ideological dimension of political cartoons.

Figure 3.1. Overview of rhetorical categories (based on Eco 1979:277)



- which aim to emotionally and pragmatically influence the recipient) are structured within the persuasive text
- e*locutio* refers to the way in which the persuasive subject matter is articulated or "delivered" to the recipient, which may involve the utilisation of existing (i.e. ready-made) expressions or the generation of new or unique modes of expression.

The above rhetorical categories can be of value to visual communicators during the production stage of a visual material, in the sense that, similar to Durand's inventory, "the creative process could be enriched and made easier if the creators would take account consciously of a system which they use intuitively" (Burgin, 1990:81).

With regard to the recipient of a visual message, Messaris (1994b:181) has argued that a recipient's awareness of both ideological or non-ideological persuasive strategies in a visual text may be regarded as a critical component of visual literacy. With reference to Brown (1991), Lewis (1992) and Gomery (1993) he writes that:

> ...the scope of visual literacy studies has been broadened to include an additional, relatively distinct issue, namely the possibility that visual literacy may be a means of counteracting the influence of visual media on their viewers. More specifically, it has been argued that an understanding of how visual communication works - how visual conventions are used to create meaning and to elicit responses from viewers - may make a person better able to resist the power of television and other visual media... In short, this formulation sees visual literacy as a means of defence against visual manipulation (Messaris, 1994a:181).

3.5 A continuum of visual rhetorical articulation

In an attempt to summarise the above reviewed literature, a continuum of visual rhetorical articulation may be formulated. The intention with the continuum is to provide an overview of the various degrees of rhetorical articulation which a visual text may contain. The continuum comprises three main regions, which are summarised in Table 3.2. These are:

- the lower region (rudimentary rhetorical articulations)
- the middle region (moderate rhetorical articulations)
- the upper region (advanced rhetorical articulations).

3.5.1 Rudimentary articulations

On the lower region of the continuum, very few elements interact rhetorically and as a general rule the configurational complexity of these elements is low (i.e. the visual elements which interact rhetorically are mainly comprised of visual figures and a limited number of visual signs). The depiction of subject matter is often monochrome, resulting in an absence of rhetorical interactions based on colour, such as the visual euphemism which may be generated when an element is substituted by a second element of opposed colour (e.g. a yellow element is substituted by a blue element, whereby yellow and blue belong to opposed chromatic poles, see Saint-Martin, 1990:32). On the lower region, rhetorical articulation is restricted to visual rhetorical figures which do not give rise to advanced visual premises or arguments. In addition, a central feature of rhetorical articulations on the lower end of the continuum is that the relations and operations between elements are as a general rule inherent to the subject matter depicted, in contrast to visual interactions which have been intentionally induced

by the creator of the image by means of the creative controls which the medium of articulation offers. For example, in a well-known image entitled "Identical twins" by the photographer Diane Arbus (Arbus, 1990:35), the visual repetition of identical visual elements (two identical twin girls imaged against a plain background utilising straight documentary technique) is based on the inherent attributes of the subject matter, even though the photographer could have employed photographic creative controls, such as double exposure or selective focus, to generate additional rhetorical articulations.

3.5.2 Moderate articulations

The middle region comprises rhetorical articulations based primarily on elements of a higher configurational complexity than those found on the lower region of the continuum. On this region, visual elements which interact rhetorically thus mainly consist of visual figures and signs, with a limited number of semes. Even though the subject matter may be imaged in monochrome or colour, the rhetorical interactions based on colour are restricted to rudimentary additions or oppositions, such as an environmental portrait depicting the person in realistic colour with the surrounding room in which (s)he is sitting rendered in monochrome. On the middle region, rhetorical articulations are designed to generate rhetorical figures and premises, whereas the intentional construction of visual arguments is excluded. Even though the rhetorical articulations may be either inherent to the subject matter depicted (as is the case on the lower region) or intentionally induced by the author of the image, the rhetorical utilisation of creative controls is limited to common pictorial conventions (e.g. selective focus, distortion of verticals in a photograph), whereas the rhetorical use of unique or unconventional pictorial controls belongs on the upper region of the continuum. An example of an unconventional pictorial control would be a photogram

produced by placing translucent leaves on the print surface while enlarging a negative of a still-life containing leaves.

3.5.3 Advanced articulations

On the upper region of the continuum, numerous diverse visual rhetorical interactions occur between elements, the majority of which are structurally complex (i.e. the visual elements which interact rhetorically mainly consist of semes). The subject matter is as a general rule depicted in realistic or unrealistic colour, giving rise to advanced rhetorical interactions between colours. On the upper region, rhetorical figures, premises and arguments are generated and the viewer is stimulated or "led" to attach connotations to rhetorical figures and premises. The rhetorical articulations are mainly based on unique or unconventional applications of the creative controls of the medium in which the visual message is articulated, as opposed to rhetorical interactions which are inherent to the subject matter depicted.

As stated in the introduction of this chapter, visual rhetoric not only involves the intentional design of a visually persuasive structure which is based on the visual interactions that may occur between the individual visual elements that comprise the image, but also covers rhetorical interactions which may take place between an image and its legend, surrounding text, soundtrack or other meta-pictorial code.

On the lower region of the continuum of visual rhetorical articulation, no (rhetorical) interaction between the pictorial code and an accompanying meta-pictorial code takes place. On the middle region, some association may exist between the pictorial and meta-pictorial codes, even though there is no overt rhetorical relationship between the two. For example, an image of a deserted city

Table 3.2 Summary of the main regions of a rhetorical continuum for closed visual texts

Item	A. Lower region (rudimentary articulations)	B. Middle region (moderate articulations)	C. Upper region (advanced articulations)
1. **Configurational complexity of visual elements which interact rhetorically**	visual figures, limited number of signs	visual figures, signs, limited number of semes	visual figures, signs, unlimited number of semes
2. **Level at which visual rhetoric is interpreted**	visual rhetorical figures	visual rhetorical figures and basic visual premises	visual rhetorical figures, premises and arguments
3. **Role of the creative controls of the medium of expression**	visual interactions are not based on pictorial controls but are inherent to the subject matter	visual interactions are inherent to the subject matter and/or are based on common pictorial controls (i.e. ready-made expressions)	visual interactions are inherent to the subject matter and/or are based on either common or unique pictorial controls (i.e. either ready-made expessions or generative schemes)
4. **Level of rhetorical interaction between pictorial and meta-pictorial codes**	no interactions between pictorial and meta-pictorial code	no overt or intentional interactions, but an association between the pictorial and meta-pictorial code may be evident	overt or intentional rhetorical interactions between pictorial and meta-pictorial codes

(pictorial code) may be presented together with haunting music (meta-pictorial code) in which case there is an association between the two codes in the sense that both connote the same mood, even though no overt rhetorical relation exists between the two codes.

In contrast, on the upper region of the continuum, the rhetorical interaction between the pictorial and meta-pictorial codes is overt and intentional. An example would be a billboard advertisement for a radio talk show whereby the billboard is partially covered with a canvas and the written text on the billboard reads "We leave nothing uncovered".

3.5.4 Discussion of examples

The above described continuum of visual rhetorical articulation may be illustrated by means of examples. The images chosen for this purpose are two tracings of South African Rock Art (Figures 3.2 and 3.3) and one health education pamphlet (Figure 3.4). The main aspects of the rhetorical content of the images may be summarised as follows:

Figure 3.2 depicts a tracing of positive hand prints on a cave wall (i.e. paint was applied to the hand which was then pressed against the rock surface). The hand print at the top of Figure 3.2 is plain (or undecorated) whereas the hand prints at the bottom left were made by first applying paint to the hand an then scraping U-shaped lines on the hand surface before pressing it against the cave wall. In the case of the lower right hand print, the U-shapes were either painted on the palm surface before pressing it against the rock wall, or they were scraped off the rock surface (i.e. decorating a positive palm print). The common interpretation of the U-shapes is that they are depictions of entoptic phenomena or entoptics. As mentioned in Chapter 2, entoptics are luminous geometric shapes such as dots, grids or U-shapes (i.e. visual figures in Eco's terminology,

1990:36) which are "seen" in the first stage of a shaman trance (or altered state of consciousness).

The rhetorical content of Figure 3.2 includes two types of visual rhyme (A2 in Table 3.1). The first type is based on an addition of visual signs (i.e. hands) which are similar in form and the second type is based on an addition of visual figures (i.e. U-shapes) which are similar in form. The addition of hand prints results in visual simile (A3), and the opposition of positive and negative U-shapes (especially between the lower left and lower right hand prints) is a visual zeugma (A5). As the configurational complexity of the visual elements which interact rhetorically is restricted to visual figures and signs, this aspect of the rhetorical content is classed on the lower region of the continuum.

Concerning the level at which the visual rhetoric in Figure 3.2 may be interpreted, Lewis-Williams and Dowson (1989:108) note that the connotations "healing" and "potency" may be attached to the hand prints as the shamans cured by laying on of hands and drawing sickness out of the patient and into their own bodies during a trance dance. Such connotations are reinforced by the entoptic phenomena drawn on the palm surface. The hand prints in Figure 3.2 thus contain rhetorical figures (simile, rhyme and zeugma) as well as a visual premise along the lines "healing by laying on of hands". Consequently, this aspect of the rhetorical content belongs to the middle region of the continuum.

With regard to the role of the creative controls of the medium of expression, the rhetorical interactions between hand prints and U-shapes in Figure 3.2 have been induced by the creator(s) of the image and are not inherent to the subject matter depicted. As the creative controls in Figure 3.2 are not considered to be overtly uncommon, this aspect of the rhetorical content is classed on the middle region of the continuum.

In contrast to Figure 3.2, the rhetorical content of Figures 3.3 and 3.4 are

complex. The image in Figure 3.3 is a tracing of a therianthrope, i.e. a depiction of blended human and animal features, often based on what shamans experienced during a very deep stage of the trance experience (Lewis-Williams and Dowson, 1989:68). The image contains numerous rhetorical relations and operations between the individual visual elements, which consist of visual figures, signs and semes. Due to the advanced configurational complexity of the visual elements, this component of the rhetorical content belongs to the upper region of the continuum. Some examples of the rhetorical interactions are the substitution of a human head with an antelope head (C 5-7 in Table 3.1), or the opposition of content generated by the depiction of one "hand" as human and the other as a hoof (A6) in the sense that 'human' and 'animal' are concepts belonging to a limited paradigm.

As the numerous visual rhetorical figures of the therianthrope are fertile ground for the generation of visual premises and visual arguments, this aspect of the rhetorical content of Figure 3.3 is also designated to the upper region of the continuum. For example, the lines from the nose of the therianthrope are generally interpreted as trance blood (i.e. a depiction of nosebleed during a trance state), which may give rise to the visual premise "injury" or "harm" and the subsequent formation of a visual argument along the lines "the trance state is not for the faint-hearted".

Similar to Figure 3.2, the rhetorical interactions in Figure 3.3 are not inherent to the subject matter depicted but have been intentionally designed by the author(s) of the image. The pictorial controls utilised in Figure 3.3 are not regarded as unique of unconventional, and consequently this component of the rhetorical content belongs to the middle region of the continuum.

In contrast to Figure 3.2 and Figure 3.3, Figure 3.4 is presented together with a meta-pictorial code in the form of the written caption "Not all spots are

Figure 3.2 Tracing of decorated positive palm prints

Source: Lewis-Williams and Dowson (1989:109)

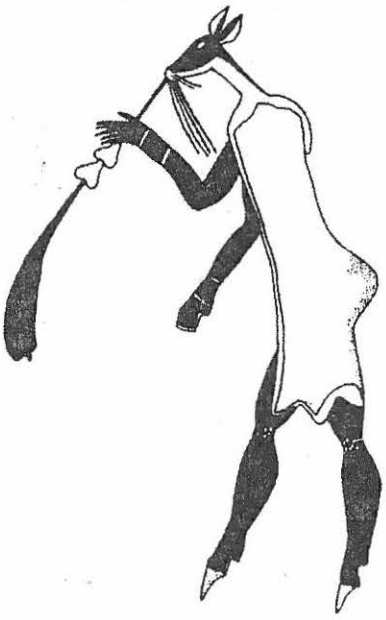
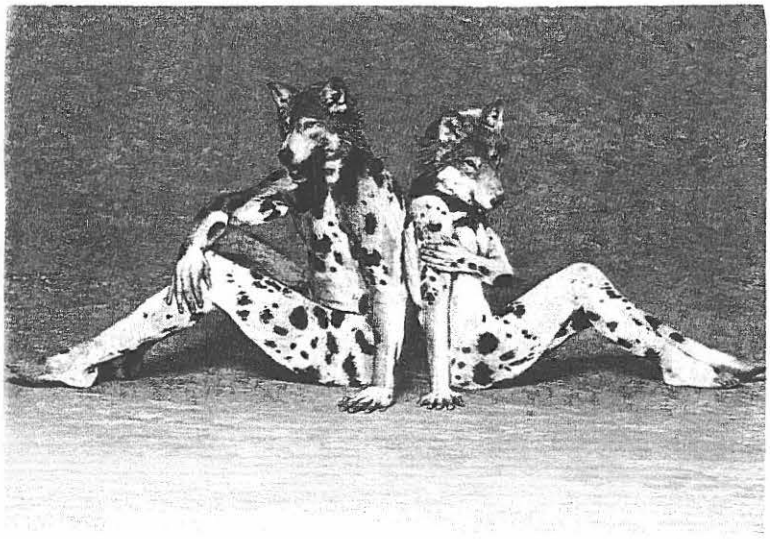


Figure 3.3 Tracing of theriantrope

Source: Lewis-Williams and Dowson (1989:78)



NOT ALL SPOTS ... ARE FRIENDLY!

WHAT WE ALL SHOULD KNOW ABOUT SAFEGUARDING OUR SKIN

SKIN AWARENESS
SCHERING-PLOUGH

Figure 3.4 Health education pamphlet with overt rhetorical content

friendly". As there is an overt, intentional rhetorical interaction between the pictorial code (i.e. therianthropic human models with the heads of wolves and spots usually associated with wild, dangerous animals) and the accompanying caption, this aspect of Figure 3.4 is placed on the upper region of the continuum. By an overt rhetorical interaction between the image and its caption is meant that the pamphlet contains a pun (C7 in Table 3.1) which is based on an potentially ambiguous substitution of the concept "spots" between the pictorial and meta-pictorial codes.

3.6 Conclusion

To summarise, it has been posited in this chapter that the rhetorical content of a closed visual text may be classed along a continuum of visual rhetorical articulation which may range from rudimentary interactions between structurally unsophisticated visual elements on the one hand, to the generation of advanced visual arguments based on seemingly endless cross-references between the visual elements on the other hand (on the upper region of the continuum rhetorical interactions may also occur between the visual elements and an accompanying meta-pictorial code such as a caption).

Even though in this chapter the emphasis has been on the various rhetorical articulations which a closed visual text may contain, it was briefly mentioned that the dominant levels of visual literacy and visual intelligence in a target audience play an important role in the overall process of rhetorical communication.

In this regard, a challenge for communicators lies in designing the rhetorical content of a visual message in such a way that it is tailored for the overall levels of visual rhetorical literacy in a specific target group in order to avoid the potential pitfalls that (1) the recipients attach aberrant interpretations

(i.e. interpretations not intended by the sender) to the visual rhetoric, and that (2) the visual rhetoric lowers the ease with which the image is understood in the target group.

Some aspects of these potential pitfalls are discussed in the next chapter, which deals with the readability of a visual text in the context of development communication.

Chapter 4

The readability of a development visual

4.1 Introduction

The intention with this chapter is to focus on image readability in the context of print media development communication. The chapter may be divided into three parts. These cover (1) the concept of image readability, which is explained with reference to the BLIX analysis devised by Pettersson (1984, 1993) and the Picture Readability Index (PRI) developed by Lantz (1996), (2) a survey of pictorial design guidelines for a development communication context and (3) a readability checklist for development visuals (RCDV), the mechanics of which are illustrated by means of an example.

4.2 The readability of a visual text

In the context of a written text, readability in the general sense refers to the "ease of understanding or comprehension due to the style of writing" (Klare, 1963:1), whereas legibility concerns mainly typographic aspects such as font type, size and line spacing (see de Lange, 1993). A widely used readability index is by Flesch (in Sevrin and Tankard, 1988:74). Flesch's reading ease score (reader interest is scored separately) is based on the number of syllables per 100 words and the average number of words per sentence (i.e. a text with many syllables and long sentences is more difficult to read), and includes a table which provides the estimated level of education to which a given reading ease score corresponds. The application by Verwey *et al.* (1994:64) of the Flesch formula to

magazine advertisements with a health message, for example, showed that the advertisement text intended for a grass roots market with high levels of illiteracy in fact required a high level of education (an estimated 11-12 years of formal education). A slightly simpler alternative to the Flesch formula is the SMOG readability index which is based on the number of polysyllabic words per sentence in a sample of not more than 30 sentences (in SNAC, 1992).

4.2.1 Readability versus appropriateness

Even though the terms "readability" and "appropriateness" are at times used interchangeably in the context of a visual message, readability in the general sense concerns the ease with which the preferred meaning of a visual text is understood in a particular target group (Pettersson, 1993:159), whereas appropriateness usually refers to a concept broader than readability that may be defined as the overall effectiveness with which the communicative objective with a visual text is achieved in a specified setting (Hugo, 1997:8) With regard to the appropriateness of a visual message, Hugo (1996:8) cites Davies (1984) who writes that "In order to make an efficient an effective contribution media, like a key, must be shaped, cut, chipped, designed so that it exactly fits the situation".

Over and above the way in which the manifest content of an image has been designed, which may either facilitate or frustrate the ease with which the intended message with an image is conveyed, image readability also depends in part on the level visual literacy skills (or interpretational competencies) prevalent in the target group. With image appropriateness, on the other hand, the focus is more on the optimisation of broader communication issues such as the correct choice of medium or cost effectiveness. For example, when an adult, verbally illiterate target group is repeatedly exposed to a particular set of initially unknown visual symbols, the readability of the symbols is likely to improve with time as the

audience becomes familiar with them and learns their meaning inductively, especially when the visual message is augmented with verbal facilitation (Brouwer, 1995:25). In contrast, the appropriateness of the symbols would not necessarily increase together with the readability as the viewers may in time become bored or irritated with the symbols once their meaning is clear and obvious (i.e. the symbols are highly readable), in which case a set of more engaging (or stimulating) symbols would probably be more appropriate in order to ensure that the communicative objectives of the author(s) are reached as effectively as possible.

4.2.2 Pettersson's BLIX score

With regard to the readability of a visual text, the BLIX score devised by Pettersson (1984, 1993) is often utilised, especially for instructional visuals. BLIX is an acronym in Swedish for picture readability index. For Pettersson (1993:159), picture readability concerns "our total ability to interpret and understand a visual message in terms of our perception of the content, execution, and context of the visual". Two early versions of the BLIX test were based on 17 and 19 variables, which included material attributes, such as image size and external shape, formal attributes (e.g. image contrast, perspective), representational attributes (e.g. degree of realism, is the subject matter common or uncommon?) as well as the relationship between the legend and the image. The revised BLIX rating scheme consists of five questions. BLIX values always fall between 0 (a virtually incomprehensible picture) and 5 (a very comprehensible picture), depending on how many questions are answered with "yes" (each "yes" answer scores one point). The five questions (answered with either "yes" or "no") are:

1. a) Colour picture: The picture is executed in true-to-life colour.

   b) Black and white picture: The contrast and grey scale in the picture are clear.

2. The picture has a shape other than a square or a rectangle or covers an entire page.

3. The picture has a legend which is brief, easy to understand, and deals with the picture.

4. The picture is unambiguous and not too "artistic"*.

5. The picture has a dominant centre of interest at or near its optical centre and few details which can be regarded as distracting.

The BLIX analysis does not include a table on which the corresponding level of formal education is given, as is the case with the Flesch formula mentioned above. The reason for this is probably that visual literacy is not an autonomous subject in most school curricula. A further difficulty is that for the moment there is no widely accepted visual literacy test available (Avgerinou and Ericson, 1996, 1997).

A possible interpretation of the BLIX analysis is that the five questions aim to identify barriers or obstacles which are likely to hinder the viewer from successfully reading the visual. For example, in Question 3 it is posited amongst others that an image caption which does not have direct bearing on the subject matter depicted lowers the readability of an illustration. The rationale seems to be that the viewer cannot gain access to the intended meaning of the illustration due to a "barrier" created by the dissonant, incongruous contents of the visual

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* The extent to which a target audience experiences a visual image as "artistic" can be established through pre-testing.

image on the one hand and the caption on the other hand. The incongruity may then cause the viewer to become frustrated with the illustration and subsequently to abort the reading process. Incoherence between a visual image and its caption may of course also be an intentional strategy of expression, even though this is rarely the case with visuals meant to augment an instructional message. An example of intentional incoherence between an image and its caption would be a well-known work entitled *The key of dreams* by the Surrealist painter Magritte, which, according to Berger (1972:8), comments on "the always-present gap between words and seeing". The painting consists of four rectangular panels which each contain an image with an absurd, incompatible hand-written caption (an image of a horse with the caption "the door"; a clock with "the wind"; a jug with "the bird" and a suitcase with "the valise").

It would appear that Question 3 was formulated by Pettersson (1993:159) with illustrations in mind which are predominantly visual in content with some supporting verbal cues about the preferred meaning, because it is stated that the legend should be brief. On Wileman's verbo-visual typology of visual illustrations (Wileman, 1993:19), such images would be classed as Types V and VI. Wileman's typology aims to categorise visual teaching aids along a continuum ranging from illustrations consisting entirely of written text and text-related marks, such as dots used to break long sentences into separate items (Type I), to illustrations which are purely pictorial and contain no written text or symbols which emphasise certain areas of the image, such as an arrow or a star (Type VII). Wileman's (1993) verbo-visual continuum is summarised in Table 4.1.

A conceivable alternative to the BLIX analysis is an image readability index modelled on the Cloze procedure (in Sevrin and Tankard, 1988:82). The term derives from the word "closure", which denotes the human tendency to complete a familiar but incomplete pattern (Closure is a Gestalt law, see Zakia,

Table 4.1 Overview of Wileman's (1993) verbo-visual continuum

Type	Description of text
Type I	The text consists of written characters and words only, none of which are emphasised (e.g. bold type, coloured text)
Type II	The text consists of written characters and words, some of which may be emphasised (or highlighted) through typographic and layout technique (e.g. bold type, coloured background)
Type III	The text consists of written characters and words together with visual cues which closely relate to the meaning of the characters or words, such as a line drawing of a sun with the word 'sun' written in the centre.
Type IV	The visual and verbal components of the text are balanced, carrying equal semantic weight.
Type V	The text consists of a visual image with verbal cues which closely relate to the meaning of the image, such as a line drawing of a flower with verbal labels.
Type VI	The text consists of a visual image some parts of which are emphasised, such as an image of a flower with an arrow or a star highlighting a particular area.
Type VII	The text consists of visual images only and contains no written characters or words.

1993:71, see also Section 3.2 in Chapter 3). To establish the readability of a written text, some of the words (e.g. every fifth word) are replaced with a blank space and the reader is required to fill in the missing word. The easier it is for the reader to find the missing words, the higher the readability of the text. When applied to visual messages, such an approach to readability would imply that certain areas of the visual are blocked out and the viewer is asked to indicate what has been hidden. For example, the legend of a visual illustration may be blocked out. In the case of an illustration with a high readability, the viewer would easily comprehend the intended meaning of the visual in the absence of the caption whereas (s)he would struggle to make sense of an illustration which relies heavily on the text anchor (i.e. which has a low readability index).

4.2.3 Lantz's PRI score

According to Lantz (1996:31), the readability of a visual image refers to "the success of the image as defined by its objective or caption. Images can be readable in the sense that they inspire cognitive and affective processing. Photographs with low readability inspire reactions that do not go beyond initial first glance responses." Lantz developed a Picture Readability Index (PRI) for instructional visuals which is based on the theory that visual information processing consists of two phases (see Spoehr and Lehmkuhle, 1982). In the first phase, affective or emotional impressions towards the image are formed as the viewer scans the image with rapid eye fixations (or saccades). During the first (or affective) phase, the viewer may:

- become aware of basic forms
- become willing to explore the image as well as other material accompanying the image

- begin to speculate about why the image was created, and
- determine the value which the image has for the viewer personally.

Lantz (1996:34) notes that should there be dislike or indifference on the part of the viewer towards the image, the visual reading process is often terminated directly after the first phase.

In the second phase of visual processing, the viewer relates the data obtained during the first phase to existing knowledge structures or schemata and also creates new schemata around new information. During the second (or cognitive) phase, the viewer may:

- determine whether the caption relates to the image
- discover relations between visual elements which inspired visual interest, and
- decide whether the image is accomplishing its objective as defined (e.g. as defined in the legend if the viewer is able to read the legend).

Lantz's readability index involves displaying an image for a short duration and then asking the viewer to draw the basic forms perceived, followed by the completion of a questionnaire to assess affective perception of the image. Thereafter, the caption of the image is provided and the viewer completes a second questionnaire to assess cognitive perception of the image and its legend after prolonged exposure to the image. The affective phase questionnaire consists of 77 questions and the cognitive phase questionnaire contains 80 questions (a total of 157 questions). According to Lantz (1996:40), a high PRI score indicates that the image stimulates a high degree of visual processing

during both processing phases and is therefore very readable (for a specific viewer or viewer group), whereas a low PRI score suggests a low degree of visual processing (i.e. the image is not easily readable).

Regardless of the approach chosen to measure the readability of an illustration, the ease with which a visual can be read by a specified audience (i.e. by the target audience) depends not only on the attributes of the illustration itself, but also on the visual literacy and visual intelligence of the audience. As stated in the previous chapter, by visual literacy is meant the "ability to understand and use images, including the ability to think, learn and express oneself in terms of images" (Braden and Hortin, 1982:169),* and visual intelligence refers to "a quality of mind developed to the point of critical perceptual awareness in visual communication" (Barry, 1997:6).

The dominant levels of visual literacy and visual intelligence in an audience are important factors regarding the practical application of readability indices to visual illustrations, because an illustration which is very comprehensible in an audience with high levels of visual literacy and intelligence may be virtually incomprehensible in a visually naïve, illiterate and unintelligent audience. For example, a visually inexperienced viewer may not be able to recognise an object depicted as a monochrome line drawing due to the abstraction involved (Colle and Glass, 1986:162) or because of an overt difference in scale (such as a mosquito drawn A2 size). The same illustration, however, is unlikely to contain any significant readability barriers for a visually literate viewer, who would be able to read and understand it with ease.

* See also Braden (1996:13) and Baca (1990:65).

4.3 Main themes of development communication

As indicated in the previous section, the meaningful measurement of readability relies, among others, on taking audience-specific factors into account. These include the level of (verbal) illiteracy in the target audience, which has been described as a pervasive problem in development communication (Hugo and Skibbe, 1991:47; Colle and Glass, 1986:159; van Aswegen and Steyn, 1987:vii). Development communication in a broad sense refers to the design and implementation of an informative or instructional message intended to effect behavioural changes in a developing community. An example would be a health education pamphlet about the use of condoms to lower the risk of contracting sexually transmitted diseases. The test visuals produced for the purpose of the empirical study described in later chapters of this dissertation would also qualify as an example of development communication in the sense that they aim to instruct and educate the target group about Tuberculosis-related issues in an attempt to achieve behavioural changes in the communities where they are disseminated.

According to Servaes (1995:8), two main theoretical approaches to development communication have emerged. These are firstly the diffusion (or mechanistic) model and secondly the participatory (or organic) model.

4.3.1 The diffusion model

Stated briefly, in the diffusion model the modernisation of a society is seen to occur as a process of diffusion and adoption of innovation whereby "individuals move from a traditional way of life to a more complex, more technically developed and more rapidly changing way of life" (Servaes, 1995:9). The role of the communication media in the diffusion model is to disseminate information about an innovation (Rogers, 1962 in Boeren, 1994:18) and to persuade an audience to

undergo an attitude change (Rokeach, 1966:530) and subsequently to adopt the innovation.

4.3.2 The participatory model

In the case of the participatory model on the other hand, development communicators "listen and observe first, and then present draft messages (story boards, scripts, photographs) to the community to validate whether they conform to their needs and customs" (Mody, 1991:28). With regard to the participatory model, Servaes (1995:12) writes that "Experts and development workers respond rather than dictate, they choose what is relevant to the context in which they are working. The emphasis is on information exchange rather than on the persuasion in the diffusion model."

The relevance of these two approaches to the measurement of readability in a development communication context is that with the diffusion model, the ease with which the target audience will read a message is primarily envisaged by the communicator, whereas in the case of the participatory model, the communicator is able to receive input from the community about audience specific readability barriers or obstacles which a draft message may contain. Over and above audience input, however, the design of a visual illustration meant to enhance a development message may also be based on extant guidelines about pictorial conventions in development communication. Some of these guidelines are reviewed in the following sub-section.

4.4 Design guidelines for development communication visuals

Lent (1980:12) notes that the writings of Fuglesang (1973, 1975), Giltrow (1973, 1977,1978), Fussell and Haaland (1978), Cook (1978) and Jenkins (1978)

contain four key suggestions or guidelines for the design of a pictorial message intended for an audience with low levels of verbal and visual literacy. These four fundamental guidelines can also be found in Zimmerman and Perkin (1982), Colle and Glass (1986), van Aswegen and Steyn (1987), Folmer *et al* (1992), Boeren (1994) and Brouwer (1995). The guidelines concern the audience's familiarity with the subject matter depicted, the role of image detail, the realism of the depicted subject matter and the role of pictorial conventions.

4.4.1 Familiarity of the subject matter

The first guideline is that the subject matter depicted should be as familiar as possible to the target audience. Boeren (1994:104) illustrates the point by means of an example in Gürgen (1987:16), in which drawings meant to show a woman burning a pile of grass were designed and pre-tested in Rwanda. The first version of the illustration depicted two piles of grass, the one pile burning and a Rwandan woman bending over the second pile with a burning torch in her hand. The pre-tests showed that adding a pot over a fire with three stones (a common way of preparing food in Rwanda) in the corner of the picture significantly raised the comprehension of the image, as the familiar or "known" cooking fire helped the audience to understand that the object held by the woman was meant to represent a burning torch.

4.4.2 Image detail

The second guideline is that the visual illustration should not contain details which may distract from the main message of the illustration. Based on the results obtained during the evaluation of family planning educational materials in Nepalese communities, Zimmerman and Perkin (1982:132), for example, note that "it is better to show a family planning clinic set against a plain background

than against a city street. A crowded street will only detract from the message being conveyed" and that comprehension is generally higher when a whole person is portrayed, rather than a part of the body on its own. However, Zimmerman and Perkin (1982:132) concede that "while excessive, unnecessary detail interferes with message understanding, comprehension may also be reduced by excessive deletion of detail".

4.4.3 Accuracy and realism of the subject matter

The third guideline is that the depiction of the subject matter should be as accurate and as possible, such as the accurate rendition of hairstyle or dress and realistic lighting. The basic premise seems to be that improved object recognition occurs when the depicted subject matter is represented with a high degree of realism and accuracy of surface detail. By realism is meant that an attempt was made to minimise the difference in appearance between the real-life object as perceived in a real-life viewing situation on the one hand, and its pictorial representation on the other hand, as would be the case in an unmanipulated colour photograph. With reference to the "split-representational" style of representation found in Native American art, Messaris (1994a:58) stresses that object recognition is primarily based on the recognition of the underlying structure of an object (e.g. black stripes on a white coat is the underlying structure whereby we recognise a zebra, see Eco, 1990:35). Messaris (1994a:58) writes that:

> ...an image's lack of surface realism is not necessarily an interpretational obstacle for viewers with no prior exposure to the pictorial conventions according to which that image was constructed. Conversely, we would predict that inexperienced viewers should have trouble recognising a pictured object if the underlying structure implicit

in the picture is different from the structure of the equivalent real object.

The implication is that an object depicted with a high degree of realism will always contain sufficient visual information about the underlying or implicit structure of that object, thus enabling object recognition to occur effortlessly.

In addition, van Aswegen and Steyn (1987:76) mention that even though a depicted object might be realistically rendered and familiar to the target audience on the denotative level of meaning, a situation may arise whereby a large percentage of the viewers attach an implied or connotative meaning to the object, which then may impede the communication process. An example advanced by van Aswegen and Steyn (1987:76) is that in a visual illustration about oral health, a pineapple was shown in order to illustrate that the inclusion of fresh fruit in a diet promotes oral health. A significant proportion of the rural Swazi audience attached the connotation "brewing beer" to the pineapple, which altered the overall meaning of the visual. This could have been avoided had an alternative fruit, such as an apple, been used to convey the concept.

4.4.4 Pictorial conventions

The fourth guideline is that the overall style of presentation of a visual illustration should be as straight-forward as possible, thus avoiding unusual camera angles and complex pictorial conventions, such as arrows or speech bubbles. Colle and Glass (1986:160) hold that the majority of aberrant interpretations which a visual illustration may generate in a developing community can be grouped in five distinct categories. The five categories pertain to the pictorial conventions utilised:

- to create the illusion of depth
- to draw attention to specific details by means of arrows etc.
- to create the illusion of motion
- to indicate the unseen, such as an X-ray view, as well as
- pictorial conventions based on "symbolic" codes, such as a toilet sign or a no-smoking sign.

Colle and Glass (1986:160) recommend that special attention should be given to these five problem areas when a visual material is pretested in a sample of the target audience. With regard to the fifth item, for example, the convention to indicate something as incorrect by means of a cross (and as correct with a tick mark) is based on an arbitrary agreement with which audiences in western developed countries are familiar as a result of repeated exposure in a variety of contexts. In a poster intended for Egyptian peasants, these symbols were used to illustrate both the correct and incorrect way of fastening a rope to a cow. A large red cross (European school teachers traditionally correct with red ink) was drawn over the image depicting the incorrect method of fastening the rope. The target audience saw "two strange red ropes which meant nothing to them at all" (Brouwer, 1995:18).

4.4.5 Ranking of design guidelines

With specific reference to a South African setting, where the challenge for development communicators often lies in designing visual messages for audiences with diverse socio-cultural profiles, a recent study by Hugo (1996) aimed to prioritise health education message design guidelines based on the insights of both media producers and media users. The design of the study

involved the administration of structured questionnaires to a media producer group (65 media specialists consisting of educational technologists, medical illustrators, photographers, video producers etc.) and a media user group (45 dieticians who offer nutrition education in provincial health care centres) asking the respondents to indicate the relative importance of several design principles. Based on the responses of the two groups, which correlated strongly with each other, the following design principles were ranked as most important (the five most important principles are arranged in order of priority for five separate design categories):

Category 1: General design principles

1. The design or presentation must be simple enough to put the message across in a clear non-confusing manner.
2. Information overload must be avoided.
3. The presentation must stimulate and motivate the audience to learn.
4. The presentation or design must be relevant to the objectives of health promotion.
5. The presentation must be based on current knowledge and skills in the intended audience.

Category 2: Graphics and illustration design principles

1. Use simple diagrams to explain complex concepts.
2. Adapt technical aspects such as layout and colour to the format and capabilities of the medium.
3. Use graphic symbols that are familiar to the audience, unless their meanings are explained.
4. Use realistic and life-like colours.

5. Use a minimum of captions with graphics and illustrations.

Category 3: Text design principles

1. Factual information and spelling in the text must be accurate.
2. Use vocabulary that is familiar to the audience.
3. Structure information in a manner that is logical to the audience.
4. Summarise the main points.
5. Visualise text by means of clarifying illustrations, diagrams, graphs.

Category 4: Audio-visual programme design principles

1. The programme must capture and hold the attention of the audience.
2. Sound (commentary, music) must be clear and audible throughout.
3. Use a stimulating voice for reading commentary for visuals.
4. Avoid disturbing camera movements and interfering background objects.
5. Music and sound effects must not overpower the commentary.

Category 5: Culture-directed design principles

1. The lower the reading skills of the audience, the more simple the language.
2. The lower the literacy level of the audience, the more visuals must be used.
3. The lower the literacy level of the audience, the higher the pictorial realism required.
4. The lower the literacy level of the audience, the less details, complexity of design and speed of information.
5. Translate text into the most common local dialect.

4.5 A readability checklist for development visuals

In an attempt to summarise the above reviewed literature, a readability checklist for development visuals (RCDV) is formulated. The basic point of departure for the readability checklist discussed in this section is that the ease with which a development visual is read may be expressed in terms of the relative absence of readability barriers in a specific target audience. By this is meant that a visual illustration with many readability barriers is virtually incomprehensible, whereas an illustration without significant readability barriers is very comprehensible in a specific target group.

4.5.1 Dimensions of the readability checklist for development visuals

The readability checklist for development visuals comprises two dimensions. On the first dimension, three types of readability barriers are suggested. These are object recognition barriers, pictorial convention barriers as well as cultural and audience-specific barriers.

4.5.1.1 Object recognition barriers

Object recognition barriers refer to those aspects of a visual illustration's style of representation which may impair the viewers' ability to recognise or identify depicted objects. According to Eco (1990:35), the "codes of recognition" in visual communication are usually studied in the psychology of intelligence, memory and learning. Bruce and Green (1990:198) note that even though many theories of object recognition in the field of psychology stress that the recognition of objects occurs irrespective of viewpoint, Palmer *et al.* (1981:131) suggest that object recognition is usually optimised when a three-quarter (or canonical) viewpoint is chosen to depict an object. For example, a top view of a bucket conceals an important axis of elongation, whereas a three-quarter view of the same bucket

would allow recognition to take place effortlessly.

Over and above a poor choice of viewpoint, the clarity with which the implicit structure of an object is depicted in a visual illustration may be lowered in a number of ways. These include the unconsidered arrangement of objects in the image frame (e.g. a clear view of a bucket is blocked by a larger object placed in front of it), a high degree of magnification or "zooming in" (e.g. only a portion of the bucket's handle is shown, resulting in a partial, abstract rendition of the bucket as a whole) as well as other forms of pictorial abstraction (e.g. a high contrast line drawing of a continuous tone object, image distortion, unrealistic colour, excessive deletion of surface texture).

4.5.1.2 Pictorial convention barriers

Pictorial convention barriers concern the viewer's lack of familiarity with pictorial conventions or techniques utilised to convey visually concepts such as depth, motion or a cause-and-effect relationship. For example, the motion of an object, such as the motion of a bucket falling on a person's head, may be depicted by means of movement lines, a blur, arrows or multiple images. However, if the viewer is not familiar with any of these techniques to convey the concept of motion, (s)he will struggle to make sense of this aspect of the visual. As stated in the previous section, Colle and Glass (1986:162) identified five problem areas in which pictorial convention barriers are likely to occur (i.e. the depiction of depth and motion, drawing attention to specific details by means of arrows etc., illustrating the unseen such as an X-ray view, common symbols such as a toilet sign or a speech bubble).

4.5.1.3 Cultural and audience-specific barriers

Cultural and audience-specific barriers refer to those aspects of a visual

illustration that may cause interpretational difficulties because the dominant world view and patterns of thought of the target audience have not been taken into account by the author(s) of the illustration (Boeren, 1994:83). The dominant outlook of a target audience may be shaped by factors such as illiteracy (i.e. the inability to read and write with understanding a short simple sentence about everyday life, UNESCO, 1995:4), low levels of formal schooling, political or religious indoctrination, superstitions, or the desire to preserve cultural traditions. Even though the definition of culture is not a simple matter, two perspectives of culture are that:

> Culture is the deposit of knowledge, experiences, beliefs, values, attitudes, meanings, hierarchies, religion, timing, roles, spatial relations, concepts of the universe and material objects and possessions through individual and group striving (Samovar *et al*, 1981:24), and that:
>
> ... culture is a phenomenon whose content differs from community to community, generally because the living conditions of these societies differ. Consequently, each culture has to be analysed on the basis of its own 'logical' structure. Each culture operates out of its own logic (Servaes and Lie, 1996:4).

However, as pointed out by Steyn (1996:105) "Social reality is no longer conceived of as a structured whole, precisely understandable through theoretical inquiry, but rather as, instead, an amorphous globality comprised of a vast multiplicity of discrete localities 'articulated' and 'interarticulated' in irreducibly complex and constantly shifting ways with each other", which implies that the

more diverse cultures become with increased globalisation, the more value systems are available to people within a cultural group.*

An example of a cultural (or audience-specific) barrier in the context of print media development communication has been described by Boeren (1994:83), who reports on a community in which the belief is commonly held that if a pregnant woman eats fish her foetus will slip out. It should be self-evident that an instructional message which illustrates a young pregnant woman eating fish (e.g. to illustrate a healthy, balanced diet) is very likely to be "misread", or to give rise to unintended interpretations, in that specific audience.

In this regard, Mody (1991:55), Zimmerman and Perkin (1982), Linney (1985, 1995), Hugo (1994), Melkote (1995), van Heerden and de Lange (1998) argue that an audience participation-based approach to the design of a development message is the preferred strategy to avoid possible audience-specific barriers, especially when the cultural background of the communicator and the audience are not the same.

4.5.1.4 Denotative and connotative levels of meaning

On the second dimension of the RCDV, two levels of meaning are suggested (see Figure 4.1). The first level concerns the denotative (or literal) meaning of the subject matter depicted, whereas the second level of meaning refers to the implied meanings or connotations and personal associations which a viewer may attach to the subject matter (Barthes, 1973:89; Webster 1980:183; Hall, 1982:226, Pettersson, 1995:137, among others). Webster (1980:185) illustrates

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* For other definitions and inter-cultural communication issues (e.g. cultural imperialism) see Fourie (1982); Geertz (1983); Habermas (1983, 1990); Wagner (1993); Carbaugh (1988); Boeren (1994); Taylor (1996); Biltereyst (1996).

the distinction between the first and second levels of meaning with reference to a pig, which denotes an animal on the first level of meaning and may carry connotations such as "filthy" or "police" on the second level of meaning.

These two levels of meaning roughly parallel the two stages of visual processing suggested by Lantz (1996:33) that were dicussed earlier, in the sense that object recognition and a literal interpretation of the subject matter usually occur during the first (or affective) phase of image processing, and implied, connoted meanings are as a general rule generated during the prolonged second (or cognitive) phase. The two levels of meaning do not apply to object recognition barriers as these occur on the first level of meaning only. However, both pictorial convention barriers and audience-specific barriers may reduce readability on the basis of literal comprehension on the one hand and as a result of implied meanings as illustrated in the example at the end of this section (Figure 4.2).

4.5.2 Discussion of an example

The five categories of RCDV may be illustrated by means of an example drawn from a health education pamphlet distributed free of charge at urban and peri-urban Primary Health Care clinics to Xhosa speaking patients (Figures 4.2 and 4.3). The visual forms part of a pamphlet entitled "The tale of excitable Johnny and his raincoat" that advocates the use of condoms and contains a total of ten illustrations similar in style to Figure 4.2, which is an English version of the Xhosa original. The pamphlet is published by the Society for Family Health and the concept and design are by the AIDS Media Research Project and the SAPC Hot Love focus group. In the pamphlet, it is not stated why condom use is advisable except that "walking around without protection is bad for Johnny's health, so here are some tips to help you get him dressed in time". Throughout the pamphlet the

Figure 4.1 Readability Checklist for Development Visuals (RCDV)

Mark one shaded box per row only

		1. 1st Level of meaning (Denotations)		2. 2nd Level of meaning (Connotations etc.)	
A.	**Absence of <u>object recognition</u> barriers** Is the target audience able to recognise or identify depicted objects effortlessly?	Yes	No	N/A	
B.	**Absence of <u>pictorial convention</u> barriers** (a) Is the target audience familiar with the *literal* meaning of pictorial techniques used to depict depth, motion, something hidden (e.g. X-ray view) and common signs?	Yes	No	N/A	
	(b) Is the target audience familiar with the *figurative* meaning of pictorial techniques used to depict depth, motion, something hidden (e.g. X-ray view) and common signs?	N/A		Yes	No
C.	**Absence of <u>cultural and audience-specific</u> barriers** (a) Does the illustration take the dominant world view and thought patterns of the target audience into account on the *literal* level?	Yes	No	N/A	
	(b) Does the illustration take the dominant world view and thought patterns of the target audience into account on the *figurative* level?	N/A		Yes	No

Figure 4.2 Health education visual with AIDS theme

Figure 4.3 Envisaged RCDV for Figure 4.2

Mark one shaded box per row only

		1. 1st Level of meaning (Denotations)		2. 2nd Level of meaning (Connotations etc.)	
A.	**Absence of <u>object recognition</u> barriers** Is the target audience able to recognise or identify depicted objects effortlessly?	Yes	(No)	N/A	
B.	**Absence of <u>pictorial convention</u> barriers** (a) Is the target audience familiar with the *literal* meaning of pictorial techniques used to depict depth, motion, something hidden (e.g. X-ray view) and common signs?	(Yes)	No	N/A	
	(b) Is the target audience familiar with the *figurative* meaning of pictorial techniques used to depict depth, motion, something hidden (e.g. X-ray view) and common signs?	N/A		(Yes)	No
C.	**Absence of <u>cultural and audience-specific</u> barriers** (a) Does the illustration take the dominant world view and thought patterns of the target audience into account on the *literal* level?	Yes	(No)	N/A	
	(b) Does the illustration take the dominant world view and thought patterns of the target audience into account on the *figurative* level?	N/A		(Yes)	No

euphemisms "raincoat", "Johnny" and "love tunnel" are used as substitutions for condom, penis and vagina respectively. The illustration of RCDV categories in this section is restricted to a discussion of envisaged readability barriers, as Figure 4.2 was not pre-tested in a sample of the target audience. Nevertheless, for the purpose of clarification only, the following items were considered:

In the first category (A1), the envisaged answer to the question "Is the target audience able to recognise or identify depicted objects effortlessly?" would be "No", as in the visual an attempt was made to decrease the realism of the subject matter by means of comic technique, thus severely impairing object recognition. The subject matter only remotely mirrors the inherent structure of a real-life penis and vagina (e.g. a real-life vagina does not have hair on the inside) and the colours are not realistic. Even though a difficulty with a very realistic rendering of a penis and a vagina may be that such an illustration could cause offence and be considered obscene, a non-provocative and easily recognisable depiction of reproductive organs utilising comic technique is achievable. An example would be the direct yet inoffensive illustrations in a sex education book for young children by Mayle (1973).

In the second category (B), which deals with the envisaged absence of pictorial convention barriers on the literal (B1) and figurative (B2) levels of meaning, the movement lines used to depict the motion of the two hands and arms are unlikely to cause interpretational difficulties on the literal level. The answer "Yes" is thus suggested for Question B1. It is not clear, however, whether the arms are moving upwards and downwards or towards and away from the viewer, or both. On the second level of meaning in category B, the probability is low that the movement lines in Figure 4.2 will generate any overt connotations which could significantly alter the overall meaning of the illustration. The envisaged answer to Question B2 would thus be "Yes".

With regard to the third category (C), which concerns the absence of envisaged cultural and audience-specific barriers (i.e. the content and presentation of the illustration take the dominant world view and thought patterns of the target audience into account), an area of concern on the literal level of meaning (C1) is that in a South African Xhosa speaking audience, sex education may be lacking and a thorough knowledge of human reproductive biology cannot be assumed, especially amongst younger members of the target audience (i.e. Xhosa speaking persons approximately 12-18 years of age). In Figure 4.2, however, the viewer requires a prior knowledge of the normal functions which human reproductive organs perform in order to successfully interpret the comic technique utilised and to understand that the visual alludes to sexual intercourse. Consequently, the suggested answer to Question C1 would be "No". Concerning the figurative level of meaning (C2) , the lights decorating the entrance of the "love tunnel" may give rise to a connotation along the lines of "party" or "festivity" which is unlikely to cause a noteworthy change in the dominant meaning of the visual illustration. Accordingly, the answer "Yes" is suggested for Question C2.

4.6 Conclusion

It was suggested in this chapter that the readability of a visual text (i.e. the ease with which the intended message of a closed visual text is comprehended by the viewer) may be expressed in terms of the relative absence of (1) object recognition barriers (i.e. the target audience is able to recognise the depicted subject matter effortlessly), (2) pictorial convention barriers (i.e. the target audience is familiar with the pictorial techniques utilised) and (3) cultural and audience-specific barriers (the content and presentation of the visual illustration take the dominant world view and thought patterns of the target audience into account).

As mentioned in the introduction of this dissertation, a possible drawback of a development visual which is free from readability barriers and has a straight-forward, clear style of representation, is that the image may fail to maintain (or continually redraw) the attention of the viewer during the viewing process due to its lack of visual complexity. In this regard, Pettersson (1993:158) notes that should the five questions of the BLIX analysis be interpreted as guidelines for the production of a visual material, there remains "plenty of scope for individual creativity". In view thereof, it would appear that in development communication a balance is achievable whereby a visual illustration is easily readable (or comprehensible) on the one hand, and creative, engaging and visually stimulating on the other hand.

Chapter 5

Design of the empirical study

5.1 Introduction

Taking the theoretical basis outlined in Chapters 2-4 as a point of departure, an empirical study was conducted in close co-operation with the health service of the Bloemfontein Transitional Local Council (BTLC) in order to measure the semantic and pragmatic comprehension of visual rhetoric in a health education setting, where audience illiteracy is a pervasive problem. This chapter covers the design of the empirical study comprising (1) the research agreement reached with the BTLC, (2) a profile of the study population, (3) the design, production and refinement of the visual illustrations which were used as test material, (4) the design of the interview situation as well as (5) the statistical handling of the data. The majority of information supplied in this chapter is based on an informal research journal which was written on a daily basis in the course of the design, pilot and data collection phases of the empirical study.

5.2 Research agreement

The field work described in this chapter was conducted on the basis of an agreement reached with the Medical Officer of Health of the BTLC. In the agreement it was stipulated that in return for the permission to hold confidential, voluntary interviews in the Primary Health Care (PHC) clinics of the BTLC in the greater Bloemfontein area with the assistance and co-operation of clinic staff, three health education visuals were produced as test material taking the health

education needs and input from staff members of the BTLC health service into account. A set of the refined test visuals were then donated to the BTLC after the conclusion of the field work and a short report concerning the main findings of the research was submitted to the Medical Officer of Health. The agreement was ratified during an ordinary session of the BTLC in March 1998 (see correspondence in Appendix C, permission to proceed with the project was granted telephonically).

5.3 Study population

One of the reasons why the BTLC health service was approached with regard to field work towards this study, was that it serves adult patients (i.e. patients 21 years or older) from a wide variety of socio-economic backgrounds. In preliminary discussions with clinic sisters, it became clear that some PHC clinics are visited by mainly illiterate adult patients (e.g. Freedom Square clinic), whereas other clinics serve mostly literate, well educated patients (e.g. Batho clinic, see Figure 5.1 for an overview of the geographic locations of the five clinics in which interviews were conducted, namely Batho, Thusong (often called Rocklands clinic), Bloemspruit, Freedom Square and Kagisanong clinics). This meant that the study population could easily be divided into two groups, the one group consisting of literate patients and the other comprising illiterate patients.

5.3.1 Handling of the literacy-illiteracy dichotomy

As stated in the introduction of this dissertation, a key methodological challenge encountered in the course of the empirical study was to find an appropriate way of translating the (theoretical) literacy-illiteracy dichotomy into convenient operational terms. Literacy in the general sense may be defined as the inability to read and write with understanding a short, simple sentence about everyday life

(UNESCO, 1995:4). With regard to the definition of literacy, Wagner (1993:9), who conducted extensive literacy research in Morocco, notes that "most specialists agree that the term [literacy] connotes aspects of reading and writing, but major debates continue to rage about what specific abilities or knowledge count as literacy and what levels to employ for measurement" (see also Venezky *et al*, 1990). Wagner (1993:260) suggests four main levels of literacy skill (see also United Nations, 1989; Wagner, 1990). The four levels are:

- non-literate, for a person who cannot read a text with understanding, write a short text in a significant national language, recognize words on signs and documents in everyday contexts or perform specific tasks such as signing her/his name and recognizing the meaning of public signs.
- low-literate, for a person who cannot read a text with understanding or write a short text in a significant national language, but who can recognize words on signs and documents in everyday contexts, or perform such specific tasks as signing her/his name or recognizing the meaning of public signs.
- moderate-literate, for a person who can, with some difficulty (i.e. making numerous errors), read a text with understanding and write a short text in a significant national language, and
- high-literate, for a person who can, with little difficulty (i.e. making few errors), read a text with understanding and write a short text in a significant national language.

For the purpose of this study, the stance was adopted that the literacy level of a

clinic patient closely relates to her/his level of formal education, an approach which is in step with related studies in the field of health education (see, for example, Hugo and Skibbe, 1991, Medical Research Council, 1988) and in the field of education and cognitive psychology (see, for example, Moll, 1994; Cole, 1990; Tulviste, 1991). The Literacy Training Officer of the BTLC, Mr. Marais, who was informally consulted about the appropriate formulation of literacy criteria, also felt that criteria based on years of formal schooling presented a practical, reliable way of grouping the clinic patients according to literacy level. During the initial stages of the research, clinic patients were classed according to the following (provisional) literacy criteria:

- Adult clinic patients who claimed a formal education of twelve years or higher were classed as literate (i.e. high-literate), whereas
- adult clinic patients with a claimed level of formal education of six years or less were classed as illiterate (i.e. non-literate to low-literate).

As it soon became apparent during the pilot work (i.e. an initial set of 30 interviews (15 in the literate group and 15 in the illiterate group) aimed at refining the test visuals, questionnaires and other aspects of the measurement mechanism) that clinic patients with low levels of formal education tended to claim a higher level of formal education than was actually the case, a control question was introduced whereby the patient was asked during the interview to read the full text of an acronym out loud to the interviewer (Question 8 in Figure 5.5 referring to the acronym DOTS that stands for Directly Observed Treatment Short Course in Poster C). This meant that the initial literacy criteria were revised to read as follows:

- Adult clinic patients who claimed a formal education of twelve years or more and who were able to read the full text of the acronym were classed as literate, whereas
- adult clinic patients who claimed a formal education of six years or less and who were unable to read the full text of the acronym were classed as illiterate.

During the data collection phase of the study, some clinic patients would initially claim a formal educational level of eight to ten years, but on being informed by the research assistant that the study was restricted to patients with six years of schooling or less and twelve years of schooling or higher, the patient would openly admit that she/he had lied and that the actual level of schooling was below six years. As a general rule, such patients then also failed to answer the control question (Question 8) correctly.

5.3.2 Profile of the study population

The study population, which consisted of mainly Sesotho speaking female adults, comprised 150 literate and 150 illiterate patients (i.e. a total of 300 patients, see Table 5.3 for an overview of the frequency of patients per clinic). Even though a larger study population was envisaged during the planning phase of the study, the decision to restrict each of the two groups to 150 patients was made taking sample size considerations suggested by Mason *et al* (1989:632) as a guideline. The sample frequencies by sex and home language and the mean ages by sex and literacy group of the study population are given in Tables 5.1 and 5.2. With regard to the mean age statistic, it is pointed out that one of the patients in the illiterate group was unable to tell her age, but claimed to have been born "during the German war". This was interpreted to mean that she was born during World

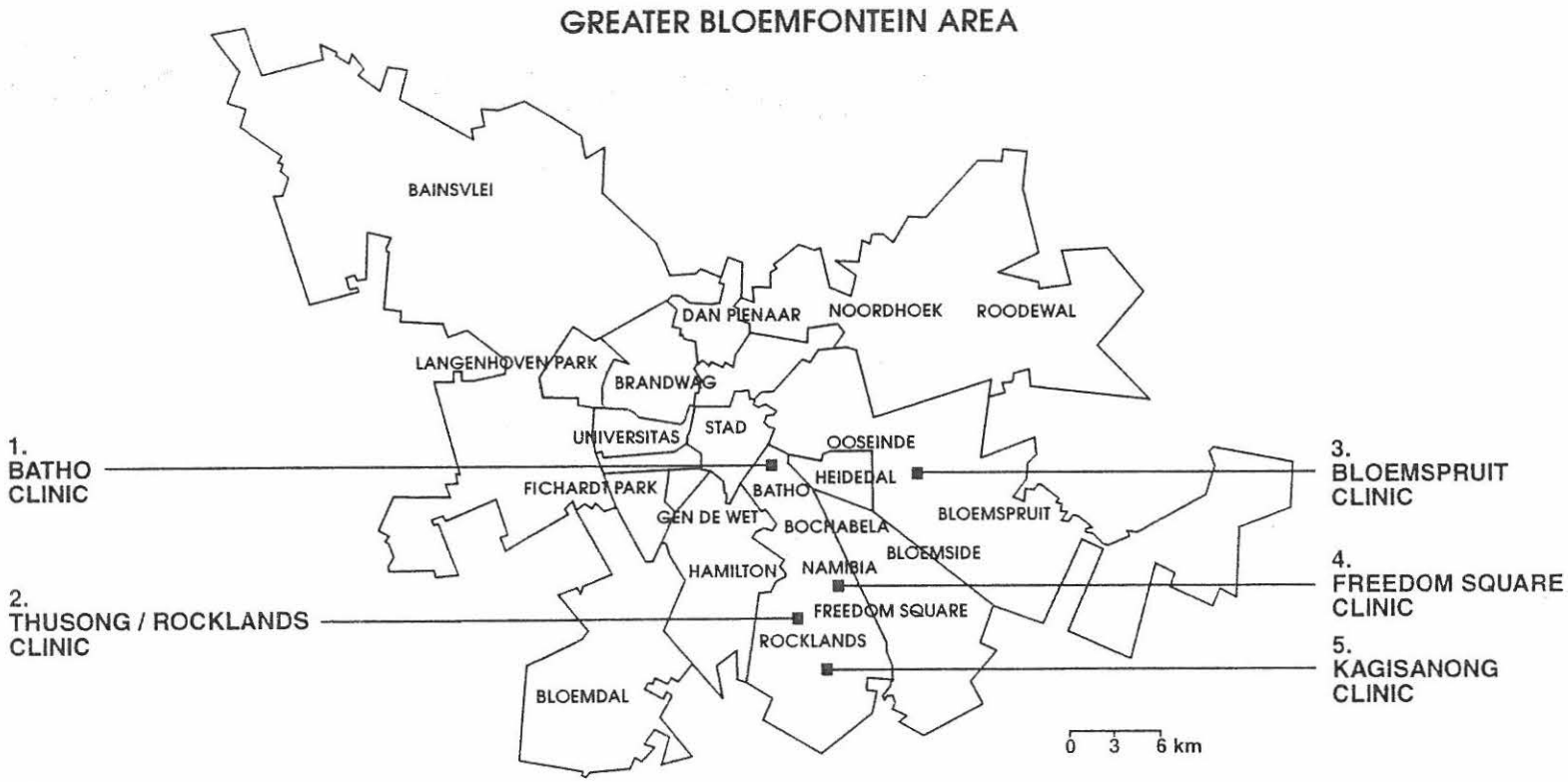


Figure 5.1 Overview of clinic locations

Table 5.1 Frequencies of sample population by sex and home language

			Literate (n=150)	Illiterate (n=150)	Total (n=300)
1. Sex	Male	Frequency	27	38	65
		Percent	18.0	25.3	21.6
	Female	Frequency	123	112	235
		Percent	82.0	74.6	78.3
2. Home language	Sesotho	Frequency	81	88	169
		Percent	54.0	58.6	56.3
	Setswana	Frequency	41	33	74
		Percent	27.3	22.0	24.6
	Xhosa	Frequency	22	24	46
		Percent	14.6	16.0	15.3
	Afrikaans	Frequency	3	2	5
		Percent	2.0	1.3	1.6
	Zulu	Frequency	3	1	4
		Percent	2.0	0.6	1.3
	Pedi	Frequency	0	1	1
		Percent	0	0.6	0.3
	Ndebele	Frequency	0	1	1
		Percent	0	0.6	0.3
	English	Frequency	0	0	0
		Percent	0	0	0

Table 5.2 Mean ages of sample population by sex and literacy group

		Literate	Illiterate	Total
Male	Mean age	26.1111	41.1842	34.9231
	Standard deviation	4.8463	15.9981	14.6130
	Sample size (n)	27	38	65
Female	Mean age	27.6991	38.3036	32.7532
	Standard deviation	6.5185	14.9020	12.4766
	Sample size (n)	123	112	235
Total	Mean age	27.4133	39.0333	33.2233
	Standard deviation	6.2661	15.1845	12.9744
	Sample size (n)	150	150	300

War II, and her age was recorded as 55 years, which corresponded with her appearance. The data listed in Tables 5.1 and 5.2 is based on the information supplied by the patients in the beginning of the interview, even though most patients had their clinic files with them which contained their age, sex, population group etc. (but not educational qualification) which the research assistant could consult when further clarity was needed.

Concerning the home language frequencies in the study population (n=300), it may be concluded that at least 81% (56.3% + 24.6%) of the patients were able to converse in Sesotho, as the likelihood is very high that adult patients resident in the greater Bloemfontein area who reported Setswana (24.6%) and Pedi (0.3%) as their home language were able to speak Sesotho fluently (the Setswana and Pedi languages are closely related to the Sesotho language in relation to the Xhosa, Zulu and Ndebele languages, which are less closely related to the Sesotho language).

With regard to the distribution of male and female patients in the illiterate group, the predominantly female study population (74.6% female and 25.3% male) is in agreement with world illiteracy trends as reported by UNESCO (1995:8), whereby in 1990 women accounted for 62.8% of the world's adult illiterates (in this instance adult referred to a person 15 years of age or older).

Table 5.3 Frequency of patients per clinic

Clinic	Pilot phase			Data collection phase		
	Literate	Illiterate	Total	Literate	Illiterate	Total
1. Batho	0	0	0	47	7	54
2. Thusong	15	15	30	25	29	54
3. Bloemspruit	0	0	0	4	10	14
4. Freedom Square	0	0	0	30	55	85
5. Kagisanong	0	0	0	44	49	93
Total	15	15	30	150	150	300

5.4 Test visuals

As stated in the introduction of this dissertation, the broad intention with the design and production of the test visuals (i.e. Posters A-C, see Appendix C) was to construct a tool for measuring the semantic and pragmatic comprehension of visual rhetorical codes in a health education setting. During explorative discussions with Sr. Reid, the Health Education Officer of the BTLC and Dr. Bruwer, an Occupational Health Specialist with the BTLC, several options were explored for the theme of the test material. These were:

- family planning
- the prevention of AIDS (Acquired Immuno Deficiency Syndrome) and STDs (Sexually Transmitted Diseases)
- accident prevention, especially with regard to the use of paraffin
- the promotion of breast feeding
- the prevention and treatment Tuberculosis, and
- basic hygiene, including oral hygiene.

Of these, the prevention and treatment of Tuberculosis (TB) was chosen as the theme for the test material, as it was agreed to by all participants of the explorative discussion that the reaction of clinic patients to a family planning or AIDS-related theme was likely to be emotional (as opposed to factual) which may have resulted in a contamination of the measurement mechanism. In addition, the BTLC experienced a shortage of health education materials with a TB-related message in comparison to the other areas of health education listed above (e.g. breast feeding). A further reason for the choice of topic for the test visuals was that the BTLC health service was intent on introducing the Directly Observed

Treatment Short Course (DOTS) program as recommended by the World Health Organization (WHO) and needed visual materials to promote the campaign, which primarily targeted adults. The DOTS program involves a mentoring or "buddy" system whereby a friend or employer agrees to ensure that the TB patient takes his/her tablets regularly in an attempt to reduce the prevalence of drug resistant TB (for a discussion of drug-resistant TB and its implications see, among others, Medifile, 1993:85).

Based on the input of Sr. Reid, Dr. Bruwer, the members of the BTLC health service TB committee and senior clinic sisters about the desired visual content of the posters and the wording of the accompanying text, a hand drawn draft version of each of the three posters was produced and presented for discussion. The following suggestions were made:

- the models in the photographs should be 35-40 year old Sesotho males, as these are the persons primarily targeted by the DOTS campaign
- the model posing as the patient in the photographs should be thin as weight loss is associated with TB
- the accompanying text should be in the three most common languages of the greater Bloemfontein area (i.e. Sesotho, Afrikaans, English)
- the dress of the models should signify a low income or unemployed person (as opposed to an affluent person)
- in the photographs the background should depict either a neutral environment or one associated with an unemployed person, rather than a city environment or an affluent suburb
- should sputum be depicted coming from the mouth of a TB patient, it

must be of a dark beige or cream colour, but not clear.

In addition to the above listed considerations, close attention was paid to the readability of the test visuals (see Chapter 4) on the one hand, and the rhetorical content of the test visuals (see Chapter 3) on the other hand.

5.4.1 The readability of the test visuals

During the design phase of the test materials, an attempt was made to optimize their readability, or the ease with which the intended meaning of the test visuals is comprehended in the study population, in so far as this did not conflict with the intention to encode the test visuals with visual rhetoric. The following aspects of the test visuals raise their readability, based on the print media development visual design guidelines reviewed in Chapter 4:

- the subject matter is imaged in real-life colour (with the exception of the black and white image in Poster B, which has a normal grey scale)
- the images have a dominant centre of interest at or near its optical centre and contain few details that may be regarded as distracting
- the models are photographed against a plain background in order to facilitate object recognition
- the models are imaged from a canonical (or three-quarter) viewpoint in order to facilitate object recognition
- the models were photographed under neutral lighting conditions (i.e. the colour temperature and contrast of the light sources were normalized)
- the subject matter is depicted as realistically as possible (i.e. an

attempt was made to minimize the difference between the appearance of the subject matter in the photograph and in the real-life viewing situation)

- for literate patients, the text is provided in the three most common languages of the greater Bloemfontein area (Sesotho, Afrikaans, English) with the exception of the acronym DOTS, where translations would have been meaningless as the DOTS campaign is known only by the English acronym
- the legends are kept brief.

The above points closely relate to the criteria employed for the determination of BLIX scores and to the readability checklist (RCDV), which were described in Chapter 4. Suggested BLIX scores for the three test materials are given in Table 5.4.

Table 5.4 Overview of test visual attributes

	Poster A	Poster B	Poster C
1. Position on Wileman's verbo-visual continuum	Type IV	Type IV-V	Type III-IV
2. Suggested BLIX score (minimum score 0, maximum score 5)	4-5	4	4
3. Position on continuum for visual rhetorical articulation (the poster as a whole)	Lower region	Middle region due to visual rhetorical codes only	Middle region due to verbo-visual rhetorical codes

5.4.2 The rhetorical content of the test visuals

The intention with the design of the rhetorical content of the test visuals was to achieve a continuum of rhetorical articulation ranging from rudimentary visual articulations in Poster A to advanced visual rhetoric in Poster B and advanced verbo-visual rhetorical articulations integrated in the layout in Poster C (see Table 5.4). The rhetorical content of the test visuals may be summarized as follows:

Poster A

The visual rhetorical content of Poster A is limited to a rudimentary substitution of related semes when the three images are viewed from left to right (C2 in Table 3.1) in the sense that the hands in the three images belong to the same person and thus have a similar form. The poster also contains a substitution of semes with opposed content (C6 in Table 3.1) when the images are viewed from left to right as the hands of the man become progressively bigger in the image frame, and the concepts "big" and "small" may be regarded as belonging to a paradigm with limited terms (e.g. male/female). These rhetorical articulations were achieved by "zooming in" on the subject matter (i.e. progressively lengthening the focal length of the lens between exposures).

Poster B

When viewed together, the hands in the top right corner of the images in Poster B generate an exchange of semes opposed in form and content (D5 and D6 in Table 3.1) as the concepts "up" and "down" are based on a paradigm with limited terms and the hand belongs to the same person. This opposition is reinforced by means of the accompanying written words "yes" and "no". The seme of a man coughing is identical in the two images except that he is depicted in black and white in the left image and in colour in the right image, which may give rise to an

exchange of semes opposed in form (i.e. black & white and colour are opposed photographic terms, D5 in Table 3.1) as well as an exchange of semes identical in content (D1 and D3 in Table 3.1).

The poster also contains an exchange of different backgrounds (D4 in Table 3.1) which may give rise to a suppression of one different visual element by another (B4 in Table 3.1) when the two backgrounds are viewed in sequence from left to right. In contrast to Poster A, which does not contain any advanced visual arguments, the superimposition of the image of the coughing man on the image of children in Poster B may be described as a form of associational juxtaposition (see Section 3.4.3) in the sense that the viewer is led to attach the connotation "inconsiderate" to the image of the man coughing based on the proximity of the child pulling a face.

These rhetorical articulations were achieved by means of digital manipulation utilising Adobe Photoshop software on an Apple Mac OS platform. In all three posters, the photographs were taken on 35mm colour transparency film and the processed slides were copied onto a Kodak DCS digital back before they were transferred to the Photoshop software. Following manipulation, the digital image files were imported into Freehand software on a Apple Mac OS platform in which the layout of the posters was generated.

Poster C

In Poster C, the image at the centre of the poster contains no overt rhetorical articulations which have been intentionally induced by means of photographic or digital imaging technique. The rhetorical content of Poster C is primarily based on verbo-visual articulations in contrast to the mainly visual rhetorical codes in Poster B. The blue dots of varying sizes (including the large blue circle in the middle of the image) give rise to visual repetition, simile and rhyme (A1, A2 and

A3 in Table 3.1) due to an addition of identical elements or elements which are similar in form and content. The ambiguous use of the word "DOTS", which may either refer to an acronym for Directly Observed Short Course or to the literal meaning of the word is reinforced in the poster by including both the full text of the acronym as well as visual images depicting the literal meaning. The association between the literal meaning of the word "DOTS" and the blue dots in the poster is strengthened by placing the written text within two of the blue dots.

It was envisaged during the design of Poster C that the blue dots may perform a mnemonic function in the sense that a visual depiction of the literal meaning of the term "DOTS" may serve as an aid to memory in the study population (for a discussion of mnemonics see, among others, Rosenheck *et al,* 1989, Braden, 1996:34, Levin and Levin, 1990).

5.4.3 Manipulation check

Following the examples of Perdue and Summers (1986) and Stafford (1996), a manipulation check was conducted prior to the data collection phase of the study. The intention with the manipulation check was to ensure that the overall style of presentation was consistently clear and direct for all three posters and that only the rhetorical content of the posters had been manipulated. Twenty nine students in a first year History of Art class at the Technikon Free State voluntarily completed a questionnaire with closed questions while viewing the three posters projected in sequence on a screen (see Figure 5.4 for a sample of the questionnaire). Even though the questionnaire was only provided in the English language, the content was explained verbally in the Afrikaans language to the group. Most students indicated that the meaning of the questions was clear to them. History of Art students were chosen for the manipulation check as it was felt that they have a strong interest in (and a positive attitude towards) visual

images, and may be regarded as visually literate. Of the 29 questionnaires which were completed, 6 were discarded as the respondents did not answer all questions.

The scores obtained on the 5-point scales were analysed utilising a paired, two-tailed Student's t-test as the responses came from a single sample (as opposed to independent samples, where it would have been possible to apply an F-test (ANOVA) followed by Scheffe tests, see Levin and Fox, 1988:219). Based on the remaining 23 questionnaires, the results of the manipulation check (see Tables 5.5 and 5.6 in Appendix C) suggest that in all three posters:

- the subject matter was easy to recognise
- the posters did not contain any visual symbols which were difficult to understand (in a visually literate audience)
- the overall style of presentation was straight-forward and direct (all p values associated with Student's t-test (paired, two-tailed) for scores between posters were >0.1346).

The results also suggest that:

- the responses regarding the extent to which the photographs were manipulated for Posters A and C did not differ significantly (both mean scores were low at 1.22 and 1.39 on the 5 point scale), whereas the mean score for Poster B, which was also relatively low at 1.96, was statistically significantly higher than the mean scores for Posters A and C ($p < 0.0446$)
- the photographs of Poster B were perceived as significantly less boring

than the photographs of Posters A and C ($p < 0.0040$).

- the layout and text of Poster C were perceived as significantly less boring than the layout and text of Posters A and B ($p < 0.0021$).

5.4.4 Refinement of the test visuals during the pilot phase

As briefly mentioned in Section 5.3.1, an initial set of the test visuals was evaluated in two small groups of clinic patients before the commencement of the data collection phase of the empirical study. The first group consisted of 15 literate patients and the second group comprised 15 illiterate patients attending Thusong clinic, which serves a community with roughly the same number of literates and illiterates. During the pilot work, the following shortcomings of the test materials were identified and subsequently rectified:

- the size of the test materials was increased from A4 size to A3 size as some of the patients (especially older patients with eyesight difficulties) complained that the images were small
- in the initial set of posters, the words "yes" and "no" in the top right corner of the photographs in Poster B were only in the English language. This was amended to include the Sesotho and Afrikaans languages
- in the leftmost image in Poster A, the man, who is coughing, was pointing to the left. The image was flipped horizontally so that the man points to the right, or towards the optical centre of the poster, thus leading the eye inwards
- in the initial set of test material, the image in the centre of Poster C had a light blue frame around it, which was a visually prominent feature of

the poster, even though it did not add to the intended message. The frame was removed in order to avoid the risk that it distracts the viewer.

5.5 Interview design

In order to measure the semantic and pragmatic comprehension of the rhetorical content of the test visuals, structured interviews were conducted by a research assistant, Mr. Maishoane, with the patient in a clinic setting. The research assistant was allocated a clinic room where the interviews could be held. The clinic staff were instructed by the Sister in Charge to channel adult patients to the research assistant for interviews. Even though the research assistant was remunerated for his services according to guidelines by the Centre for Science Development, the patients who participated in the study on a voluntary basis did not receive any payment for doing so.

5.5.1 Questionnaire construction

During the structured interviews, the research assistant completed a questionnaire (see Figures 5.5 - 5.8 in Appendix C) which consisted of 12 items arranged according to the "inverted funnel" method (Schnetler, 1989:83), whereby direct, specific questions in the beginning of the interview are followed by more general questions at the end of the interview. In the planning phase of the empirical study, the intention was to make use of the semantic differential technique (Oppenheim, 1992:112; Watson and Hill, 1993:169) among others, to measure the comprehension of visual rhetoric in the study population. However, the semantic differential technique, which involves the (inflexible) use of opposed concepts (e.g. offensive / not offensive), proved unsuitable for the measurement of the way in which the study population responded to the (intentional) visual

ambiguities with which the test material was encoded. For example, in Poster C the preferred reading is that the term "DOTS" is used ambiguously. In order to test for the comprehension thereof, a question constructed according to the semantic differential method would read along the lines "Is the word DOTS meant literally or figuratively?" (literal and figurative are opposed concepts) to which both answers would be correct, as opposed to the less restrictive question "Do you think that the blue dots in the poster can help one to remember the word 'DOTS'?" (Question 9 in Figure 5.5).

The questionnaire, which was formulated in all three languages used in the test material (Sesotho, English, Afrikaans) covered:

- particulars of the patient (age, sex, home language, education)
- five questions directed at the semantic (or literal) meaning of the visual rhetoric or components thereof (Questions 1,2,4,5 and 8)
- five questions directed at the pragmatic (or figurative) meaning of the visual rhetoric or components thereof (Questions 3, 6,7, 9 and 10)
- two questions asking the respondent to compare the three posters in terms of readability and phatic function (Questions 11 and 12)
- an indication whether the patient was co-operative during the interview.

With regard to the final item (was the patient co-operative during the interview?), the possible scenario was envisaged that the patient "withdraws into silence" during the interview as she/he does not agree with the dominant views of (western) medicine conveyed in the test material, which would imply the formation of a "spiral of silence" similar to the theory originally described by Noelle-Neuman (in Watson and Hill, 1993:129, see also Price and Allen, 1990;

Shamir, 1995). As the interviews were entirely voluntary, however, this scenario did not materialize.

5.5.2 Training and supervision of the research assistant

The training of the research assistant, which occurred before the commencement of pilot work, involved a careful explanation of the questionnaire content as well as simulated interviews. By simulated interviews is meant that the research assistant conducted mock interviews in the presence of the principal researcher in order to become familiar with the questionnaire items and the correct or envisaged answers to questions where applicable. The research assistant, an unemployed teacher fluent in Sesotho, English and Afrikaans, also received written guidelines (see Appendix C). These included the instructions to:

- discuss language preference with the patient before the interview commences so that a language with which the patient feels comfortable is used
- only interview patients who are 21 years or older
- only interview patients that have either 12 or more years of formal education (i.e. matric and higher) or 6 or less years of formal education (i.e. Std 4 or lower)
- record all answers that are difficult to interpret *verbatim* on the back of the questionnaire page.

The supervision of the research assistant during the pilot and data collection phases of the study involved regular clinic visits by the principal researcher as well as daily meetings at the end of interview days in order to retrieve and check

completed questionnaires, to reflect on the day's interviews and to plan activities for the following day.

5.5.3 Refinement of the questionnaire during the pilot phase

As noted in the introduction of this dissertation, a key methodological challenge lay in the appropriate wording of questions as the visual literacy literature is rife with the concerns of researchers that the measurement of visual literacy skills is usually based on verbal responses (see, for example, Dwyer and Dwyer, 1989). This meant that the questions had to be formulated in such a way that the answer expected from the patient did not require a high degree of (verbal) articulation.

Initial responses during the pilot phase showed that the question "What photographic technique was used in these three pictures?", which focused on the design decisions that were made during the production of Poster A, was inappropriate as it required the patient to articulate an answer such as "The camera zooms in on the subject matter as one progresses from the right photograph to the left photograph" which presupposes an understanding of the photographic concept "to zoom in" (i.e. to systematically lengthen the focal length of the lens during a single exposure or between successive exposures) and requires the patient to convey in words that the three images are meant to be viewed as a sequence from right to left. In contrast, the revised version of the question read "Does the size of the man's hands get bigger or smaller when one looks at the three photographs from right to left?" (Question 3 in Figures 5.5-5.8), which the patient answered with either "bigger" or "smaller", thus avoiding the potential methodological pitfall that the measurement of visual comprehension is based on advanced verbal articulation. Other changes made to the questionnaire during the pilot phase included:

- the introduction of a control question in order to determine the patient's literacy level (Question 8), as discussed in Section 5.3.1
- during the pilot phase the research assistant asked for information about the educational level of the patient with the question "What is the highest standard that you passed?", which was changed to "What education do you have?" for the data collection phase as the latter also accommodates post-school qualifications, which were frequent in the literate group.
- the initial questionnaire contained the question "What do the blue dots in Poster C mean?", which proved too vague as it required the respondent to formulate on his/her own that the blue dots may perform a mnemonic function as a result of the ambiguous use of the word "DOTS" in the poster. In the amended version of the questionnaire, the question was broken down into two parts, namely Question 9 (Do you think that the blue dots in the middle of the poster can help one to remember the word DOTS?) and Question 10 (Is it possible that the blue dots in the poster could refer to some of the many tablets which one has to take as a TB patient?"
- during the pilot phase the research assistant marked some questionnaire sheets with crosses and some with the tick marks, which accidentally led to the realization that most patients were more compliant when the answers were recorded with a tick mark, probably due to the positive connotation "correct" that a tick mark carries, in contrast to the negative connotation "wrong" that is usually attached to a cross mark. In view thereof the instruction on the questionnaire was changed from "Mark one shaded box per row only " to "Tick one

shaded box per row only".

5.6 Statistical handling of the data

As the questionnaire described in the previous section yielded categorical data, chi-square analysis was employed to test for independence of the two study population groups (i.e. literate and illiterate patients), based on the obtained frequencies of correct answers (Questions 1-10) or choice of poster (Questions 11-12). This involved the construction of multi-dimensional contingency tables with chi-square values for each cell (Crowther, 1993; Levin and Fox, 1988:269). The table test statistics were expressed both as chi-square value and as probability (p value). The calculations were performed with Microsoft Excel software.

5.7 Conclusion

Even though this chapter concentrated on the methods and procedures followed in the course of the empirical investigation, it is pointed out that even though the questionnaire utilized focused on the rhetorical content of the test visuals, some of the questions also covered readability aspects. For example, Question 1 (What is the man in Photograph 2 doing?) relates to an object recognition readability barrier in the sense that an incorrect answer may point to an inability on the part of the respondent to grasp what the image contents denotes. In a similar way, Question 6 (What do the hands in the top right corner of the photographs indicate?) concerns a pictorial convention readability barrier, because an incorrect answer could suggests that the respondent may not be familiar with the pictorial convention of depicting "yes" or "correct" with an image of a thumb pointing upwards and "no" or "incorrect" with an image of a thumb pointing downwards.

Chapter 6

Result of the empirical study

6.1 Introduction

Flowing from the previous chapter, which covered the methods and procedures employed in the course of the empirical investigation, this chapter focuses on the data which the structured interviews yielded. The chapter comprises (1) an evaluation of the research hypotheses as stated in the introduction of this dissertation, (2) an analysis of the study population's semantic comprehension of the visual rhetoric in the test material, (3) an evaluation of the extent to which the study population understood the rhetorical content of the test material on the pragmatic level and (4) a ranking of the test visuals in terms of phatic function and readability.

The data discussed in this chapter is based on 300 questionnaires completed during the structured interviews in the study population, even though a total of 312 interviews were conducted, excluding the 30 pilot interviews which took place before the data collection phase. Of the 12 questionnaires which were discarded, nine (elderly) patients indicated in the course of the interview that they had eyesight difficulties and were not able to see the posters clearly, in addition to three respondents who claimed a formal education of twelve years or higher but were not able to answer Question 8 (What do the letters DOTS stand for?) correctly.

6.2 Evaluation of the research hypotheses

In the introduction of this dissertation, the working hypotheses of the study were stated as follows:

- on the semantic level, the comprehension of visual rhetorical codes in a closed visual text does not differ between literate and illiterate adults, and that
- on the pragmatic level, the comprehension of visual rhetorical codes in a closed visual text differs between literate and illiterate adults.

On the basis of the results obtained, which are tabulated in Tables 6.1 - 6.5, the research hypotheses were accepted. The null hypothesis with regard to comprehension on the pragmatic level was rejected at the 0.005 level of significance, whereas on the semantic level there was no statistically significant difference between the comprehension of the literate and illiterate adults (see especially Table 6.1). The results of the empirical study support the assumption that most illiterate adults are able to comprehend visual rhetorical codes in a closed visual text on the semantic level, but are not able to comprehend them on a pragmatic level, whereas most literate adults are able to understand them on both levels.

The probabilities listed in Table 6.1 are based on chi-square statistics for independence of the literate and the illiterate groups for the following:

- semantic comprehension of *visual* rhetorical codes in the test material (i.e. frequencies of correct or expected answers for Questions 1,2,4,5

in Figure 5.5)

- pragmatic comprehension of *visual* rhetorical codes in the test material (i.e. frequencies of correct answers for Questions 3,6-7)
- semantic and pragmatic comprehension of *visual* rhetorical codes in the test material (i.e. frequencies of correct answers for Questions 1-5,6-7)
- semantic and pragmatic comprehension of *visual and verbal* rhetorical codes in the test material (i.e. frequencies of correct answers for Questions 1-10)

Table 6.1 Overview of probabilities associated with chi-square analyses

Table		Probability	
Table 6.2	Semantic comprehension of visual rhetorical codes	0.7191	NS
Table 6.3	Pragmatic comprehension of visual rhetorical codes	0.0034	S
Table 6.4	Semantic and pragmatic comprehension of visual rhetorical codes	0.0000	S
Table 6.5	Semantic and pragmatic comprehension of visual and verbal rhetorical codes	0.0000	S

Key: S = Significant at α=0.005 NS = Not significant at α=0.005

6.3. Analysis of semantic comprehension in the study population

The frequencies of correct or envisaged answers relating to semantic comprehension, or the ability of the study population to recognize depicted objects and to identify their literal meaning, presupposing the competence to perceive depth, texture, colour and other fundamental components of the image (Goldsmith, 1984:124), in the literate and illiterate groups of the study population are listed in Table 6.5.

In the literate group, the percentages of correct answers for semantic comprehension range between 95.3% and 100%, whereas in the illiterate group the range is from 0.0% to 96.6%. The reason for the 0.0% percentage of correct answers for Question 8 (What do the letters DOTS stand for?) in the illiterate group should be self-evident, as the question was designed as a control mechanism to check the literacy level of the patient. With regard to Questions 1, 2, 4 and 5, the lowest percentage of correct answers in the illiterate group is for Question 2 at 78.0% (Do you think one is supposed to look at the three photographs from left to right or from left to right?), which was considered to belong to the semantic level, rather than the pragmatic level, as it tests for the patient's understanding of the literal meaning of the arrows between images.

With regard to Question 1 (What is the man in Photograph 2 doing?), of the 17.3% incorrect answers that were obtained in the illiterate group, more than half of the patients responded with "The man is drinking from the jar". As illiterate patients could not read the legend of the photograph, the image was (visually) more ambiguous in the illiterate group (the percentage of correct answers was 82.6%) as opposed to the literate group, where all patients answered the question correctly (i.e. the percentage of correct answers was 100%).

6.4 Analysis of pragmatic comprehension in the study population

The frequencies of correct answers for questions pertaining to pragmatic comprehension, or the ability to interpret a visual message beyond its literal meaning, implying an ability to comprehend figurative meaning and a familiarity with artistic manipulation and cultural conventions (Goldsmith, 1984:124), in the study population are listed in Table 6.5.

In the literate group, the percentages of correct answers range from 74.6% to 90.6%, whereas in the illiterate group the range is from 0.0%-70.0%. In the

illiterate group, the percentage of correct answers was 0.0% for Questions 9 and 10 which refer to the ambiguous use of the word "DOTS" in Poster C. As the respondents in the illiterate group could not read the full text of the acronym "DOTS" out loud to the research assistant on their own (see Question 8), it was felt that pragmatic comprehension of the verbo-visual rhetoric in Poster C could impossibly have followed, especially because the blue dots in Poster C are only able to perform a mnemonic function once the viewer grasps the deliberately ambiguous use of the word "DOTS" (see Section 5.4.2).

The intended meaning of the associational juxtapositioning in Poster B (see Sections 3.4.3 and 5.4.2), whereby the image of a man coughing is superimposed on an image of children with one child pulling a face was well understood in the literate group (the percentage of correct answers for Question 7 was 88.0%) in contrast to the illiterate group, where the percentage of correct answers was 36.6%. As the illiterate patients could not read the legend of the image, they were forced to "invent" probable reasons for the child pulling a face, which included "The child is hungry", "The child is sick" and "The child is feeling cold".

Unexpected results were obtained for Question 6 (What do the hands in top right corner [in Poster B] indicate?), as the percentages of correct answers were 74.6% in the literate group and 33.3% in the illiterate group. The result was surprising for the literate group as the words "Yes" and "No" are written in three languages next to the pictorial symbols (i.e. thumb up for correct and thumb down for incorrect) which gave rise to the expectation that the percentage of correct answers in the literate group would be almost 100%. As mentioned in Section 2.4, the reply of most literate patients who did not answer Question 6 correctly was along the lines "Thumb down means the man is sick and thumb up means the man is well again", which points toward a broad (but aberrant) interpretation

of the verbal anchors "Yes" and "No". In the illiterate group, a large variety of incorrect interpretations were obtained for Question 6. In addition to the reply received in the literate group that "Thumb down means the man is sick and thumb up means the man is well again", incorrect answers included "Thumb down means the man has not visited the clinic yet, and thumb up means that he now visits the clinic regularly". These (incorrect or unexpected) answers indicate, however, that the patients in both groups seem to have attached the meanings "bad", "undesirable" or "wrong" to the image of the thumb down, and the meanings "better", "good" or "favorable" to the image of the thumb up, which suggests that the use of common pictorial symbols has potential in the study population. On the other hand, the results for Question 6 highlight that the accurate (or precise) interpretation of visual symbols should not be taken for granted in any target group whatsoever, but that thorough pre-testing is a prerequisite before the visual materials are disseminated on a large scale.

6.5 Ranking of the test visuals in terms of phatic function and readability

The intention with Question 11 (Please point to the poster which you think is easiest to understand) and Question 12 (Please point towards the poster which you think is the most interesting to look at) was to obtain an indication of the readability and phatic function of the test visuals in relation to one another as perceived by the study population. Even though the chi-square analysis for independence of the literate and illiterate group did not indicate a significant difference between the two groups ($p > 0.3452$ for Question 11 and $p > 0.2861$ for Question 12, see Tables 6.6 and 6.7), the obtained frequencies suggest the tendencies that:

- Poster A was the easiest to understand (or was most readable) in both

the literate and illiterate groups, see Table 6.6, and

- Poster C was considered the most engaging (or performed the highest phatic function) in the literate group, whereas there was no clear preference in the illiterate group, see Table 6.7.

During the interview, the research assistant gave the respondents opportunity to motivate their choice for Questions 11 and 12 and recorded the answers. On the whole, however, the answers obtained were disappointing as there were almost no references to design aspects of the posters. The answers in both groups concentrated on the content of the test material along the lines "Poster A is the easiest to understand because the sequence of collecting sputum is explained, which was always confusing to me before" or "The two men in Poster C look like interesting people" in addition to numerous responses such as "I'm not sure exactly why" or "I don't know". These replies, which suggest that most members of the study population were unable to articulate visual concepts verbally, are in agreement with concerns by visual literacy researchers that the measurement of visual literacy skills should not be based on data collection techniques that require the respondent to verbally express visual concepts on his/her own (see Sections 1.6 and 5.5).

6.6 Conclusion

The result of the empirical investigation supported the research hypotheses stated in the introduction of this dissertation that (1) on the semantic level, the comprehension of visual rhetorical codes in a closed visual text does not differ between literate and illiterate adults, and that (2) on the pragmatic level, the comprehension of visual rhetorical codes in a closed visual text differs between literate and illiterate adults, at the 0.005 level of significance.

The result of the empirical study evaluated in this chapter has important

implications for (1) the phatic function - readability dilemma described in the introduction of this dissertation, and may serve as a point of departure for the formulation of (2) design guidelines for rhetorical codes in a development communication context and (3) perspectives for future research. These items are discussed in the following chapter, which concludes the dissertation.

Table 6.2 Chi-square analysis for semantic comprehension (visual rhetorical codes only)

Question number	Literate (n=150)				Illiterate (n=150)			
	Obtained frequency	Percent	Expected frequency	Cell chi-square	Obtained frequency	Percent	Expected frequency	Cell chi-square
Question 1	150	100.0	146.1501	0.1014	124	82.6	127.8499	0.1159
Question 2	143	95.3	138.6825	0.1344	117	78.0	121.3147	0.1534
Question 4	149	99.3	156.8179	0.3897	145	96.0	137.1821	0.4455
Question 5	141	94.0	141.3495	0.0008	124	82.6	123.6505	0.0009

Table statistic

Degrees of freedom	Table chi-square	Critical value (α=0.05)	Probability
3	1.3423	7.8147	0.7191

Table 6.3 Chi-square analysis for pragmatic comprehension (visual rhetorical codes only)

Question number	Literate (n=150)				Illiterate (n=150)			
	Obtained frequency	Percent	Expected frequency	Cell chi-square	Obtained frequency	Percent	Expected frequency	Cell chi-square
Question 3	136	90.6	155.2203	2.3799	105	70.0	85.7796	4.3066
Question 6	112	74.6	104.3389	0.5625	50	33.3	57.6610	1.0178
Question 7	132	88.0	120.4407	1.1094	55	36.6	66.5593	2.0074

Table statistic

Degrees of freedom	Table chi-square	Critical value (α=0.01)	Probability
2	11.3839	9.2103	0.0034

Table 6.4 Chi-square analysis for semantic and pragmatic comprehension (visual rhetorical codes only)

Comprehension		Literate (n=150)				Illiterate (n=150)			
Semantic	**Pragmatic**	**Obtained frequency**	**Percent**	**Expected frequency**	**Cell chi-square**	**Obtained frequency**	**Percent**	**Expected frequency**	**Cell chi-square**
Question 1		150	100.0	156.7807	0.2933	124	82.6	117.2192	0.3923
Question 2		143	95.3	148.7701	0.2238	117	78.0	111.2299	0.2993
Question 4		149	99.3	168.2246	2.1969	145	96.6	125.7754	2.9384
Question 5		141	94.0	151.6310	0.7453	124	82.6	113.3689	0.9969
	Question 3	136	90.6	137.8984	0.0261	105	70.0	103.1016	0.0349
	Question 6	112	74.6	92.6952	4.0204	50	33.3	69.3048	5.3773
	Question 7	132	88.0	107.0000	5.8411	55	36.6	80.0000	7.8125

Table statistic

Degrees of freedom	Table chi-square	Critical value (α=0.01)	Probability
6	31.2060	16.8119	0.0000

Table 6.5 Chi-square analysis for semantic and pragmatic comprehension (visual and verbal rhetorical codes)

Comprehension		Literate (n=150)				Illiterate (n=150)			
Semantic	Pragmatic	Obtained frequency	Percent	Expected frequency	Cell chi-square	Obtained frequency	Percent	Expected frequency	Cell chi-square
Question 1		150	100.0	179.5172	4.8533	124	82.6	94.4827	9.2215
Question 2		143	95.3	170.3448	4.3895	117	78.0	89.6552	8.3401
Question 4		149	99.3	192.6207	9.8783	145	96.6	101.3793	18.7687
Question 5		141	94.0	173.6206	6.1289	124	82.6	91.3793	11.6449
Question 8		150	100.0	98.2758	27.2233	0	0.0	51.7241	51.7241
	Question 3	136	90.6	157.8965	3.0365	105	70.0	83.1034	5.7694
	Question 6	112	74.6	106.1379	0.3237	50	33.3	55.8621	0.6151
	Question 7	132	88.0	122.5172	0.7339	55	36.6	64.4827	1.3945
	Question 9	128	85.3	83.8621	23.2304	0	0.0	44.1379	44.1379
	Question 10	127	84.6	83.2069	23.0489	0	0.0	43.7931	43.7931

Table statistic

Degrees of freedom	Table chi-square	Critical value (α=0.01)	Probability
9	298.2560	21.6660	0.0000

Table 6.6 Chi-square analysis for Question 11

Poster number	Literate (n=150)				Illiterate (n=150)			
	Obtained frequency	Percent	Expected frequency	Cell chi-square	Obtained frequency	Percent	Expected frequency	Cell chi-square
Poster A	92	61.3	95.0000	0.0947	98	65.3	95.0000	0.0947
Poster B	31	20.6	32.5000	0.0692	34	22.6	32.5000	0.0692
Poster C	27	18.0	22.5000	0.9000	18	12.0	22.5000	0.9000

Table statistic

Degrees of freedom	Table chi-square	Critical value (α=0.05)	Probability
2	2.1279	5.9915	0.3451

Table 6.7 Chi-square analysis for Question 12

Poster number	Literate (n=150)				Illiterate (n=150)			
	Obtained frequency	Percent	Expected frequency	Cell chi-square	Obtained frequency	Percent	Expected frequency	Cell chi-square
Poster A	45	30.0	51.5000	0.8203	58	38.6	51.5000	0.8203
Poster B	44	29.3	41.5000	0.1506	39	26.0	41.5000	0.1506
Poster C	61	40.6	57.0000	0.2807	53	35.3	57.0000	0.2807

Table statistic

Degrees of freedom	Table chi-square	Critical value (α=0.05)	Probability
2	2.5034	5.9915	0.2860

Chapter 7

Conclusion

7.1 Evaluation of the phatic function-readability dilemma

In the introduction of this dissertation, the broad aim of the study was identified as follows:

> ...to investigate the role of visual rhetorical codes, which usually perform a strong phatic function, in a health communication context with a view to establish whether visual rhetorical codes constitute a significant readability barrier, especially in a predominantly illiterate adult target group.

As stated in the previous chapter, the working hypotheses of the study which read that (1) on the semantic level, the comprehension of visual rhetorical codes in a closed visual text does not differ between literate and illiterate adults, and that (2) on the pragmatic level, the comprehension of visual rhetorical codes in a closed visual text differs between literate and illiterate adults, were both accepted following chi-square analysis which tested for independence of the literate and the illiterate study population groups.

Accordingly, advanced visual rhetoric which relies on the accurate interpretation of visual premises and overt connotations on the pragmatic level of comprehension may be regarded as a readability barrier in an illiterate adult target group, in the sense that these advanced rhetorical codes tend to generate

aberrant interpretations of the image with the result that, put in the words of Evans *et al.* (1987:92), the image "moves form being an engaging motivator to an engaging distractor".

In contrast, rudimentary visual rhetorical articulations, such as the repetition of an identical seme or the exchange of backgrounds between two or more images, appear to be well understood (or do not lower image readability) in an illiterate adult target group where they play an important role in engaging the viewer.

Even though, for the purpose of this study, image readability was defined as the ease with which the intended message of a closed text is understood in a specified target audience or sectors thereof (Pettersson, 1993:159), it was pointed out in Chapter 4 that according to Lantz (1996:31) an alternative view of image readability is that:

> Images can be readable in the sense that they inspire cognitive and affective processing. Photographs with low readability inspire reactions that do not go beyond initial first glance responses.

An implication of the above for the theoretical basis of the phatic function-readability dilemma, which served as the basic point of departure for this study, would be that:

- an engaging image which inspires high levels of cognitive and affective processing performs a strong phatic function in the sense that it continually redraws the attention and interest of the viewer beyond first glance responses, and
- an engaging image which inspires high levels of cognitive and affective

processing may be regarded as very readable in the sense that the viewer feels comfortable to explore the image beyond first glance responses and does not abort the viewing process prematurely due to frustration or boredom.

Conversely, an image may fail to engage the viewer beyond first glance responses either because the viewer experiences the image as incomprehensible (i.e. the readability of the image is low), or because the viewer experiences the image as too straight forward (i.e. the phatic function is low).

Based on the above, the following undesirable scenarios may unfold when a development visual is encoded with inappropriate levels of visual rhetoric:

- the visual rhetoric may cause the viewer to experience the illustration as incomprehensible and abort the viewing process prematurely, or
- the visual rhetoric may generate aberrant interpretations with the result that even though the viewer experiences the illustration as engaging, the communicative objectives with the illustration (e.g. to inform, to achieve a change in behavior patterns) are not met as the viewer does not grasp the preferred meaning of the message as intended by the sender.

7.2 Design guidelines for visual rhetorical codes

Seen in conjunction with existing design considerations for development visuals reviewed in Chapter 4, the following basic design guidelines which emanate from the empirical study are suggested for the appropriate utilization of visual rhetoric in a development communication context:

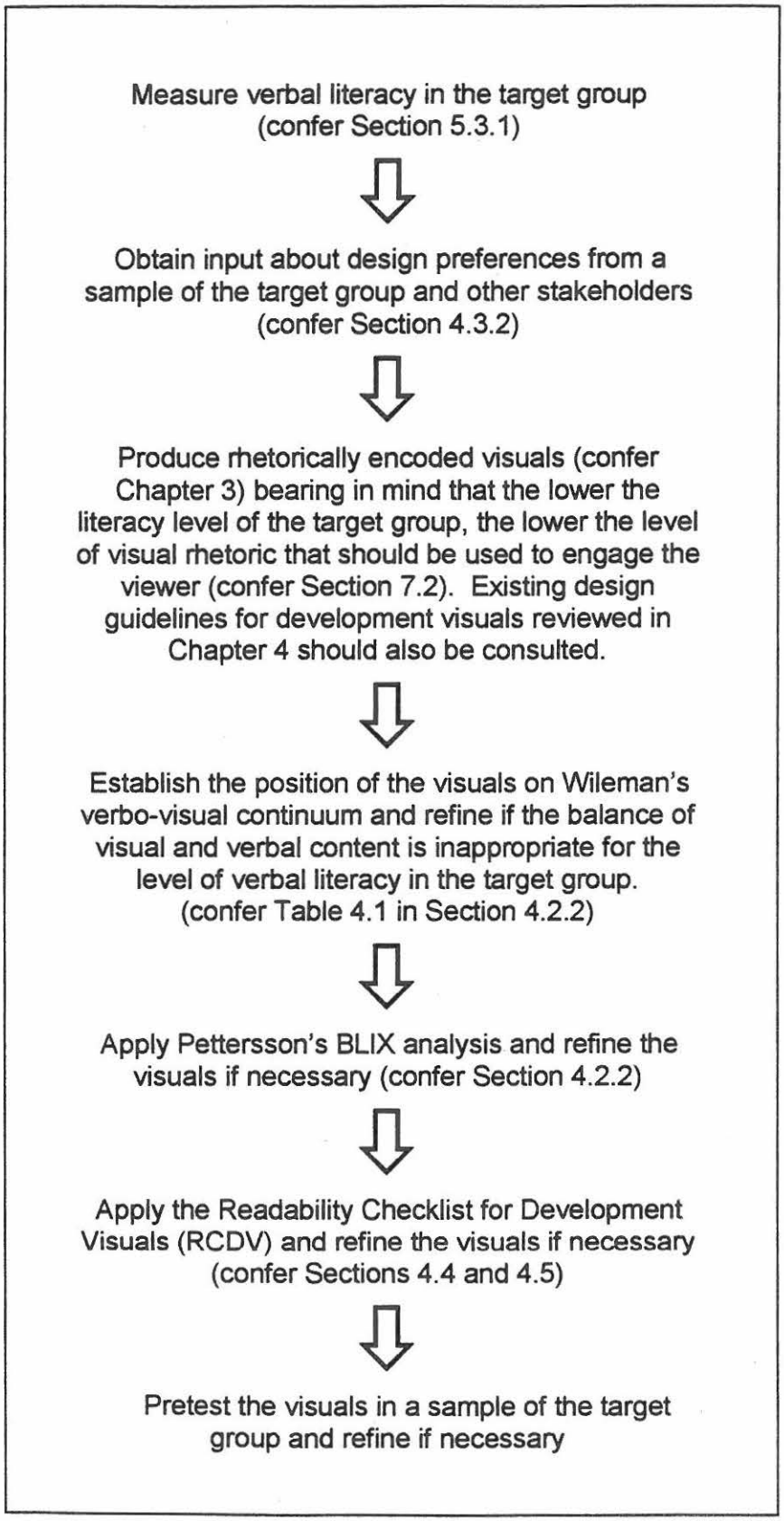
- the lower the literacy level of the target group, the lower the level of visual rhetoric that should be used to engage the viewer
- rudimentary visual rhetorical codes (e.g. visual repetitions, oppositions, exchanges) are appropriate for non-literate target groups
- advanced visual rhetorical premises and arguments should only be used in high-literate target groups, where it is preferable to include a text anchor in order to ensure that a preferred reading occurs
- before pictorial symbols (e.g. arrows, thought bubbles) and pictorial conventions (e.g. thumb up for correct and thumb down for incorrect) are employed to support (or to form part of) visual rhetorical articulations, pretests should be conducted to ensure that the literal meaning of the symbols or conventions is clear to the target group
- visual rhetoric has potential for enhancing the mnemonic effect of visual images, especially when accompanied by a text anchor in high-literate audiences.

7.3 Protocol for visual rhetorical codes

Flowing from the above listed design guidelines, specific steps are recommended when visual rhetorical codes are implemented in a development communication setting. The sequence of steps is described in Figure 7.1.

Figure 7.1 does not contain any specific reference to the measurement of visual literacy (including manipulation awareness), even though the dominant levels of visual literacy and visual intelligence in a target group are important factors that influence the extent to which visual rhetoric is comprehended (see Section 4.3.2). The reason for the omission is that to date no convenient, standardized visual literacy test has yet been formulated (see Avgerinou and

Figure 7.1 Protocol for visual rhetorical codes



Ericson, 1996, 1997). Should such a test become available in future, it may be added to the first step (i.e. measure verbal literacy in the target group) of the protocol described in Figure 7.1.

With regard to health learning materials, the protocol for visual rhetorical codes may augment a model by Hugo (1997:233) that adopts a global, integrated perspective of the numerous factors that shape the health learning material design process, even though certain areas of overlap may occur. For example, the model by Hugo (1997:263) includes the item 'socio-cultural sensitivity' that closely relates to the third category of the Readability Checklist for Development Visuals which deals with cultural and audience-specific readability barriers.

7.4 Perspectives for future research

This study may serve as a point of departure for further (interdisciplinary) research with regard to rhetorical literacy in general and visual rhetorical literacy in particular. Some suggestions for further research may be formulated with reference to the following studies (listed in chronological order) related to the topic of this dissertation:

- With regard to the appropriate selection of media for development communication, Adams (1987) has argued for an expanded conceptualization of the term "media" to include traditional education strategies, such as drawing on local myths, legends, tales and proverbs with which the target group is familiar. With reference to this study, further research is required to explore whether the (pictorial) incorporation of well-known legends or proverbs facilitates or reduces the comprehension of visual rhetorical articulations
- A Delphi study conducted to identify the critical constructs of visual

literacy by Baca (1990) yielded 167 consensus-based statements about the nature and extent of visual literacy skills and practices. The statements include the view that there is a need to develop and validate instruments for research in visual literacy, including instruments for evaluating visual literacy skills (i.e. visual literacy tests). A research suggestion relating to this study would be to expand and further refine the questionnaires utilised during the structured interviews in an attempt to construct a more widely applicable measurement mechanism for visual rhetorical literacy (for example, the questionnaires may adapted for use among children)

- Mody (1991) has argued that an audience participation based approach should be followed when designing development communication materials in order to raise the appropriateness of the message. Mody (1991:53) formulated specific steps to be followed in order to achieve audience involvement during the design phase of educational materials, which include dialogue with the target group about design preferences. During the pilot phase of this study, however, it soon became apparent that especially illiterate patients struggled to verbally articulate visual concepts, which implies that further research is necessary in order to explore ways in which meaningful input about design decisions may be obtained from illiterate, poorly schooled, technologically isolated and subsistence orientated target groups
- In the field of cognitive development, ongoing research by Moll (1994), which is modeled on the fieldwork of the Russian cognitive developmental scientist Lev Luria in Uzbekistan, suggests that in addition to basic reading and writing skills, formal schooling introduces

de-contextualised activity over an extended period of time, fostering the development of figurative thought and syllogistic reasoning. Flowing from Moll's (1994) study, which is based on an intensive rather than extensive research design (Harre and Secord, 1976) in the sense that in-depth interviews were conducted with a single illiterate subsistence farmer, research possibilities related to this study would include (1) whether the level of formal schooling in a target group may be regarded as a more appropriate criterion than (verbal) literacy skills (i.e. the ability to read and write) for the formulation of development message design guidelines, and (2) whether a target group with low levels of formal schooling, where the tendency is to interpret visual messages on a literal level, is able to learn the intended meaning of advanced visual rhetorical codes inductively through repeated exposure.

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Appendix

Appendix A: Survey of image functions (based on Peters, 1978)

Referential function	The image performs a referential function when it provides a recognizable representation of an object (excluding mental images). An example of the referential function would be a passport photograph, the main purpose of which is to provide a reference of the person depicted.
Expressive function	The image performs an expressive function when the thoughts and attitudes of the communicator are expressed through it through choice of subject matter or formal technique such as choice of camera position.
Poetic function	The image performs a poetic (or aesthetic) function when it evokes aesthetic appreciation on the part of the viewer, based on aesthetic laws such as the law of the similar and the same.
Conative function	The image performs a conative function when it places the viewer in a better position to receive the represented message. An example would be a greatly enlarged view of a minuscule object.
Phatic function	The image performs a phatic (or contact) function when it attracts and maintains (or continually redraws) the attention and interest of the viewer.
Meta-pictorial function	An image performs a meta-pictorial function when it provides additional clarifying information to a second message. An example would be an arrow placed in a scientific photograph to point out the area of interest.

Appendix B: Definitions of literary terms in Table 3.1

Location	Term	Definition
A1	*Repetition*	Copy or replication
B1	*Ellipsis*	Omission from sentence of words needed to complete construction or sense
C1	*Hyperbole*	Exaggerated statement not meant to be taken literally
D1	*Inversion*	Reversal of normal position, order or relation
A2	*Rhyme*	Identity of sound between words or verse lines
C2	*Allusion*	Covert, passing or indirect reference
D2	*Hendiadys*	Expression of a complex idea by two words connected with "and", e.g. nice and warm
A3	*Simile*	The illustrative, explanatory or ornamental introduction of an object or scene or action with which the one in hand is professedly compared
B3	*Circumlocution*	Evasive talk, roundabout expression
C3	*Metaphor*	Application of name or descriptive term to an object to which it is not literally applicable
D3	*Homology*	Correspondence, sameness in relation
A4	*Accumulation*	Collection
B4	*Suspension*	Maintenance of an undecided or inoperative state
C4	*Metonomy*	Substitution of the name of an attribute for that of the thing meant
D4	*Asyndeton*	Omission of the particle that usually begins the sentence
A5	*Zeugma*	A verb or adjective does duty with two nouns to one of which it is strictly applicable
B5	*Dubiation*	Hesitation
C5	*Periphrasis*	Roundabout phrase or way of speaking

Location (cont.)	Term (cont.)	Definition (cont.)
D5	*Anacoluthon*	Sentence lacking grammatical sequence
A6	*Antithesis*	Contrast of ideas expressed by parallelism of strongly contrasted words
B6	*Reticence*	Abstinence from over-emphasis, reserve, avoidance
C6	*Euphemism*	Substitution of mild expression for harsh or blunt one
D6	*Chiasmus*	Inversion in second phrase of word order followed in first phrase
A7	*Antanaclasis*	Repetition of same word with different signification
B7	*Tautology*	Saying of the same thing twice over in different words
C7	*Pun*	Humorous use of word to suggest different meanings
D7	*Antimetabola*	Contradictory exchange
A8	*Paradox*	Seemingly absurd though perhaps well-founded statement, self-contradictory statement
B8	*Preterition*	Omission, disregard
C8	*Antiphrasis*	Contradictory use of phrases
D8	*Antilogy*	Contradiction in terms

Source: Simpson and Weiner (1991).

TUBERCULOSIS
TUBERKULOSE
LEFUBA

TB

COLLECTING SPUTUM
DIE VERSAMELING VAN SPEEKSEL
HO BOKANYA SEKGOHLELA

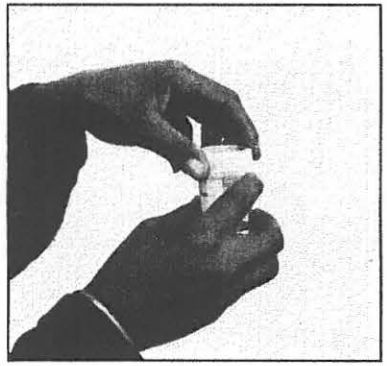
1.

Stand and take a deep breath.
Cough as hard as you can.
Staan en asem diep in.
Hoes so hard as wat jy kan.
Ema mme o hule moya haholo.
Hohlola haholo ka moo o ka kgonang.

2.

Spit what you bring up into the sputum jar.
Spoeg dit wat uitkom in die spoegbakkie.
Tshwela se hlahang ka hara baka ya sekgohlela.

3.



Seal the sputum jar.
Verseel die spoegbakkie.
Kwadisisa baka ya sekgohlela.

REMEMBER

Collect the sputum outside
Versamel die speeksel buite
Bokanya sekgohlela o le ka ntle

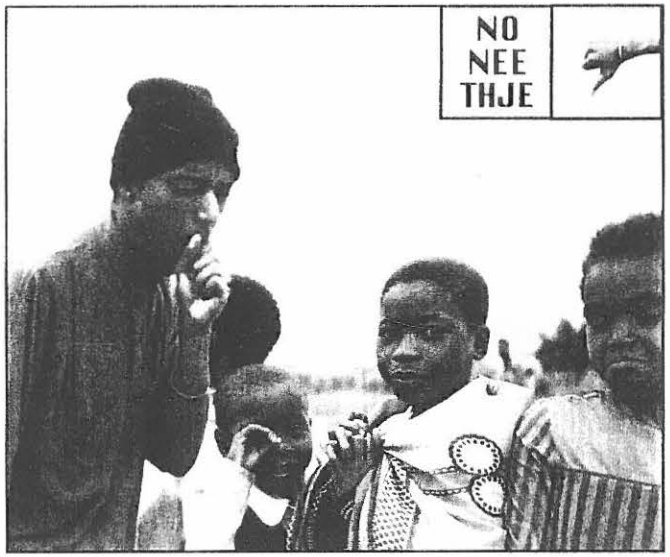
ONTHOU

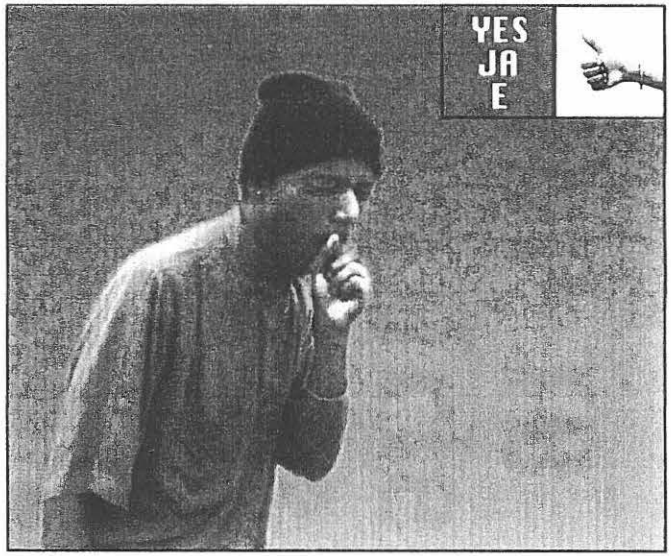
Rinse your mouth with sterile water
Spoel jou mond met steriele water uit
Tsokotsa molomo wa hao ka metsi a hlwekisitsweng haholo

HOPOLA

Appendix C: Poster A

If you have TB...
Indien jy 'n TB-lyer is...
Ebang o tshwerwe ke lefuba...



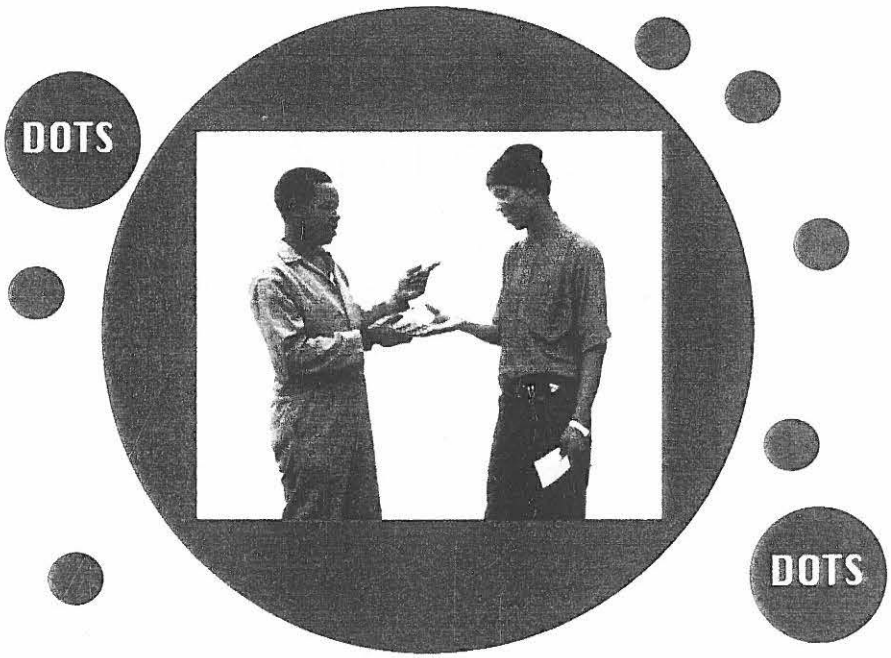


...don't cough near others, especially children.
...moenie naby ander hoes nie, veral nie kinders nie.
...o seke wa hohlella pela batho ba bang, haholo-holo bana.

Appendix C: Poster B

Appendix C: Poster C

STOP TB
-help a friend



Ask at your clinic about...
Vra jou kliniek uit oor...
Botsa kliniki ya hao ka...

D.O.T.S.

Directly Observed Treatment Short Course

Appendix C: Figure 5.4 Questionnaire for manipulation check

Date:

Instructions: Please mark one shaded box per row only

Poster: A ☐ B ☐ C ☐

Score (for Admin) ☐

Q1. Is it difficult or easy to recognise the subject matter depicted?

very difficult | 1 | 2 | 3 | 4 | 5 | very easy

Q2. Does the poster contain any visual symbols which are difficult to understand?

many | 1 | 2 | 3 | 4 | 5 | none

Q3. Is the overall style of presentation of the poster clear or unclear?

unclear | 1 | 2 | 3 | 4 | 5 | clear

Q4. Do the photographs contain any obvious digital manipulations?

none | 1 | 2 | 3 | 4 | 5 | many

Q5. Are the photographs in the poster boring or engaging?

boring | 1 | 2 | 3 | 4 | 5 | engaging

Q6. Are the text and layout of the poster boring or engaging?

boring | 1 | 2 | 3 | 4 | 5 | engaging

Table 5.5 Mean scores and standard deviations for manipulation check (n=23)

Question number	Poster A		Poster B		Poster C	
	Mean score	Standard deviation	Mean score	Standard deviation	Mean score	Standard deviation
Question 1	4.7391	0.4489	4.8695	0.3443	4.6956	0.4704
Question 2	4.9130	0.2881	4.7826	0.4217	4.8695	0.3443
Question 3	4.7826	0.4217	4.6087	0.7223	4.5652	0.5068
Question 4	1.2173	0.4217	1.9562	0.9282	1.3913	0.4990
Question 5	1.1304	0.3443	1.6956	0.7648	1.0869	0.2881
Question 6	1.3043	0.4704	1.2608	0.4489	1.9130	0.6683

Table 5.6 Probabilities associated with Student's t-test (paired, two-tailed) for manipulation check (n=23)

Posters	Question number											
	Q1		Q2		Q3		Q4		Q5		Q6	
Posters A vs B	0.1855	NS	0.2660	NS	0.3572	NS	0.0001	S	0.0040	S	0.6647	NS
Posters A vs C	0.7704	NS	0.6647	NS	0.1346	NS	0.2951	NS	0.5752	NS	0.0021	S
Posters B vs C	0.1618	NS	0.4917	NS	0.8401	NS	0.0446	S	0.0005	S	0.0005	S

Key: **NS** = Not significant at $\alpha = 0.05$ **S** = Significant at $\alpha = 0.05$

Appendix C: Figure 5.5 Questionnaire for structured interview: English

Clinic:	Date:
Sex:	Age:
Home language:	File no.
Education:	

		Tick one shaded box per row only		
Poster A		**NC**	**SC**	**PC**
Q1	What is the man in photograph 2 doing?			
Q2.	Do you think one is supposed to look at the three photographs from left to right or from right to left?			
Q3.	Does the size of the man's hands get bigger or smaller when one looks at the three photographs from right to left?			
Poster B				
Q4	Is the man in the left photograph and the man in the right photograph the same man or a different man?			
Q5	Is the man's surrounding the same in the left photograph and in the right photograph?			
Q6	What do the hands in the top right corner of the photographs indicate?			
Q7	Why is the child in the left photograph pulling a face?			
Poster C				
Q8	What do the letters D.O.T.S. stand for?			
Q9	Do you think that the blue dots in the middle of the poster can help one to remember the word "DOTS"?			
Q10	Is it possible that the blue dots in the poster could refer to some of the many tablets which one has to take as a TB patient?			

		A	**B**	**C**
General				
Q11	Please point at the poster which you think is easiest to understand.			
Q12	Please point at the poster which you think is the most interesting to look at.			

Comments:

Was the patient co-operative throughout the interview? ☐ Yes ☐ No

Key:
NC = No Comprehension; **SC** = Semantic Comprehension; **PC** = Pragmatic comprehension

Appendix C: Figure 5.6 Correct answers structured interview

Poster A		Tick one shaded box per row only NC	SC	PC
Q1	What is the man in photograph 2 doing? **SPITTING IN THE JAR**			
Q2.	Do you think one is supposed to look at the three photographs from left to right or from right to left? **LEFT TO RIGHT**			
Q3.	Does the size of the man's hands get bigger or smaller when one looks at the three photographs from right to left? **IN REAL LIFE THEY STAY THE SAME, BUT IN THE PHOTOGRAPH THEY GET SMALLER**			

Poster B				
Q4	Is the man in the left photograph and the man in the right photograph the same man or a different man? **SAME (OR IDENTICAL) MAN**			
Q5	Is the man's surrounding the same in the left photograph and in the right photograph? **NO, NOT THE SAME**			
Q6	What do the hands in the top right corner of the photographs indicate? **THUMB DOWN MEANS NO OR INCORRECT, THUMB UP MEANS YES OR CORRECT**			
Q7	Why is the child in the left photograph pulling a face? **BECAUSE SHE DOESN'T LIKE THE MAN COUGHING IN HER FACE / NEAR HER**			

Poster C				
Q8	What do the letters D.O.T.S. stand for? **DIRECTLY OBSERVED TREATMENT SHORT COURSE**			
Q9	Do you think that the blue dots in the middle of the poster can help one to remember the word "DOTS"? **YES, THERE IS A CONNECTION BETWEEN THE TWO**			
Q10	Is it possible that the blue dots in the poster could refer to some of the many tablets which one has to take as a TB patient? **YES, IT IS POSSIBLE, EVEN THOUGH THE DOTS DON'T LOOK EXACTLY LIKE TABLETS**			

Appendix C: Figure 5.7 Questionnaire for structured interview: Sesotho

Clinic:	Date:
Sex:	Age:
Home language:	File no.
Education:	

Setshwantsho A		Tick one shaded box per row only NC	SC	PC
P1.	Motho ya setshwantshong sa 2 o etsang?			
P2.	Na o nahana hore motho o tshwanetse ho sheba ditshwantsho tsena tse tharo ho tswa letsohong le letshehadi ho ya ho le letona kapa ho tloha ho le letona ho ya ho le letshehadi?			
P3.	Na boholo ba matsoho a monna a eba maholwanyane kapa mannyane ha motho o sheba ditshwantsoho tse tharo ho tswa ho le letona ho ya ho le letshehadi?			

Setshwantsho B				
P4	Na monna ya setshwantsong se ka letsohong le letshehadi le monna ya setshshwantshong se ka letsohong le letona ke motho a le mong kapa ke batho ba fapaneng?			
P5	Na tikoloho ya monna ya setshwantshong se ka letsohong le letshehadi e tshwana le ya ka letsohong le letona?			
P6	Matsoho a leng khoneng e lehlakoreng le letona la ditshwantsho a bontsha eng?			
P7	Ke eng ha ngwana ya setshwantshong se lehlakoreng le letshehadi a sosobantse sefahleho?			

Setshwantsho C				
P8	Diletere tsena D.O.T.S. di emetseng?			
P9	Na o nahana hore matheba a bolou a mahareng a setshwantsho a ka thusa motho hore a hopole lentswe lena "DOTS"?			
P10	Na ho nale kgonahalo ya hore matheba a bolou setshwantsong a ka lebisa ho dipilisi tse ngata tseo motho a loketseng ho di nwa jwaloka mokudi wa Lefuba?			

Kakaretso		A	B	C
P11	Ka kopo supa setshwantsho seo o nahanang hore se bonolo haholo ho ka hopolwa			
P12	Ka kopo supa setshwantsho seo o nahanang hore se fana ka thahasello ho ka shejwa.			

Comments:

Was the patient co-operative throughout the interview? ☐ Yes ☐ No

Key:
NC = No Comprehension; **SC** = Semantic Comprehension; **PC** = Pragmatic comprehension

Appendix C: Figure 5.8 Questionnaire for structured interview: Afrikaans

Clinic:	Date:
Sex:	Age:
Home language:	File no.
Education:	

Tick one shaded box per row only

Plakaat A		NC	SC	PC
V1	Wat is die man op foto nommer 2 besig om te doen?			
V2.	Dink u 'n mens behoort van links na regs of van regs na links na die drie foto's te kyk?			
V3.	Word die man se hand groter of kleiner wanneer `n mens van regs na links na die drie foto's kyk?			

Plakaat B				
V4	Is die man op die linkerfoto en die een op die regterfoto dieselfde of verskillende persone?			
V5	Is die omgewing waarin die man op die linkerfoto en die regterfoto homself bevind, dieselfde omgewing?			
V6	Wat dui die hande in die boonste regterhoek van die foto's aan?			
V7	Waarom trek die kind op die linkerfoto gesig?			

Plakaat C				
V8	Waarvoor staan die letters D.O.T.S.?			
V9	Dink u dat die blou kolle in die middel van die plakkaat `n mens kan help om die woord "DOTS" te onthou?			
V10	Is dit moontlik dat die blou kolle op die plakkaat `n verwysing kan wees na die baie pille wat deur `n TB-pasiënt gedrink moet word?			

Algemeen		A	B	C
V11	Dui asseblief aan watter plakkaat na u mening die maklikste verstaanbaar is.			
V12	Dui asseblief aan watter plakkaat na u mening die interessantste is om na te kyk.			

Comments:

Was the patient co-operative throughout the interview? ☐ Yes ☐ No

Key:
NC = No Comprehension; **SC** = Semantic Comprehension; **PC** = Pragmatic comprehension

Appendix C: Interview guidelines supplied to research assistant

The research assistant completes the questionnaire during an interview with the patient. In the first stage of the interview, the research assistant greets the patient and introduces himself. In explaining the aim of the questionnaire, the following opening remarks are suggested:

> "We have produced these posters for the Municipality to be used in the clinics. Please may I ask you to answer a few questions about the posters as we are trying to find out whether they are easy or difficult to understand. It will take about ten minutes."

If the patient agrees, the research assistant fills in the patients details (age, home language, education etc). Concerning age, only patients who are 21 years or older are interviewed. With regard to education, it is important that only patients with 12 or more years of formal education (i.e. matric and higher) and patients with 6 or less years of formal education (i.e. Std 4 or lower) are interviewed.

The research assistant asks the patient questions (preferably in the patients home language) and completes the questionnaire by ticking one shaded box per row. For questions 1-10, the shaded block in the column NC (i.e. no comprehension) is ticked if the patient gives an incorrect answer, and the shaded block in the columns SC (i.e. semantic comprehension) or PC (pragmatic comprehension) is ticked (whichever is applicable), when the patient gives a correct answer. Semantic comprehension refers to the ability to recognize depicted objects and to identify their literal meaning. Pragmatic comprehension may be defined as the ability to interpret a visual illustration beyond its literal meaning, implying an ability to comprehend figurative meaning and a familiarity with artistic manipulation and cultural conventions. The correct answers to

questions 1-10 are:

Q1 What is the man in photograph 2 doing?

SPITTING IN THE JAR

Q2 Do you think one is supposed to look at the three photographs form left to right or from right to left?

LEFT TO RIGHT

Q3 Does the size of the man's hands get bigger or smaller when one looks at the three photographs from right to left?

IN REAL LIFE THEY STAY THE SAME, BUT IN THE PHOTOGRAPH THEY GET SMALLER

Q4 Is the man in the left photograph and the man in the right photograph the same man or a different man?

SAME (OR IDENTICAL) MAN

Q5 Is the man's surrounding the same in the left photograph and in the right photograph?

NO, NOT THE SAME

Q6 What do the hands in the top right corner of the photographs indicate?

THUMBS DOWN MEANS NO OR INCORRECT, THUMBS UP MEANS YES OR CORRECT

Q7 Why is the child in the left photograph pulling a face?

BECAUSE SHE DOESN'T LIKE THE MAN COUGHING NEAR HER

Q8 What do the letters D.O.T.S. stand for?

DIRECTLY OBSERVED TREATMENT SHORT COURSE

Q9 Do you think that the blue dots in the middle of the poster can help one to remember the word "DOTS"?

YES, THERE IS A CONNECTION

Q10 Is it possible that the blue dots in the poster could refer to some of the many tablets which one has to take as a TB patient?

YES, IT IS POSSIBLE

In the case of Question 9, it is important that the research assistant does not provide any clues to the patient, as this question is designed to check whether the patient is indeed literate or illiterate. The patient should thus read the text "Directly Observed....etc" out loud on his/her own to the assistant. In Questions 11 and 12, the research assistant records the answer of the patient by ticking the appropriate shaded box (either poster A, B or C). At the end of the interview, the research assistant ticks "Yes" if the patient was co-operative throughout the interview, and "no" if this was not the case. **If the research assistant is uncertain whether an answer given by the patient should be recorded as correct or incorrect, the answer is written down *verbatim* (i.e. word for word) on the back of the questionnaire sheet.**

At the end of the interview, the assistant thanks the patient for participating.

Appendix C: Correspondence with BTLC

Mr. Rolf J. Gaede
P. O. Box 28739
9310 Danhof
Tel: (W) 507-3184
Tel: (H) 436-7805
Fax: 507-3199
e-mail: rgaede@mail.tofs.ac.za

1998/03/12

Dr. A. Hiemstra
Medical Officer of Health
Bloemfontein Transitional Local Council
P. O. Box 3709
9300 Bloemfontein

Dear Dr. Hiemstra

Re: Production of health education visuals

Flowing from a preliminary discussion with Sr. M. Reid on 1998/03/11, I would like to bring the following to your attention.

I am currently busy with doctoral studies in the area of visual communication and photography at the Technikon Free State (Student no. 9761845) and would like to conduct field work in co-operation with the Health Services of the BTLC.

As indicated by Sr. Reid, a possible arrangement could be that I produce health education visuals based on the needs and input from the BTLC and subsequently conduct interviews with patients to measure the ease with which the visuals are understood. Tuberculosis has been suggested as a theme for the visuals (e.g. a sequence illustrating sputum collection). I would bear all costs with regard to the production of an initial set of visuals. I have received funding for the proposed project from the Centre for Science Development (Grant no. 15/1/4/3/00051) with which I would be able to appoint a research assistant to conduct interviews.

The implications for clinic staff would be that the research assistant is accomodated in the daily routine of the clinic sothat he/she may conduct interviews with patients and that co-operation is granted should it be necessary to photograph in a clinic setting during the production stage of the visuals.

The focus of the research would lie with readability barriers in health education visuals experienced by both literate and illiterate adult viewers (it is envisaged that only patients older than 21 years with an education of either Std.2 and lower or Std. 10 and higher will be admitted to the study).

As I have indicated to Sr. Reid, I undertake to donate a set of the better understood visuals to the BTLC at the end of the project and to supply feedback concerning the main fidings of the research in the form of a short report.

Please feel free to contact me should you have any questions in this regard.

Yours sincerely

R.J. Gaede

Rolf J. Gaede

Copy to: Sr. M. Reid, Bloemfontein Transitional Local Council

Appendix D Background information on sputum collection

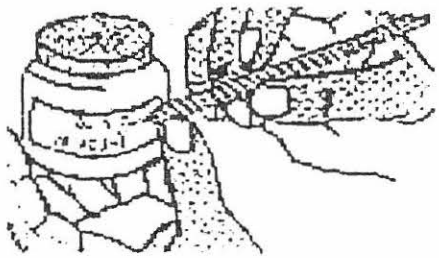
The material below was used as a point of departure for the design of Poster A:

Collection of Sputum

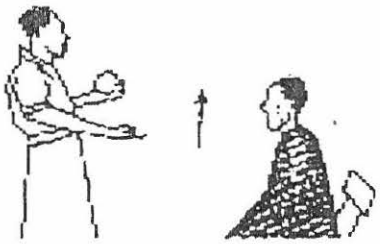
Collect the first sputum of the morning.

The Nurse or Laboratory Technician or Supporter must be present and the following procedure should be followed;

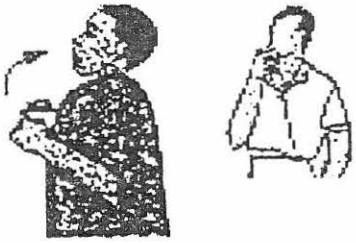
1. Label the sputum jar.



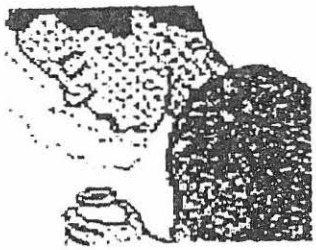
2. The patient must stand - if possible.



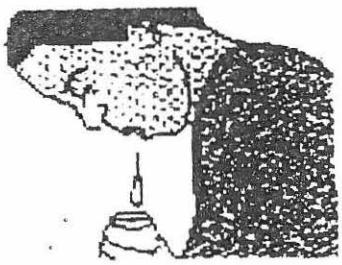
3. The patient must take a very deep breath, filling their lungs completely.



4. The patient must empty their lungs in one breath, coughing as hard and as deeply as they can.



5. The patient must spit what they bring up into the sputum jar.

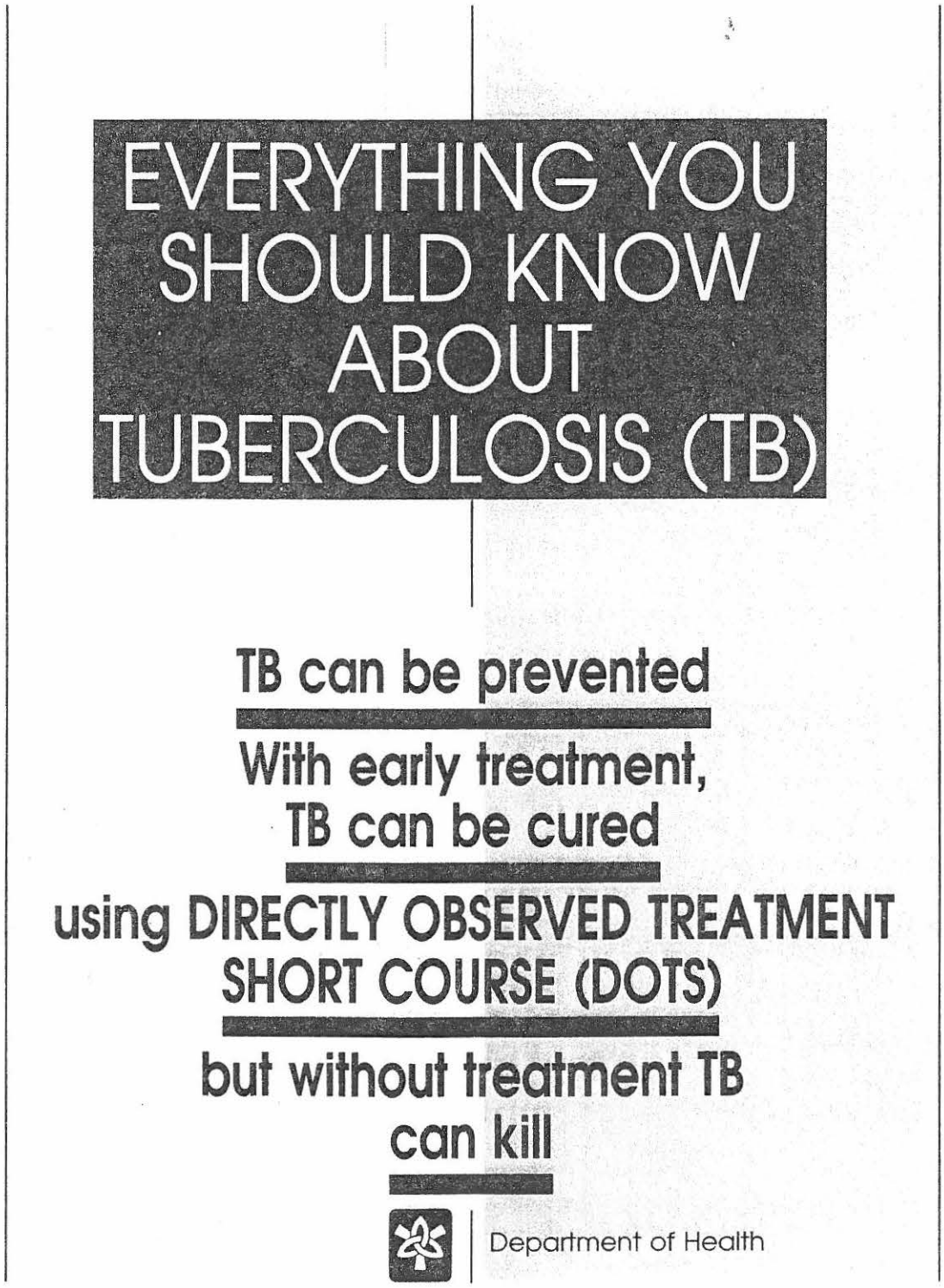


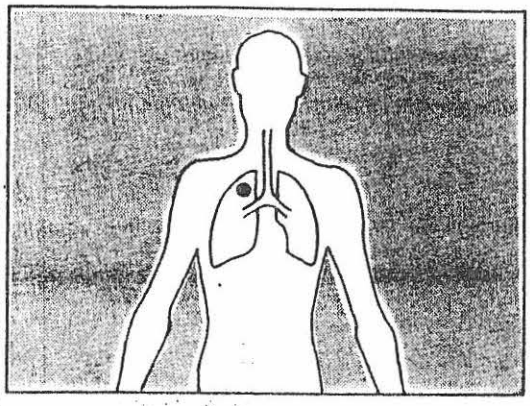
Guidelines for Sputum Collection

1. A good sputum is required. A poor saliva sample will waste both your time and money as well as the TB laboratory's time!
2. An Early morning specimen is best!
3. Two samples should be collected on different days!
4. INSTRUCT patient to rinse mouth with sterile water (the water that has cooled in the kettle since last boiled)!
5. Explain the steps slowly and fully to the patient!
6. Demonstrate a deep cough, beginning with deep breathing!
7. Supervise the collection but do not stand in front of the patient!
8. Always stand away from the patient to prevent inhaling TB bacilli!
9. Collect the sputum outside in fresh air (Do not collect indoors)!
10. Then Label container with patient and clinic details!
11. Check that the container is sealed tightly. This will ensure that no-one else is exposed to the TB bacilli!
12. Write the appearance of the sputum on the record card!
13. Isolate if possible, each sputum container in its own plastic bag!
14. Laboratory rules may dictate that leaked specimens be discarded!
15. Transport specimens in a cooler bag, as soon as possible!
16. Store in a refrigerator not a freezer - if transport is not immediately available!
17. Sputum can be kept for a maximum of 72 hours (preferably in a refrigerator. However sputum may be kept outside if there is no refrigerator available).

Appendix E Background information on the DOTS program

The pamphlet below served as a starting point for the design of Posters B & C:





WHAT IS TB?

- TB is a disease that mainly affects the lungs, but can be found in any other body organ.
- It is caused by a germ called Mycobacterium tuberculosis.
- The germs are present in the sputum coughed up by those that have TB of the lungs.
- The germs usually destroy the soft tissue of the lungs. This causes cavities (holes) in the lungs, resulting in difficulty with breathing.
- Blood can be coughed up.
- If untreated TB can cause death.

HOW DO PEOPLE GET TB?

- The disease is passed on from person to person.
- When a person who has TB coughs, sneezes or spits, germs are spread into the air from where they can be breathed in.
- Fortunately not all those infected suffer from TB. In most cases the germs are sealed off in the body and they do not multiply.
- However, if the body's defences can no longer control the germs, they become active and the person gets TB.

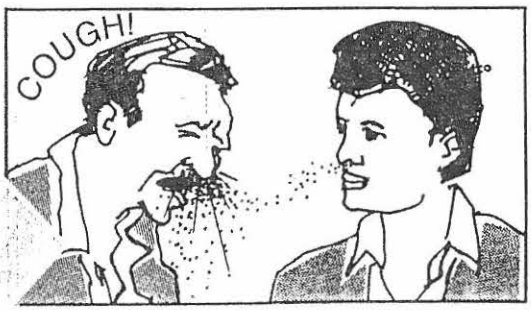
Chances to get TB are increased when the body's defences are lowered because of:

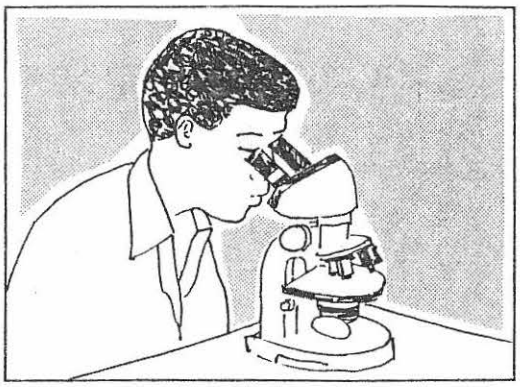
- Disease like diabetes and AIDS.
- Excessive alcohol intake.
- Lack of proper food.
- Stress due to unresolved problems.
- Living in poorly ventilated, overcrowded rooms.

WHAT ARE THE SIGNS AND SYMPTOMS OF TB?

- A cough for longer than three weeks.
- Coughing up blood.
- Pain in the chest.
- Tiredness and weakness of the body.
- Poor appetite.
- Weight loss.
- Night sweats, even when it is cold.

* When two or more of the above signs are present at the same time, a person must get help from a clinic or hospital, as soon as possible.





HOW IS TB DIAGNOSED?

- Any of the above signs may be an indication of the disease.
- The germs are found in the sputum (spit) when tested at a clinic or hospital.
- An X-ray done at a clinic or hospital, may show cavities or changes in the lungs.
- A skin test done on children by a nurse or doctor, can be an indication.

* When a person has been diagnosed as suffering from TB, all children under five years of age that have been in close contact with that person should be examined, so that if necessary they may also receive treatment. Adults should be advised to seek help should they develop any TB symptoms.

* Most people feel depressed or ashamed when told that they are suffering from TB. There really is no need for this as TB is a disease like any other disease. It can happen to anyone.

TREATMENT OF TB

- TB CAN BE CURED WITH LITTLE OR NO COMPLICATIONS
  - Medicines must, however, be started as soon as possible and it must be taken regularly according to the instruction given at the clinic.
  - It takes 6 months or longer for TB to be cured completely, but within 2 weeks of starting treatment, the person will no longer spread the disease.
- TREATMENT MUST BE COMPLETED
  - It is a mistake to stop taking medicines when a person feels better.
  - It takes a long time for TB germs to be destroyed. If medicines are stopped too soon and without the instructions of the nurse or doctor, the disease may start all over again.
- DIRECTLY OBSERVED TREATMENT, SHORT COURSE (DOTS) provides encouragement and support to persons suffering from TB to enable them to complete their treatment. This is done by choosing a treatment supporter who is responsible for watching the person with TB swallow his/her medicines somewhere convenient eg. at the workplace or in the community.
- ALL TREATMENT IS PROVIDED FREE OF CHARGE AT CLINICS AND HOSPITALS
- SOMETIMES MEDICINES CAN CAUSE PROBLEMS LIKE UPSET STOMACH, EAR AND EYE PROBLEMS

Should this happen the person must not stop treatment, but go back to the clinic or hospital, where a nurse or doctor will give them correct advice.